



# Full wwPDB NMR Structure Validation Report ⓘ

Jun 3, 2023 – 09:29 PM EDT

PDB ID : 7KBQ  
BMRB ID : 30802  
Title : Solution NMR Structure of DE NOVO DESIGNED Rossmann 3x3 Fold Protein r3x3\_bp3, Northeast Structural Genomics Consortium (NESG) Target OR689  
Authors : Liu, G.; Montelione, G.T.; Northeast Structural Genomics Consortium (NESG)  
Deposited on : 2020-10-02

This is a Full wwPDB NMR Structure Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/NMRValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
wwPDB-RCI : v\_1n\_11\_5\_13\_A (Berjanski et al., 2005)  
PANAV : Wang et al. (2010)  
wwPDB-ShiftChecker : v1.2  
BMRB Restraints Analysis : v1.2  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.33

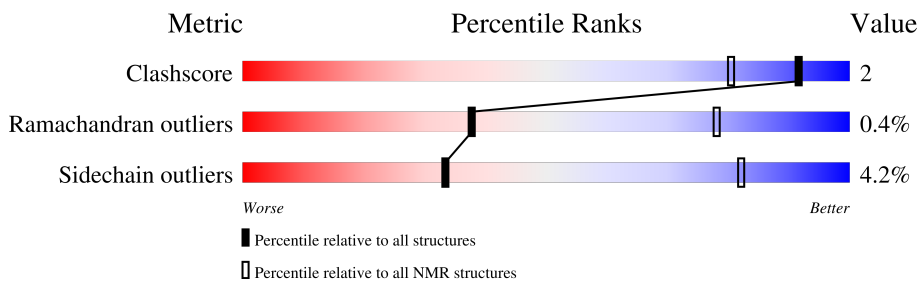
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*SOLUTION NMR*

The overall completeness of chemical shifts assignment is 85%.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



| Metric                | Whole archive<br>(#Entries) | NMR archive<br>(#Entries) |
|-----------------------|-----------------------------|---------------------------|
| Clashscore            | 158937                      | 12864                     |
| Ramachandran outliers | 154571                      | 11451                     |
| Sidechain outliers    | 154315                      | 11428                     |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the experimental data. The red, orange, yellow and green segments indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. A cyan segment indicates the fraction of residues that are not part of the well-defined cores, and a grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 135    | 81% 16%          |

## 2 Ensemble composition and analysis i

This entry contains 20 models. Model 17 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *medoid*.

The following residues are included in the computation of the global validation metrics.

| Well-defined (core) protein residues |                           |                   |              |
|--------------------------------------|---------------------------|-------------------|--------------|
| Well-defined core                    | Residue range (total)     | Backbone RMSD (Å) | Medoid model |
| 1                                    | A:2-A:8, A:18-A:123 (113) | 0.87              | 17           |

Ill-defined regions of proteins are excluded from the global statistics.

Ligands and non-protein polymers are included in the analysis.

The models can be grouped into 6 clusters and 1 single-model cluster was found.

| Cluster number        | Models          |
|-----------------------|-----------------|
| 1                     | 6, 8, 9, 14, 17 |
| 2                     | 4, 7, 13        |
| 3                     | 3, 11, 15       |
| 4                     | 2, 10, 20       |
| 5                     | 16, 18, 19      |
| 6                     | 1, 5            |
| Single-model clusters | 12              |

### 3 Entry composition

There is only 1 type of molecule in this entry. The entry contains 2289 atoms, of which 1177 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called DE NOVO DESIGNED OR689.

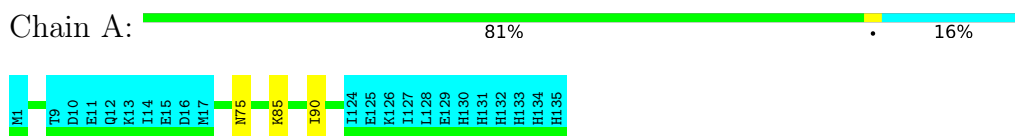
| Mol | Chain | Residues | Atoms |     |      |     |     | Trace |   |
|-----|-------|----------|-------|-----|------|-----|-----|-------|---|
|     |       |          | Total | C   | H    | N   | O   |       | S |
| 1   | A     | 135      | 2289  | 708 | 1177 | 195 | 207 | 2     | 0 |

## 4 Residue-property plots i

### 4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic is the same as shown in the summary in section 1 of this report. The second graphic shows the sequence where residues are colour-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outliers are shown as green connectors. Residues which are classified as ill-defined in the NMR ensemble, are shown in cyan with an underline colour-coded according to the previous scheme. Residues which were present in the experimental sample, but not modelled in the final structure are shown in grey.

- Molecule 1: DE NOVO DESIGNED OR689

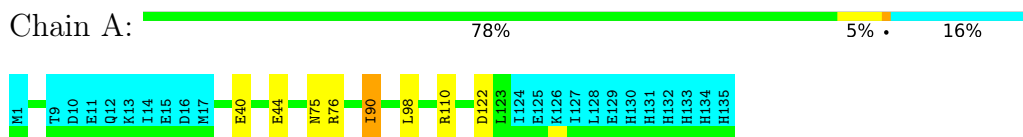


### 4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

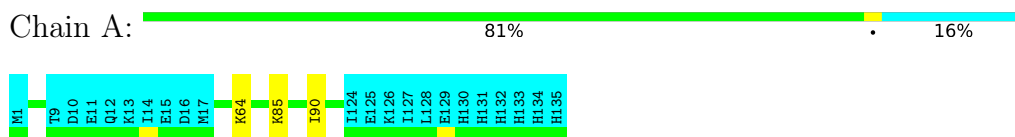
#### 4.2.1 Score per residue for model 1

- Molecule 1: DE NOVO DESIGNED OR689



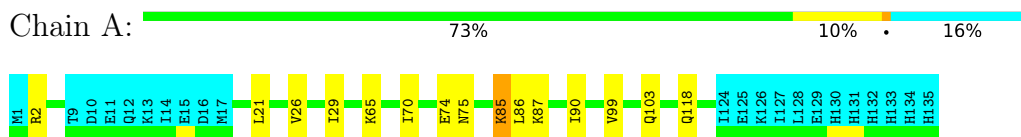
#### 4.2.2 Score per residue for model 2

- Molecule 1: DE NOVO DESIGNED OR689



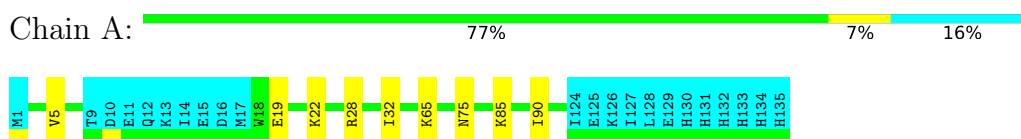
### 4.2.3 Score per residue for model 3

- Molecule 1: DE NOVO DESIGNED OR689



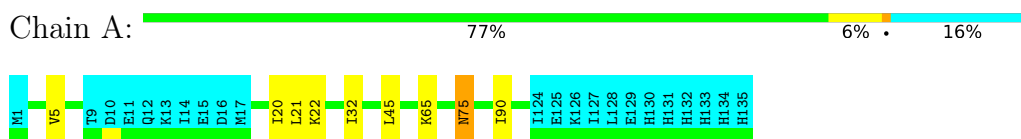
### 4.2.4 Score per residue for model 4

- Molecule 1: DE NOVO DESIGNED OR689



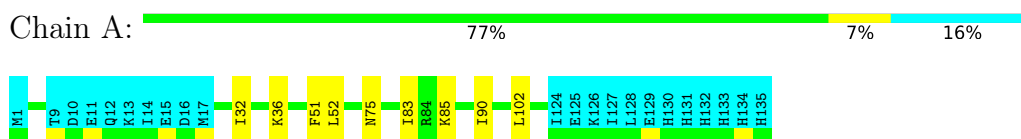
### 4.2.5 Score per residue for model 5

- Molecule 1: DE NOVO DESIGNED OR689



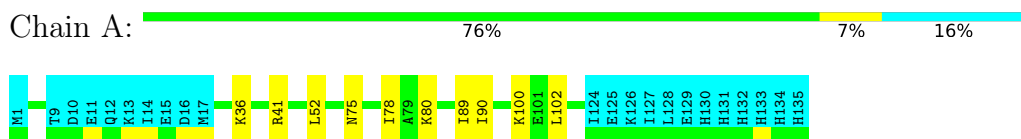
### 4.2.6 Score per residue for model 6

- Molecule 1: DE NOVO DESIGNED OR689



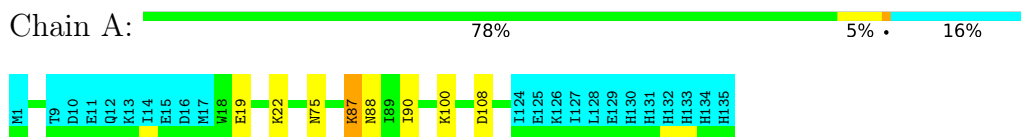
### 4.2.7 Score per residue for model 7

- Molecule 1: DE NOVO DESIGNED OR689



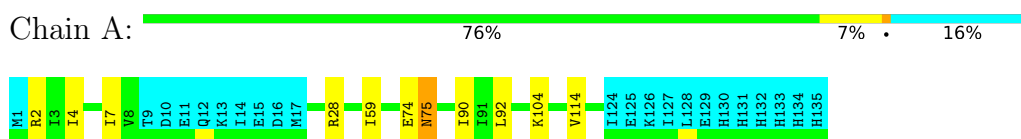
#### 4.2.8 Score per residue for model 8

- Molecule 1: DE NOVO DESIGNED OR689



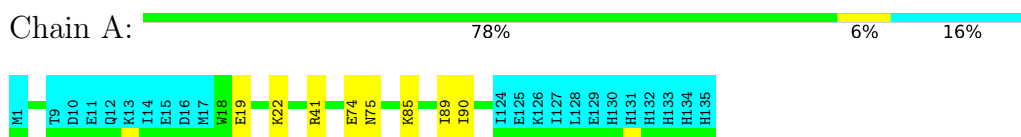
#### 4.2.9 Score per residue for model 9

- Molecule 1: DE NOVO DESIGNED OR689



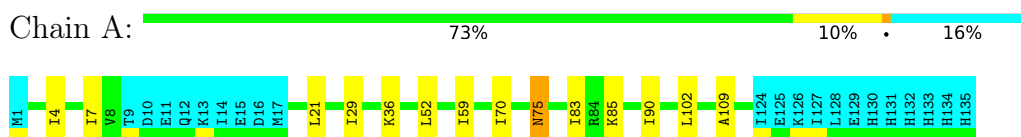
#### 4.2.10 Score per residue for model 10

- Molecule 1: DE NOVO DESIGNED OR689



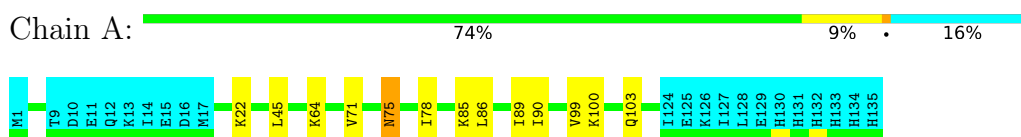
#### 4.2.11 Score per residue for model 11

- Molecule 1: DE NOVO DESIGNED OR689



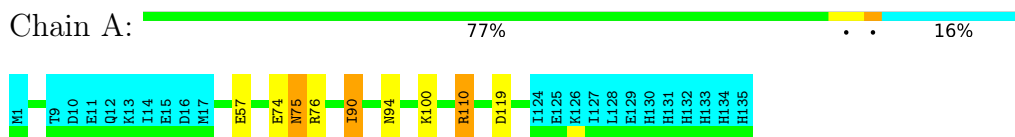
#### 4.2.12 Score per residue for model 12

- Molecule 1: DE NOVO DESIGNED OR689



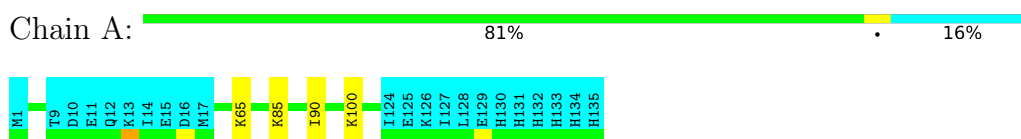
### 4.2.13 Score per residue for model 13

- Molecule 1: DE NOVO DESIGNED OR689



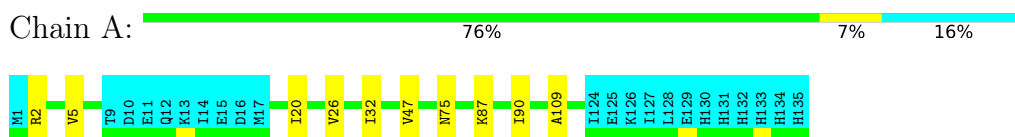
### 4.2.14 Score per residue for model 14

- Molecule 1: DE NOVO DESIGNED OR689



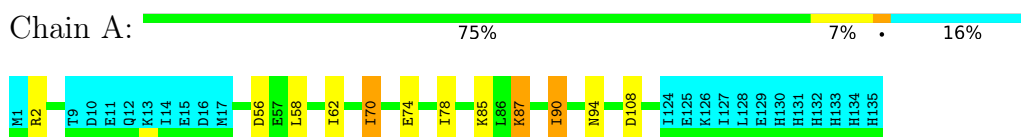
### 4.2.15 Score per residue for model 15

- Molecule 1: DE NOVO DESIGNED OR689



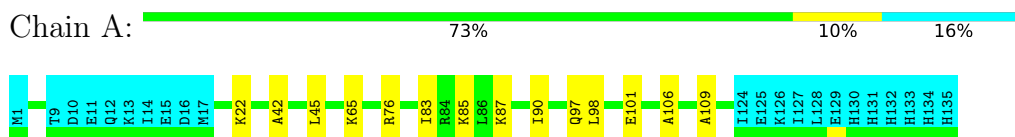
### 4.2.16 Score per residue for model 16

- Molecule 1: DE NOVO DESIGNED OR689



### 4.2.17 Score per residue for model 17 (medoid)

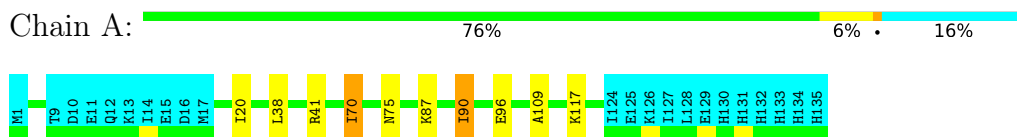
- Molecule 1: DE NOVO DESIGNED OR689





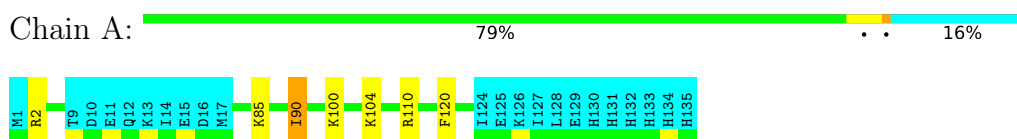
#### 4.2.18 Score per residue for model 18

- Molecule 1: DE NOVO DESIGNED OR689



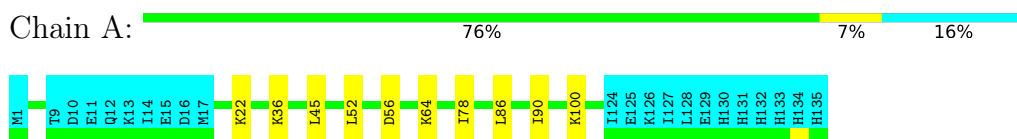
#### 4.2.19 Score per residue for model 19

- Molecule 1: DE NOVO DESIGNED OR689



#### 4.2.20 Score per residue for model 20

- Molecule 1: DE NOVO DESIGNED OR689



## 5 Refinement protocol and experimental data overview

The models were refined using the following method: *simulated annealing*.

Of the 100 calculated structures, 20 were deposited, based on the following criterion: *target function*.

The following table shows the software used for structure solution, optimisation and refinement.

| Software name | Classification        | Version |
|---------------|-----------------------|---------|
| CNS           | refinement            |         |
| CYANA         | structure calculation |         |
| ASDP          | structure calculation |         |

The following table shows chemical shift validation statistics as aggregates over all chemical shift files. Detailed validation can be found in section 7 of this report.

| Chemical shift file(s)                       | working_cs.cif |
|--|----------------|
| Number of chemical shift lists               | 1              |
| Total number of shifts                       | 1614           |
| Number of shifts mapped to atoms             | 1614           |
| Number of unparsed shifts                    | 0              |
| Number of shifts with mapping errors         | 0              |
| Number of shifts with mapping warnings       | 0              |
| Assignment completeness (well-defined parts) | 85%            |

## 6 Model quality i

### 6.1 Standard geometry i

There are no covalent bond-length or bond-angle outliers.

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 6.2 Too-close contacts i

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in each chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes averaged over the ensemble.

| Mol | Chain | Non-H | H(model) | H(added) | Clashes |
|-----|-------|-------|----------|----------|---------|
| 1   | A     | 917   | 992      | 992      | 3±2     |
| All | All   | 18340 | 19840    | 19840    | 59      |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 2.

All unique clashes are listed below, sorted by their clash magnitude.

| Atom-1          | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|-----------------|------------------|----------|-------------|--------|-------|
|                 |                  |          |             | Worst  | Total |
| 1:A:106:ALA:HB1 | 1:A:109:ALA:HB3  | 0.60     | 1.74        | 17     | 1     |
| 1:A:5:VAL:HG13  | 1:A:32:ILE:HG13  | 0.57     | 1.76        | 4      | 1     |
| 1:A:75:ASN:HB3  | 1:A:78:ILE:HB    | 0.55     | 1.79        | 7      | 1     |
| 1:A:36:LYS:HD3  | 1:A:52:LEU:HD21  | 0.51     | 1.81        | 6      | 1     |
| 1:A:74:GLU:HB3  | 1:A:94:ASN:H     | 0.50     | 1.67        | 16     | 1     |
| 1:A:22:LYS:HB3  | 1:A:45:LEU:HD12  | 0.49     | 1.83        | 17     | 1     |
| 1:A:80:LYS:HG2  | 1:A:102:LEU:HD21 | 0.49     | 1.84        | 7      | 1     |
| 1:A:64:LYS:HD3  | 1:A:86:LEU:HD21  | 0.48     | 1.85        | 12     | 2     |
| 1:A:76:ARG:HG3  | 1:A:98:LEU:HD23  | 0.48     | 1.84        | 17     | 1     |
| 1:A:36:LYS:HG2  | 1:A:52:LEU:HD21  | 0.47     | 1.86        | 7      | 3     |
| 1:A:75:ASN:HD22 | 1:A:78:ILE:H     | 0.47     | 1.52        | 12     | 1     |
| 1:A:19:GLU:O    | 1:A:22:LYS:HG2   | 0.47     | 2.10        | 10     | 3     |
| 1:A:7:ILE:HD13  | 1:A:59:ILE:HD12  | 0.46     | 1.85        | 11     | 2     |
| 1:A:87:LYS:HA   | 1:A:109:ALA:HB2  | 0.46     | 1.86        | 17     | 2     |

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| Atom-1          | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|-----------------|------------------|----------|-------------|--------|-------|
|                 |                  |          |             | Worst  | Total |
| 1:A:90:ILE:HA   | 1:A:110:ARG:O    | 0.45     | 2.12        | 1      | 3     |
| 1:A:87:LYS:HD3  | 1:A:108:ASP:HB2  | 0.45     | 1.88        | 8      | 1     |
| 1:A:70:ILE:HG12 | 1:A:90:ILE:HG23  | 0.45     | 1.88        | 16     | 2     |
| 1:A:92:LEU:HD11 | 1:A:114:VAL:HG13 | 0.45     | 1.88        | 9      | 1     |
| 1:A:87:LYS:HB2  | 1:A:108:ASP:HB2  | 0.44     | 1.90        | 16     | 1     |
| 1:A:21:LEU:HD13 | 1:A:29:ILE:HD11  | 0.44     | 1.89        | 11     | 2     |
| 1:A:4:ILE:HD12  | 1:A:28:ARG:NH2   | 0.43     | 2.28        | 9      | 1     |
| 1:A:71:VAL:HG23 | 1:A:89:ILE:HD11  | 0.43     | 1.90        | 12     | 1     |
| 1:A:64:LYS:HB2  | 1:A:85:LYS:HD3   | 0.43     | 1.90        | 2      | 1     |
| 1:A:22:LYS:HB3  | 1:A:45:LEU:HG    | 0.43     | 1.91        | 5      | 1     |
| 1:A:42:ALA:HA   | 1:A:45:LEU:HD23  | 0.43     | 1.89        | 17     | 1     |
| 1:A:99:VAL:HG12 | 1:A:103:GLN:NE2  | 0.43     | 2.29        | 3      | 2     |
| 1:A:5:VAL:HG13  | 1:A:32:ILE:HD12  | 0.43     | 1.91        | 5      | 2     |
| 1:A:56:ASP:HB3  | 1:A:78:ILE:HD11  | 0.43     | 1.90        | 20     | 2     |
| 1:A:76:ARG:HA   | 1:A:98:LEU:HG    | 0.42     | 1.91        | 1      | 1     |
| 1:A:32:ILE:HG12 | 1:A:51:PHE:HB2   | 0.42     | 1.89        | 6      | 1     |
| 1:A:40:GLU:O    | 1:A:44:GLU:HG2   | 0.42     | 2.15        | 1      | 1     |
| 1:A:83:ILE:HG13 | 1:A:102:LEU:HD12 | 0.42     | 1.92        | 6      | 2     |
| 1:A:22:LYS:HA   | 1:A:45:LEU:HD21  | 0.41     | 1.92        | 20     | 2     |
| 1:A:75:ASN:ND2  | 1:A:78:ILE:H     | 0.41     | 2.14        | 12     | 1     |
| 1:A:21:LEU:O    | 1:A:26:VAL:HG13  | 0.41     | 2.15        | 3      | 1     |
| 1:A:85:LYS:HG3  | 1:A:86:LEU:HG    | 0.41     | 1.93        | 3      | 1     |
| 1:A:58:LEU:O    | 1:A:62:ILE:HG12  | 0.41     | 2.15        | 16     | 1     |
| 1:A:4:ILE:HA    | 1:A:70:ILE:HG23  | 0.41     | 1.93        | 11     | 1     |
| 1:A:26:VAL:HG11 | 1:A:47:VAL:HG22  | 0.41     | 1.92        | 15     | 1     |
| 1:A:97:GLN:O    | 1:A:101:GLU:HG2  | 0.41     | 2.16        | 17     | 1     |
| 1:A:87:LYS:O    | 1:A:109:ALA:HA   | 0.41     | 2.16        | 18     | 1     |
| 1:A:83:ILE:HD12 | 1:A:109:ALA:HB1  | 0.40     | 1.94        | 11     | 2     |

## 6.3 Torsion angles [i](#)

### 6.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all NMR entries. The Analysed column shows the number of residues for which the backbone conformation was analysed and the total number of residues.

| Mol | Chain | Analysed      | Favoured      | Allowed    | Outliers   | Percentiles |
|-----|-------|---------------|---------------|------------|------------|-------------|
| 1   | A     | 113/135 (84%) | 109±1 (96±1%) | 4±2 (3±1%) | 0±0 (0±0%) | 38 78       |

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| Mol | Chain | Analysed        | Favoured   | Allowed | Outliers | Percentiles |
|-----|-------|-----------------|------------|---------|----------|-------------|
| All | All   | 2260/2700 (84%) | 2173 (96%) | 77 (3%) | 10 (0%)  | 38 78       |

All 1 unique Ramachandran outliers are listed below.

| Mol | Chain | Res | Type | Models (Total) |
|-----|-------|-----|------|----------------|
| 1   | A     | 75  | ASN  | 10             |

### 6.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all NMR entries. The Analysed column shows the number of residues for which the sidechain conformation was analysed and the total number of residues.

| Mol | Chain | Analysed        | Rotameric    | Outliers   | Percentiles |
|-----|-------|-----------------|--------------|------------|-------------|
| 1   | A     | 103/125 (82%)   | 99±2 (96±2%) | 4±2 (4±2%) | 33 82       |
| All | All   | 2060/2500 (82%) | 1973 (96%)   | 87 (4%)    | 33 82       |

All 26 unique residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

| Mol | Chain | Res | Type | Models (Total) |
|-----|-------|-----|------|----------------|
| 1   | A     | 90  | ILE  | 20             |
| 1   | A     | 85  | LYS  | 10             |
| 1   | A     | 75  | ASN  | 7              |
| 1   | A     | 100 | LYS  | 7              |
| 1   | A     | 2   | ARG  | 5              |
| 1   | A     | 65  | LYS  | 5              |
| 1   | A     | 74  | GLU  | 4              |
| 1   | A     | 70  | ILE  | 3              |
| 1   | A     | 87  | LYS  | 3              |
| 1   | A     | 20  | ILE  | 3              |
| 1   | A     | 41  | ARG  | 3              |
| 1   | A     | 89  | ILE  | 2              |
| 1   | A     | 104 | LYS  | 2              |
| 1   | A     | 118 | GLN  | 1              |
| 1   | A     | 28  | ARG  | 1              |
| 1   | A     | 21  | LEU  | 1              |
| 1   | A     | 88  | ASN  | 1              |
| 1   | A     | 57  | GLU  | 1              |
| 1   | A     | 76  | ARG  | 1              |

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| Mol | Chain | Res | Type | Models (Total) |
|-----|-------|-----|------|----------------|
| 1   | A     | 94  | ASN  | 1              |
| 1   | A     | 110 | ARG  | 1              |
| 1   | A     | 119 | ASP  | 1              |
| 1   | A     | 38  | LEU  | 1              |
| 1   | A     | 96  | GLU  | 1              |
| 1   | A     | 117 | LYS  | 1              |
| 1   | A     | 120 | PHE  | 1              |

### 6.3.3 RNA [i](#)

There are no RNA molecules in this entry.

### 6.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

### 6.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 6.6 Ligand geometry [i](#)

There are no ligands in this entry.

### 6.7 Other polymers [i](#)

There are no such molecules in this entry.

### 6.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 7 Chemical shift validation [i](#)

The completeness of assignment taking into account all chemical shift lists is 85% for the well-defined parts and 80% for the entire structure.

### 7.1 Chemical shift list 1

File name: working\_cs.cif

Chemical shift list name: o689bmr31.bmr

#### 7.1.1 Bookkeeping [i](#)

The following table shows the results of parsing the chemical shift list and reports the number of nuclei with statistically unusual chemical shifts.

|   |      |
|---|------|
| Total number of shifts                  | 1614 |
| Number of shifts mapped to atoms        | 1614 |
| Number of unparsed shifts               | 0    |
| Number of shifts with mapping errors    | 0    |
| Number of shifts with mapping warnings  | 0    |
| Number of shift outliers (ShiftChecker) | 2    |

#### 7.1.2 Chemical shift referencing [i](#)

The following table shows the suggested chemical shift referencing corrections.

| Nucleus                | # values | Correction $\pm$ precision, ppm | Suggested action           |
|------------------------|----------|---------------------------------|----------------------------|
| $^{13}\text{C}_\alpha$ | 120      | $0.08 \pm 0.12$                 | None needed ( $< 0.5$ ppm) |
| $^{13}\text{C}_\beta$  | 117      | $0.19 \pm 0.14$                 | None needed ( $< 0.5$ ppm) |
| $^{13}\text{C}'$       | 0        | —                               | None (insufficient data)   |
| $^{15}\text{N}$        | 115      | $0.71 \pm 0.26$                 | Should be applied          |

#### 7.1.3 Completeness of resonance assignments [i](#)

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 85%, i.e. 1430 atoms were assigned a chemical shift out of a possible 1686. 0 out of 22 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

|           | Total          | $^1\text{H}$  | $^{13}\text{C}$ | $^{15}\text{N}$ |
|-----------|----------------|---------------|-----------------|-----------------|
| Backbone  | 436/568 (77%)  | 219/229 (96%) | 111/226 (49%)   | 106/113 (94%)   |
| Sidechain | 950/1066 (89%) | 650/691 (94%) | 290/331 (88%)   | 10/44 (23%)     |

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|          | <b>Total</b>    | <b><sup>1</sup>H</b> | <b><sup>13</sup>C</b> | <b><sup>15</sup>N</b> |
|----------|-----------------|----------------------|-----------------------|-----------------------|
| Aromatic | 44/52 (85%)     | 26/26 (100%)         | 17/25 (68%)           | 1/1 (100%)            |
| Overall  | 1430/1686 (85%) | 895/946 (95%)        | 418/582 (72%)         | 117/158 (74%)         |

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 80%, i.e. 1614 atoms were assigned a chemical shift out of a possible 2012. 0 out of 23 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

|           | <b>Total</b>    | <b><sup>1</sup>H</b> | <b><sup>13</sup>C</b> | <b><sup>15</sup>N</b> |
|-----------|-----------------|----------------------|-----------------------|-----------------------|
| Backbone  | 482/678 (71%)   | 247/273 (90%)        | 120/270 (44%)         | 115/135 (85%)         |
| Sidechain | 1076/1234 (87%) | 742/799 (93%)        | 324/388 (84%)         | 10/47 (21%)           |
| Aromatic  | 56/100 (56%)    | 32/50 (64%)          | 23/37 (62%)           | 1/13 (8%)             |
| Overall   | 1614/2012 (80%) | 1021/1122 (91%)      | 467/695 (67%)         | 126/195 (65%)         |

#### 7.1.4 Statistically unusual chemical shifts [i](#)

The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules containing paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

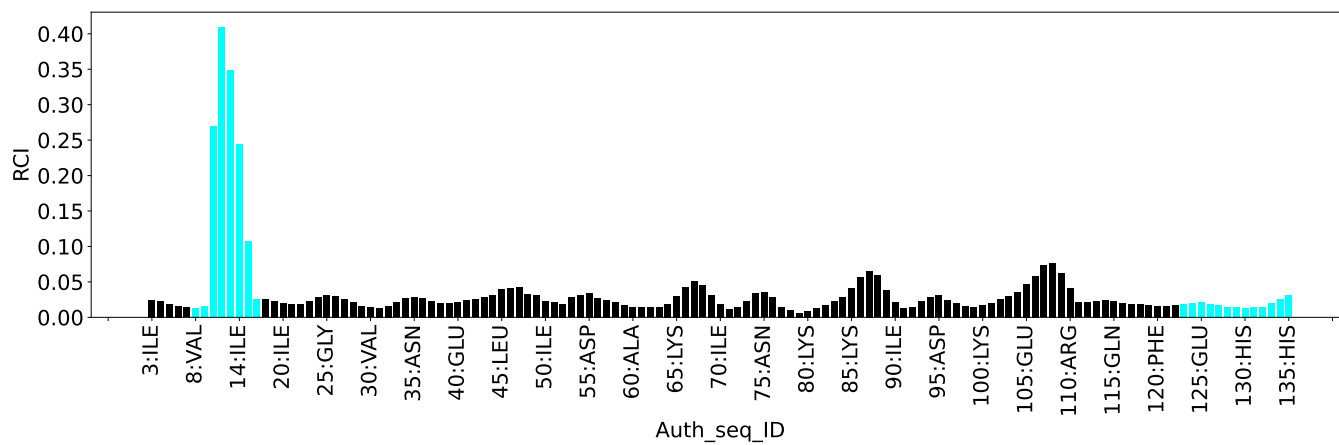
| List Id | Chain | Res | Type | Atom | Shift, ppm | Expected range, ppm | Z-score |
|---------|-------|-----|------|------|------------|---------------------|---------|
| 1       | A     | 79  | ALA  | CB   | 88.44      | 10.19 – 27.75       | 39.6    |
| 1       | A     | 128 | LEU  | CB   | 17.87      | 33.11 – 51.34       | -13.4   |

#### 7.1.5 Random Coil Index (RCI) plots [i](#)

The image below reports *random coil index* values for the protein chains in the structure. The height of each bar gives a probability of a given residue to be disordered, as predicted from the available chemical shifts and the amino acid sequence. A value above 0.2 is an indication of significant predicted disorder. The colour of the bar shows whether the residue is in the well-defined core (black) or in the ill-defined residue ranges (cyan), as described in section 2 on ensemble composition. If well-defined core and ill-defined regions are not identified then it is shown as gray bars.

Random coil index (RCI) for chain A:





## 8 NMR restraints analysis

### 8.1 Conformationally restricting restraints

The following table provides the summary of experimentally observed NMR restraints in different categories. Restraints are classified into different categories based on the sequence separation of the atoms involved.

| Description  | Value |
|--|-------|
| Total distance restraints                                | 3322  |
| Intra-residue ( $ i-j =0$ )                              | 1005  |
| Sequential ( $ i-j =1$ )                                 | 829   |
| Medium range ( $ i-j >1$ and $ i-j <5$ )                 | 717   |
| Long range ( $ i-j \geq 5$ )                             | 685   |
| Inter-chain  | 0     |
| Hydrogen bond restraints                                 | 86    |
| Disulfide bond restraints                                | 0     |
| Total dihedral-angle restraints                          | 194   |
| Number of unmapped restraints                            | 0     |
| Number of restraints per residue                         | 26.0  |
| Number of long range restraints per residue <sup>1</sup> | 5.2   |

<sup>1</sup>Long range hydrogen bonds and disulfide bonds are counted as long range restraints while calculating the number of long range restraints per residue

### 8.2 Residual restraint violations

This section provides the overview of the restraint violations analysis. The violations are binned as small, medium and large violations based on its absolute value. Average number of violations per model is calculated by dividing the total number of violations in each bin by the size of the ensemble.

#### 8.2.1 Average number of distance violations per model

Distance violations less than 0.1 Å are not included in the calculation.

| Bins (Å)         | Average number of violations per model | Max (Å) |
|------------------|--|---------|
| 0.1-0.2 (Small)  | 10.7                                   | 0.2     |
| 0.2-0.5 (Medium) | 3.0                                    | 0.42    |
| >0.5 (Large)     | 0.1                                    | 0.88    |

### 8.2.2 Average number of dihedral-angle violations per model [i](#)

Dihedral-angle violations less than 1° are not included in the calculation.

| Bins (°)           | Average number of violations per model | Max (°) |
|--------------------|--|---------|
| 1.0-10.0 (Small)   | 21.9                                   | 9.7     |
| 10.0-20.0 (Medium) | 0.1                                    | 11.6    |
| >20.0 (Large)      | None                                   | None    |

## 9 Distance violation analysis [i](#)

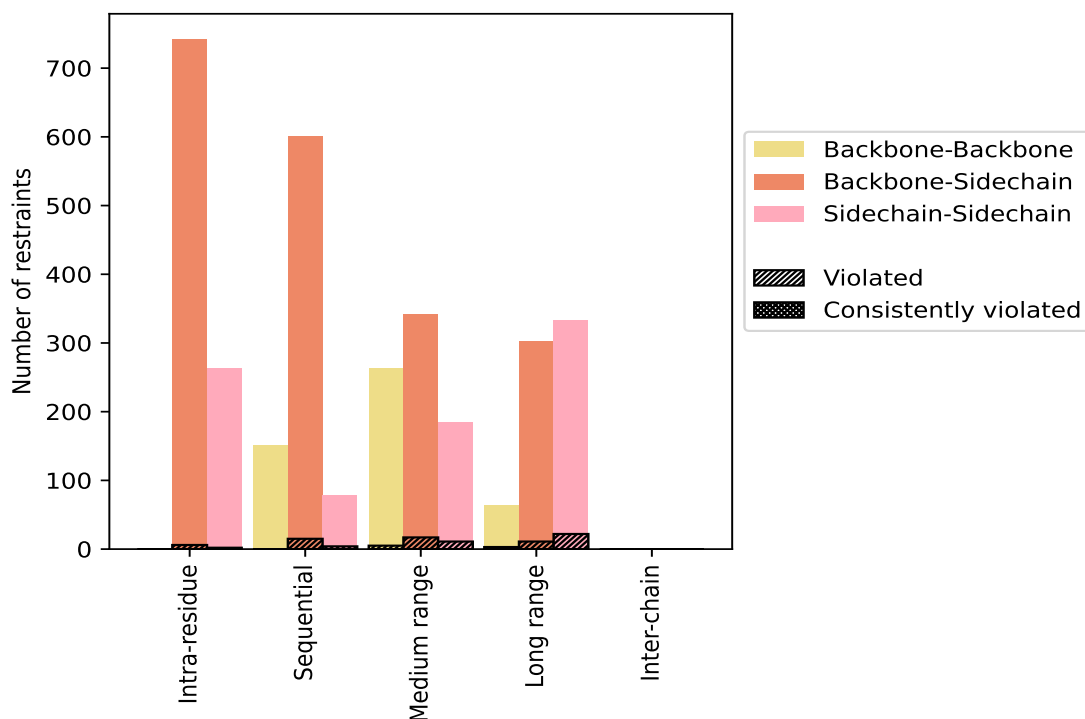
### 9.1 Summary of distance violations [i](#)

The following table shows the summary of distance violations in different restraint categories based on the sequence separation of the atoms involved. Each category is further sub-divided into three sub-categories based on the atoms involved. Violations less than 0.1 Å are not included in the statistics.

| Restrains type  | Count       | % <sup>1</sup> | Violated <sup>3</sup> |                |                | Consistently Violated <sup>4</sup> |                |                |
|---|-------------|----------------|-----------------------|----------------|----------------|------------------------------------|----------------|----------------|
|   |             |                | Count                 | % <sup>2</sup> | % <sup>1</sup> | Count                              | % <sup>2</sup> | % <sup>1</sup> |
| <b>Intra-residue (<math> i-j =0</math>)</b>                                 | <b>1005</b> | <b>30.3</b>    | <b>8</b>              | <b>0.8</b>     | <b>0.2</b>     | <b>0</b>                           | <b>0.0</b>     | <b>0.0</b>     |
| Backbone-Backbone   | 0           | 0.0            | 0                     | 0.0            | 0.0            | 0                                  | 0.0            | 0.0            |
| Backbone-Sidechain  | 742         | 22.3           | 6                     | 0.8            | 0.2            | 0                                  | 0.0            | 0.0            |
| Sidechain-Sidechain   | 263         | 7.9            | 2                     | 0.8            | 0.1            | 0                                  | 0.0            | 0.0            |
| <b>Sequential (<math> i-j =1</math>)</b>                                    | <b>829</b>  | <b>25.0</b>    | <b>19</b>             | <b>2.3</b>     | <b>0.6</b>     | <b>0</b>                           | <b>0.0</b>     | <b>0.0</b>     |
| Backbone-Backbone   | 151         | 4.5            | 0                     | 0.0            | 0.0            | 0                                  | 0.0            | 0.0            |
| Backbone-Sidechain  | 600         | 18.1           | 15                    | 2.5            | 0.5            | 0                                  | 0.0            | 0.0            |
| Sidechain-Sidechain   | 78          | 2.3            | 4                     | 5.1            | 0.1            | 0                                  | 0.0            | 0.0            |
| <b>Medium range (<math> i-j &gt;1</math> &amp; <math> i-j &lt;5</math>)</b> | <b>717</b>  | <b>21.6</b>    | <b>29</b>             | <b>4.0</b>     | <b>0.9</b>     | <b>0</b>                           | <b>0.0</b>     | <b>0.0</b>     |
| Backbone-Backbone   | 191         | 5.7            | 1                     | 0.5            | 0.0            | 0                                  | 0.0            | 0.0            |
| Backbone-Sidechain  | 342         | 10.3           | 17                    | 5.0            | 0.5            | 0                                  | 0.0            | 0.0            |
| Sidechain-Sidechain   | 184         | 5.5            | 11                    | 6.0            | 0.3            | 0                                  | 0.0            | 0.0            |
| <b>Long range (<math> i-j \geq 5</math>)</b>                                | <b>685</b>  | <b>20.6</b>    | <b>34</b>             | <b>5.0</b>     | <b>1.0</b>     | <b>0</b>                           | <b>0.0</b>     | <b>0.0</b>     |
| Backbone-Backbone   | 49          | 1.5            | 1                     | 2.0            | 0.0            | 0                                  | 0.0            | 0.0            |
| Backbone-Sidechain  | 303         | 9.1            | 11                    | 3.6            | 0.3            | 0                                  | 0.0            | 0.0            |
| Sidechain-Sidechain   | 333         | 10.0           | 22                    | 6.6            | 0.7            | 0                                  | 0.0            | 0.0            |
| <b>Inter-chain</b>  | <b>0</b>    | <b>0.0</b>     | <b>0</b>              | <b>0.0</b>     | <b>0.0</b>     | <b>0</b>                           | <b>0.0</b>     | <b>0.0</b>     |
| Backbone-Backbone   | 0           | 0.0            | 0                     | 0.0            | 0.0            | 0                                  | 0.0            | 0.0            |
| Backbone-Sidechain  | 0           | 0.0            | 0                     | 0.0            | 0.0            | 0                                  | 0.0            | 0.0            |
| Sidechain-Sidechain   | 0           | 0.0            | 0                     | 0.0            | 0.0            | 0                                  | 0.0            | 0.0            |
| <b>Hydrogen bond</b>  | <b>86</b>   | <b>2.6</b>     | <b>6</b>              | <b>7.0</b>     | <b>0.2</b>     | <b>0</b>                           | <b>0.0</b>     | <b>0.0</b>     |
| <b>Disulfide bond</b>   | <b>0</b>    | <b>0.0</b>     | <b>0</b>              | <b>0.0</b>     | <b>0.0</b>     | <b>0</b>                           | <b>0.0</b>     | <b>0.0</b>     |
| <b>Total</b>  | <b>3322</b> | <b>100.0</b>   | <b>96</b>             | <b>2.9</b>     | <b>2.9</b>     | <b>0</b>                           | <b>0.0</b>     | <b>0.0</b>     |
| Backbone-Backbone   | 477         | 14.4           | 8                     | 1.7            | 0.2            | 0                                  | 0.0            | 0.0            |
| Backbone-Sidechain  | 1987        | 59.8           | 49                    | 2.5            | 1.5            | 0                                  | 0.0            | 0.0            |
| Sidechain-Sidechain   | 858         | 25.8           | 39                    | 4.5            | 1.2            | 0                                  | 0.0            | 0.0            |

<sup>1</sup> percentage calculated with respect to the total number of distance restraints, <sup>2</sup> percentage calculated with respect to the number of restraints in a particular restraint category, <sup>3</sup> violated in at least one model, <sup>4</sup> violated in all the models

### 9.1.1 Bar chart : Distribution of distance restraints and violations [i](#)



Violated and consistently violated restraints are shown using different hatch patterns in their respective categories. The hydrogen bonds and disulfid bonds are counted in their appropriate category on the x-axis

## 9.2 Distance violation statistics for each model [i](#)

The following table provides the distance violation statistics for each model in the ensemble. Violations less than 0.1 Å are not included in the statistics.

| Model ID | Number of violations |                 |                 |                 |                 |       | Mean (Å) | Max (Å) | SD <sup>6</sup> (Å) | Median (Å) |
|----------|----------------------|-----------------|-----------------|-----------------|-----------------|-------|----------|---------|---------------------|------------|
|          | IR <sup>1</sup>      | SQ <sup>2</sup> | MR <sup>3</sup> | LR <sup>4</sup> | IC <sup>5</sup> | Total |          |         |                     |            |
| 1        | 1                    | 5               | 1               | 1               | 0               | 8     | 0.2      | 0.39    | 0.08                | 0.18       |
| 2        | 1                    | 3               | 6               | 5               | 0               | 15    | 0.2      | 0.88    | 0.19                | 0.14       |
| 3        | 1                    | 1               | 4               | 6               | 0               | 12    | 0.16     | 0.25    | 0.05                | 0.14       |
| 4        | 0                    | 5               | 4               | 2               | 0               | 11    | 0.19     | 0.26    | 0.04                | 0.18       |
| 5        | 1                    | 2               | 2               | 10              | 0               | 15    | 0.17     | 0.3     | 0.05                | 0.14       |
| 6        | 0                    | 4               | 3               | 4               | 0               | 11    | 0.19     | 0.42    | 0.09                | 0.17       |
| 7        | 2                    | 5               | 4               | 8               | 0               | 19    | 0.18     | 0.38    | 0.08                | 0.14       |
| 8        | 1                    | 6               | 3               | 7               | 0               | 17    | 0.16     | 0.27    | 0.04                | 0.15       |
| 9        | 0                    | 2               | 2               | 4               | 0               | 8     | 0.18     | 0.39    | 0.09                | 0.13       |
| 10       | 0                    | 8               | 4               | 7               | 0               | 19    | 0.16     | 0.3     | 0.05                | 0.14       |
| 11       | 2                    | 5               | 3               | 3               | 0               | 13    | 0.19     | 0.33    | 0.07                | 0.18       |

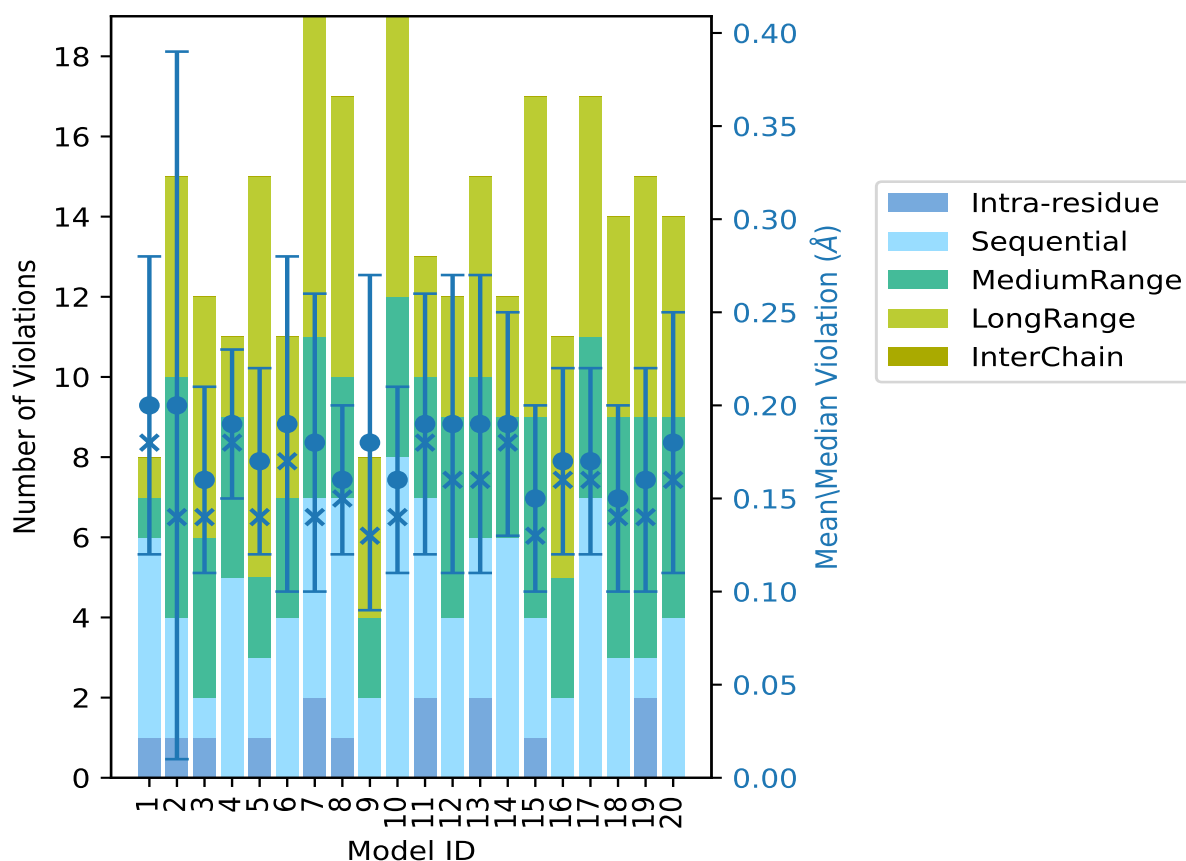
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| Model ID | Number of violations |                 |                 |                 |                 | Total | Mean (Å) | Max (Å) | SD <sup>6</sup> (Å) | Median (Å) |
|----------|----------------------|-----------------|-----------------|-----------------|-----------------|-------|----------|---------|---------------------|------------|
|          | IR <sup>1</sup>      | SQ <sup>2</sup> | MR <sup>3</sup> | LR <sup>4</sup> | IC <sup>5</sup> |       |          |         |                     |            |
| 12       | 0                    | 4               | 5               | 3               | 0               | 12    | 0.19     | 0.35    | 0.08                | 0.16       |
| 13       | 2                    | 4               | 4               | 5               | 0               | 15    | 0.19     | 0.39    | 0.08                | 0.16       |
| 14       | 0                    | 6               | 3               | 3               | 0               | 12    | 0.19     | 0.35    | 0.06                | 0.18       |
| 15       | 1                    | 3               | 5               | 8               | 0               | 17    | 0.15     | 0.27    | 0.05                | 0.13       |
| 16       | 0                    | 2               | 3               | 6               | 0               | 11    | 0.17     | 0.28    | 0.05                | 0.16       |
| 17       | 0                    | 7               | 4               | 6               | 0               | 17    | 0.17     | 0.28    | 0.05                | 0.16       |
| 18       | 0                    | 3               | 6               | 5               | 0               | 14    | 0.15     | 0.29    | 0.05                | 0.14       |
| 19       | 2                    | 1               | 6               | 6               | 0               | 15    | 0.16     | 0.28    | 0.06                | 0.14       |
| 20       | 0                    | 4               | 5               | 5               | 0               | 14    | 0.18     | 0.37    | 0.07                | 0.16       |

<sup>1</sup>Intra-residue restraints, <sup>2</sup>Sequential restraints, <sup>3</sup>Medium range restraints, <sup>4</sup>Long range restraints, <sup>5</sup>Inter-chain restraints, <sup>6</sup>Standard deviation

### 9.2.1 Bar graph : Distance Violation statistics for each model [i](#)



The mean(dot),median(x) and the standard deviation are shown in blue with respect to the y axis on the right

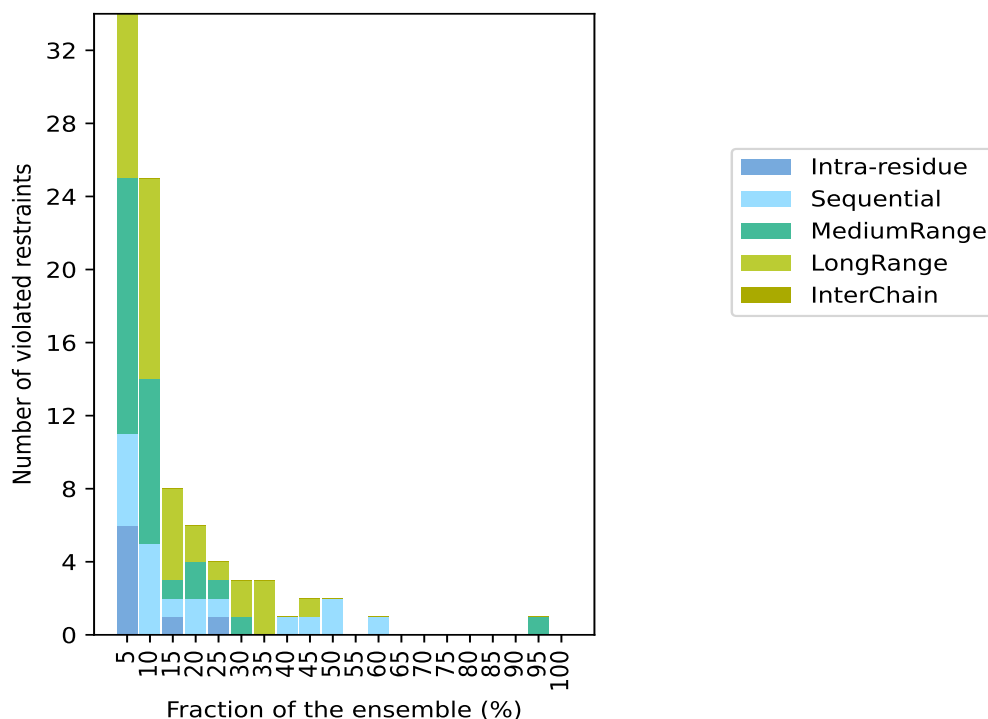
### 9.3 Distance violation statistics for the ensemble

Violation analysis may find that some restraints are violated in few models and some are violated in most of models. The following table provides this information as number of violated restraints for a given fraction of the ensemble. In total, 3146(IR:997, SQ:810, MR:688, LR:651, IC:0) restraints are not violated in the ensemble.

| Number of violated restraints |                 |                 |                 |                 |       | Fraction of the ensemble |       |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|-------|--------------------------|-------|
| IR <sup>1</sup>               | SQ <sup>2</sup> | MR <sup>3</sup> | LR <sup>4</sup> | IC <sup>5</sup> | Total | Count <sup>6</sup>       | %     |
| 6                             | 5               | 14              | 9               | 0               | 34    | 1                        | 5.0   |
| 0                             | 5               | 9               | 11              | 0               | 25    | 2                        | 10.0  |
| 1                             | 1               | 1               | 5               | 0               | 8     | 3                        | 15.0  |
| 0                             | 2               | 2               | 2               | 0               | 6     | 4                        | 20.0  |
| 1                             | 1               | 1               | 1               | 0               | 4     | 5                        | 25.0  |
| 0                             | 0               | 1               | 2               | 0               | 3     | 6                        | 30.0  |
| 0                             | 0               | 0               | 3               | 0               | 3     | 7                        | 35.0  |
| 0                             | 1               | 0               | 0               | 0               | 1     | 8                        | 40.0  |
| 0                             | 1               | 0               | 1               | 0               | 2     | 9                        | 45.0  |
| 0                             | 2               | 0               | 0               | 0               | 2     | 10                       | 50.0  |
| 0                             | 0               | 0               | 0               | 0               | 0     | 11                       | 55.0  |
| 0                             | 1               | 0               | 0               | 0               | 1     | 12                       | 60.0  |
| 0                             | 0               | 0               | 0               | 0               | 0     | 13                       | 65.0  |
| 0                             | 0               | 0               | 0               | 0               | 0     | 14                       | 70.0  |
| 0                             | 0               | 0               | 0               | 0               | 0     | 15                       | 75.0  |
| 0                             | 0               | 0               | 0               | 0               | 0     | 16                       | 80.0  |
| 0                             | 0               | 0               | 0               | 0               | 0     | 17                       | 85.0  |
| 0                             | 0               | 0               | 0               | 0               | 0     | 18                       | 90.0  |
| 0                             | 0               | 1               | 0               | 0               | 1     | 19                       | 95.0  |
| 0                             | 0               | 0               | 0               | 0               | 0     | 20                       | 100.0 |

<sup>1</sup>Intra-residue restraints, <sup>2</sup>Sequential restraints, <sup>3</sup>Medium range restraints, <sup>4</sup>Long range restraints, <sup>5</sup>Inter-chain restraints, <sup>6</sup> Number of models with violations

### 9.3.1 Bar graph : Distance violation statistics for the ensemble [i](#)

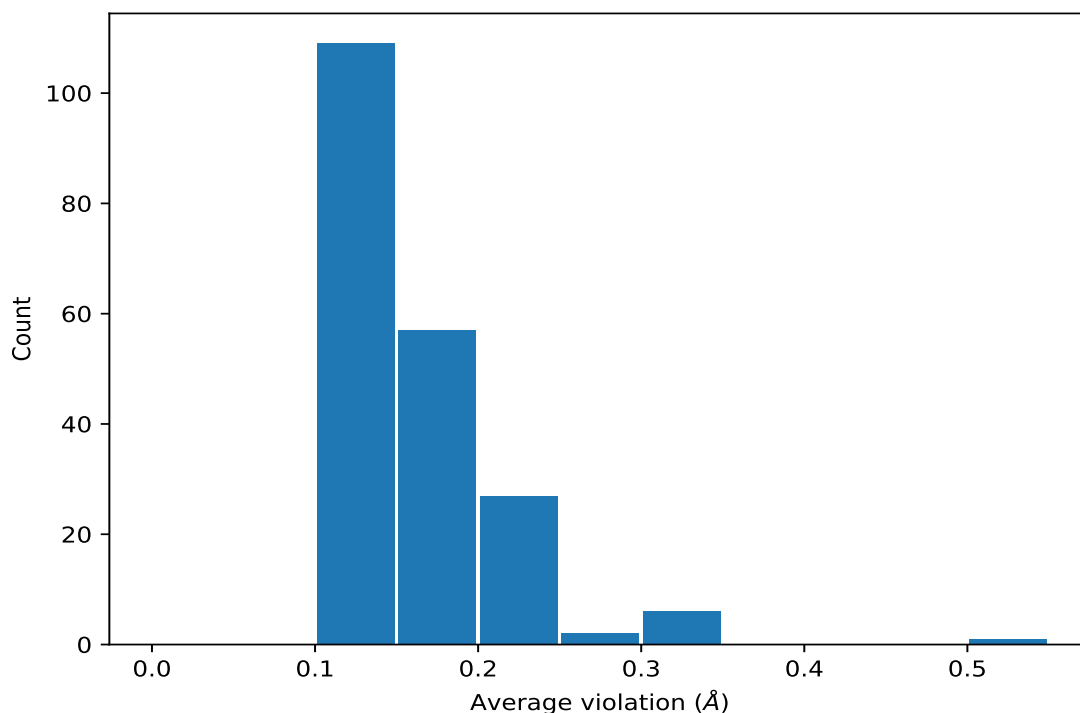


## 9.4 Most violated distance restraints in the ensemble [i](#)

### 9.4.1 Histogram : Distribution of mean distance violations [i](#)

The following histogram shows the distribution of the average value of the violation. The average is calculated for each restraint that is violated in more than one model over all the violated models in the ensemble





#### 9.4.2 Table: Most violated distance restraints [i](#)

The following table provides the mean and the standard deviation of the violation for each restraint sorted by number of violated models and the mean value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint. Rows with same key represent combinatorial or ambiguous restraints and are counted as a single restraint.

| Key      | Atom-1          | Atom-2          | Models <sup>1</sup> | Mean (Å) | SD <sup>1</sup> (Å) | Median (Å) |
|----------|-----------------|-----------------|---------------------|----------|---------------------|------------|
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 19                  | 0.26     | 0.03                | 0.26       |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H    | 12                  | 0.16     | 0.03                | 0.16       |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H    | 12                  | 0.16     | 0.03                | 0.16       |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD11 | 10                  | 0.34     | 0.06                | 0.36       |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD12 | 10                  | 0.34     | 0.06                | 0.36       |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD13 | 10                  | 0.34     | 0.06                | 0.36       |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD21 | 10                  | 0.34     | 0.06                | 0.36       |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD22 | 10                  | 0.34     | 0.06                | 0.36       |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD23 | 10                  | 0.34     | 0.06                | 0.36       |
| (2,242)  | 1:A:100:LYS:HD2 | 1:A:101:GLU:H   | 10                  | 0.16     | 0.04                | 0.15       |
| (2,2257) | 1:A:94:ASN:HA   | 1:A:115:GLN:HG3 | 9                   | 0.2      | 0.06                | 0.17       |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG   | 9                   | 0.15     | 0.03                | 0.15       |
| (2,131)  | 1:A:52:LEU:HD21 | 1:A:53:LEU:H    | 8                   | 0.16     | 0.02                | 0.16       |
| (2,131)  | 1:A:52:LEU:HD22 | 1:A:53:LEU:H    | 8                   | 0.16     | 0.02                | 0.16       |
| (2,131)  | 1:A:52:LEU:HD23 | 1:A:53:LEU:H    | 8                   | 0.16     | 0.02                | 0.16       |
| (2,2140) | 1:A:72:PHE:HE1  | 1:A:90:ILE:HG13 | 7                   | 0.17     | 0.04                | 0.17       |

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| Key      | Atom-1          | Atom-2           | Models <sup>1</sup> | Mean (Å) | SD <sup>1</sup> (Å) | Median (Å) |
|----------|-----------------|------------------|---------------------|----------|---------------------|------------|
| (2,2140) | 1:A:72:PHE:HE2  | 1:A:90:ILE:HG13  | 7                   | 0.17     | 0.04                | 0.17       |
| (2,1825) | 1:A:31:ILE:HD11 | 1:A:43:LYS:H     | 7                   | 0.14     | 0.04                | 0.12       |
| (2,1825) | 1:A:31:ILE:HD12 | 1:A:43:LYS:H     | 7                   | 0.14     | 0.04                | 0.12       |
| (2,1825) | 1:A:31:ILE:HD13 | 1:A:43:LYS:H     | 7                   | 0.14     | 0.04                | 0.12       |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG21  | 7                   | 0.12     | 0.01                | 0.12       |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG22  | 7                   | 0.12     | 0.01                | 0.12       |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG23  | 7                   | 0.12     | 0.01                | 0.12       |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD11  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD12  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD13  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD21  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD22  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD23  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD11  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD12  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD13  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD21  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD22  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD23  | 6                   | 0.17     | 0.04                | 0.17       |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG11 | 6                   | 0.14     | 0.03                | 0.12       |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG12 | 6                   | 0.14     | 0.03                | 0.12       |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG13 | 6                   | 0.14     | 0.03                | 0.12       |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG21 | 6                   | 0.14     | 0.03                | 0.12       |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG22 | 6                   | 0.14     | 0.03                | 0.12       |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG23 | 6                   | 0.14     | 0.03                | 0.12       |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD11  | 6                   | 0.13     | 0.02                | 0.12       |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD12  | 6                   | 0.13     | 0.02                | 0.12       |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD13  | 6                   | 0.13     | 0.02                | 0.12       |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD11  | 5                   | 0.14     | 0.03                | 0.13       |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD12  | 5                   | 0.14     | 0.03                | 0.13       |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD13  | 5                   | 0.14     | 0.03                | 0.13       |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD11  | 5                   | 0.14     | 0.02                | 0.13       |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD12  | 5                   | 0.14     | 0.02                | 0.13       |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD13  | 5                   | 0.14     | 0.02                | 0.13       |
| (2,1389) | 1:A:97:GLN:HA   | 1:A:97:GLN:HE21  | 5                   | 0.13     | 0.0                 | 0.13       |
| (2,169)  | 1:A:70:ILE:HG21 | 1:A:71:VAL:H     | 5                   | 0.13     | 0.02                | 0.13       |
| (2,169)  | 1:A:70:ILE:HG22 | 1:A:71:VAL:H     | 5                   | 0.13     | 0.02                | 0.13       |
| (2,169)  | 1:A:70:ILE:HG23 | 1:A:71:VAL:H     | 5                   | 0.13     | 0.02                | 0.13       |
| (2,2117) | 1:A:4:ILE:HD11  | 1:A:29:ILE:HB    | 4                   | 0.23     | 0.08                | 0.22       |
| (2,2117) | 1:A:4:ILE:HD12  | 1:A:29:ILE:HB    | 4                   | 0.23     | 0.08                | 0.22       |
| (2,2117) | 1:A:4:ILE:HD13  | 1:A:29:ILE:HB    | 4                   | 0.23     | 0.08                | 0.22       |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD11  | 4                   | 0.2      | 0.02                | 0.19       |

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| Key      | Atom-1          | Atom-2          | Models <sup>1</sup> | Mean (Å) | SD <sup>1</sup> (Å) | Median (Å) |
|----------|-----------------|-----------------|---------------------|----------|---------------------|------------|
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD12 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD13 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD21 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD22 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD23 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD11 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD12 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD13 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD21 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD22 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD23 | 4                   | 0.2      | 0.02                | 0.19       |
| (2,1778) | 1:A:21:LEU:HG   | 1:A:22:LYS:HA   | 4                   | 0.19     | 0.05                | 0.2        |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG21 | 4                   | 0.18     | 0.04                | 0.19       |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG22 | 4                   | 0.18     | 0.04                | 0.19       |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG23 | 4                   | 0.18     | 0.04                | 0.19       |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG21 | 4                   | 0.15     | 0.02                | 0.16       |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG22 | 4                   | 0.15     | 0.02                | 0.16       |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG23 | 4                   | 0.15     | 0.02                | 0.16       |
| (2,1666) | 1:A:40:GLU:HA   | 1:A:43:LYS:HB3  | 4                   | 0.12     | 0.01                | 0.12       |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD11 | 3                   | 0.24     | 0.03                | 0.24       |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD12 | 3                   | 0.24     | 0.03                | 0.24       |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD13 | 3                   | 0.24     | 0.03                | 0.24       |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD11 | 3                   | 0.24     | 0.03                | 0.24       |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD12 | 3                   | 0.24     | 0.03                | 0.24       |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD13 | 3                   | 0.24     | 0.03                | 0.24       |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD11 | 3                   | 0.24     | 0.03                | 0.24       |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD12 | 3                   | 0.24     | 0.03                | 0.24       |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD13 | 3                   | 0.24     | 0.03                | 0.24       |
| (2,2834) | 1:A:75:ASN:HA   | 1:A:75:ASN:HD21 | 3                   | 0.19     | 0.06                | 0.15       |
| (2,2834) | 1:A:75:ASN:HA   | 1:A:75:ASN:HD22 | 3                   | 0.19     | 0.06                | 0.15       |
| (2,1613) | 1:A:96:GLU:HG2  | 1:A:97:GLN:H    | 3                   | 0.18     | 0.05                | 0.17       |
| (2,3)    | 1:A:3:ILE:HA    | 1:A:28:ARG:H    | 3                   | 0.18     | 0.04                | 0.15       |
| (2,1315) | 1:A:78:ILE:HG21 | 1:A:82:ILE:HG13 | 3                   | 0.14     | 0.02                | 0.15       |
| (2,1315) | 1:A:78:ILE:HG22 | 1:A:82:ILE:HG13 | 3                   | 0.14     | 0.02                | 0.15       |
| (2,1315) | 1:A:78:ILE:HG23 | 1:A:82:ILE:HG13 | 3                   | 0.14     | 0.02                | 0.15       |
| (2,1855) | 1:A:34:SER:HB3  | 1:A:52:LEU:HD21 | 3                   | 0.14     | 0.02                | 0.15       |
| (2,1855) | 1:A:34:SER:HB3  | 1:A:52:LEU:HD22 | 3                   | 0.14     | 0.02                | 0.15       |
| (2,1855) | 1:A:34:SER:HB3  | 1:A:52:LEU:HD23 | 3                   | 0.14     | 0.02                | 0.15       |
| (2,2889) | 1:A:80:LYS:HD2  | 1:A:105:GLU:HB3 | 3                   | 0.14     | 0.02                | 0.14       |
| (2,2889) | 1:A:80:LYS:HD3  | 1:A:105:GLU:HB3 | 3                   | 0.14     | 0.02                | 0.14       |
| (2,2149) | 1:A:70:ILE:HD11 | 1:A:90:ILE:HD11 | 3                   | 0.13     | 0.03                | 0.11       |
| (2,2149) | 1:A:70:ILE:HD11 | 1:A:90:ILE:HD12 | 3                   | 0.13     | 0.03                | 0.11       |

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| Key      | Atom-1          | Atom-2           | Models <sup>1</sup> | Mean (Å) | SD <sup>1</sup> (Å) | Median (Å) |
|----------|-----------------|------------------|---------------------|----------|---------------------|------------|
| (2,2149) | 1:A:70:ILE:HD11 | 1:A:90:ILE:HD13  | 3                   | 0.13     | 0.03                | 0.11       |
| (2,2149) | 1:A:70:ILE:HD12 | 1:A:90:ILE:HD11  | 3                   | 0.13     | 0.03                | 0.11       |
| (2,2149) | 1:A:70:ILE:HD12 | 1:A:90:ILE:HD12  | 3                   | 0.13     | 0.03                | 0.11       |
| (2,2149) | 1:A:70:ILE:HD12 | 1:A:90:ILE:HD13  | 3                   | 0.13     | 0.03                | 0.11       |
| (2,2149) | 1:A:70:ILE:HD13 | 1:A:90:ILE:HD11  | 3                   | 0.13     | 0.03                | 0.11       |
| (2,2149) | 1:A:70:ILE:HD13 | 1:A:90:ILE:HD12  | 3                   | 0.13     | 0.03                | 0.11       |
| (2,2149) | 1:A:70:ILE:HD13 | 1:A:90:ILE:HD13  | 3                   | 0.13     | 0.03                | 0.11       |
| (2,1864) | 1:A:35:ASN:HB2  | 1:A:38:LEU:HB2   | 2                   | 0.5      | 0.38                | 0.5        |
| (2,2278) | 1:A:124:ILE:HA  | 1:A:126:LYS:HG3  | 2                   | 0.28     | 0.1                 | 0.28       |
| (2,2892) | 1:A:80:LYS:HE2  | 1:A:101:GLU:HB3  | 2                   | 0.2      | 0.06                | 0.2        |
| (2,2892) | 1:A:80:LYS:HE3  | 1:A:101:GLU:HB3  | 2                   | 0.2      | 0.06                | 0.2        |
| (2,992)  | 1:A:116:THR:HB  | 1:A:119:ASP:H    | 2                   | 0.19     | 0.05                | 0.19       |
| (2,3167) | 1:A:116:THR:H   | 1:A:119:ASP:HB2  | 2                   | 0.19     | 0.0                 | 0.19       |
| (2,3167) | 1:A:116:THR:H   | 1:A:119:ASP:HB3  | 2                   | 0.19     | 0.0                 | 0.19       |
| (2,1805) | 1:A:26:VAL:HA   | 1:A:29:ILE:HB    | 2                   | 0.18     | 0.05                | 0.18       |
| (2,1949) | 1:A:43:LYS:HB3  | 1:A:50:ILE:HG21  | 2                   | 0.18     | 0.01                | 0.18       |
| (2,1949) | 1:A:43:LYS:HB3  | 1:A:50:ILE:HG22  | 2                   | 0.18     | 0.01                | 0.18       |
| (2,1949) | 1:A:43:LYS:HB3  | 1:A:50:ILE:HG23  | 2                   | 0.18     | 0.01                | 0.18       |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG11 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG12 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG13 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG21 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG22 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG23 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG11 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG12 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG13 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG21 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG22 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG23 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG11 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG12 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG13 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG21 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG22 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG23 | 2                   | 0.17     | 0.05                | 0.17       |
| (2,2782) | 1:A:65:LYS:HE2  | 1:A:66:LEU:H     | 2                   | 0.16     | 0.01                | 0.16       |
| (2,2782) | 1:A:65:LYS:HE3  | 1:A:66:LEU:H     | 2                   | 0.16     | 0.01                | 0.16       |
| (2,2552) | 1:A:36:LYS:HB2  | 1:A:37:GLN:H     | 2                   | 0.16     | 0.02                | 0.16       |
| (2,2552) | 1:A:36:LYS:HB3  | 1:A:37:GLN:H     | 2                   | 0.16     | 0.02                | 0.16       |
| (2,1725) | 1:A:118:GLN:HA  | 1:A:121:LYS:HB3  | 2                   | 0.15     | 0.03                | 0.15       |
| (2,1973) | 1:A:55:ASP:HB2  | 1:A:58:LEU:HG    | 2                   | 0.15     | 0.0                 | 0.15       |

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| Key      | Atom-1           | Atom-2           | Models <sup>1</sup> | Mean (Å) | SD <sup>1</sup> (Å) | Median (Å) |
|----------|------------------|------------------|---------------------|----------|---------------------|------------|
| (2,2185) | 1:A:93:SER:HB3   | 1:A:99:VAL:HG11  | 2                   | 0.15     | 0.0                 | 0.15       |
| (2,2185) | 1:A:93:SER:HB3   | 1:A:99:VAL:HG12  | 2                   | 0.15     | 0.0                 | 0.15       |
| (2,2185) | 1:A:93:SER:HB3   | 1:A:99:VAL:HG13  | 2                   | 0.15     | 0.0                 | 0.15       |
| (2,824)  | 1:A:37:GLN:HE22  | 1:A:38:LEU:HB2   | 2                   | 0.14     | 0.03                | 0.14       |
| (1,9)    | 1:A:20:ILE:O     | 1:A:25:GLY:H     | 2                   | 0.14     | 0.01                | 0.14       |
| (2,1801) | 1:A:28:ARG:HB3   | 1:A:29:ILE:HG21  | 2                   | 0.14     | 0.02                | 0.14       |
| (2,1801) | 1:A:28:ARG:HB3   | 1:A:29:ILE:HG22  | 2                   | 0.14     | 0.02                | 0.14       |
| (2,1801) | 1:A:28:ARG:HB3   | 1:A:29:ILE:HG23  | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB1   | 1:A:102:LEU:HD11 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB1   | 1:A:102:LEU:HD12 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB1   | 1:A:102:LEU:HD13 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB1   | 1:A:102:LEU:HD21 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB1   | 1:A:102:LEU:HD22 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB1   | 1:A:102:LEU:HD23 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB2   | 1:A:102:LEU:HD11 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB2   | 1:A:102:LEU:HD12 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB2   | 1:A:102:LEU:HD13 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB2   | 1:A:102:LEU:HD21 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB2   | 1:A:102:LEU:HD22 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB2   | 1:A:102:LEU:HD23 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB3   | 1:A:102:LEU:HD11 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB3   | 1:A:102:LEU:HD12 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB3   | 1:A:102:LEU:HD13 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB3   | 1:A:102:LEU:HD21 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB3   | 1:A:102:LEU:HD22 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,2866) | 1:A:79:ALA:HB3   | 1:A:102:LEU:HD23 | 2                   | 0.14     | 0.02                | 0.14       |
| (2,91)   | 1:A:40:GLU:HG3   | 1:A:41:ARG:H     | 2                   | 0.12     | 0.02                | 0.12       |
| (2,2224) | 1:A:106:ALA:HB1  | 1:A:111:VAL:HB   | 2                   | 0.12     | 0.01                | 0.12       |
| (2,2224) | 1:A:106:ALA:HB2  | 1:A:111:VAL:HB   | 2                   | 0.12     | 0.01                | 0.12       |
| (2,2224) | 1:A:106:ALA:HB3  | 1:A:111:VAL:HB   | 2                   | 0.12     | 0.01                | 0.12       |
| (2,1809) | 1:A:24:ILE:H     | 1:A:29:ILE:HD11  | 2                   | 0.12     | 0.01                | 0.12       |
| (2,1809) | 1:A:24:ILE:H     | 1:A:29:ILE:HD12  | 2                   | 0.12     | 0.01                | 0.12       |
| (2,1809) | 1:A:24:ILE:H     | 1:A:29:ILE:HD13  | 2                   | 0.12     | 0.01                | 0.12       |
| (2,1955) | 1:A:34:SER:HA    | 1:A:52:LEU:HD21  | 2                   | 0.12     | 0.01                | 0.12       |
| (2,1955) | 1:A:34:SER:HA    | 1:A:52:LEU:HD22  | 2                   | 0.12     | 0.01                | 0.12       |
| (2,1955) | 1:A:34:SER:HA    | 1:A:52:LEU:HD23  | 2                   | 0.12     | 0.01                | 0.12       |
| (2,2266) | 1:A:114:VAL:HG11 | 1:A:119:ASP:HB2  | 2                   | 0.12     | 0.01                | 0.12       |
| (2,2266) | 1:A:114:VAL:HG12 | 1:A:119:ASP:HB2  | 2                   | 0.12     | 0.01                | 0.12       |
| (2,2266) | 1:A:114:VAL:HG13 | 1:A:119:ASP:HB2  | 2                   | 0.12     | 0.01                | 0.12       |
| (2,2576) | 1:A:41:ARG:HA    | 1:A:44:GLU:HB2   | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2576) | 1:A:41:ARG:HA    | 1:A:44:GLU:HB3   | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG2   | 1:A:102:LEU:HD11 | 2                   | 0.12     | 0.0                 | 0.12       |

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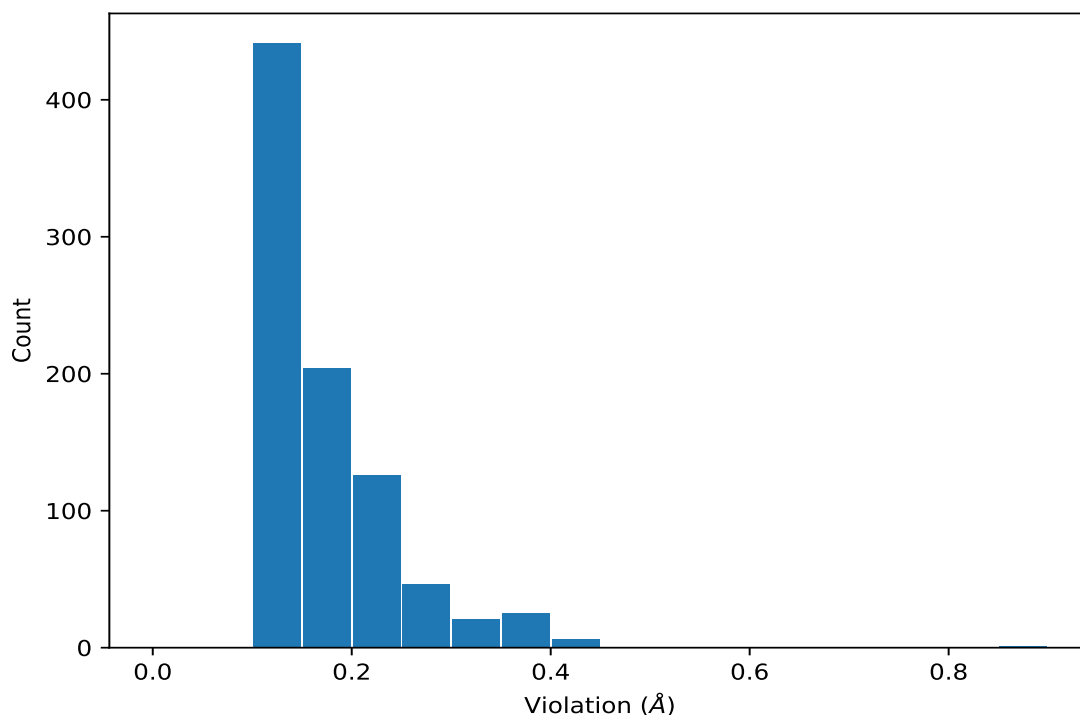
| Key      | Atom-1         | Atom-2           | Models <sup>1</sup> | Mean (Å) | SD <sup>1</sup> (Å) | Median (Å) |
|----------|----------------|------------------|---------------------|----------|---------------------|------------|
| (2,2886) | 1:A:80:LYS:HG2 | 1:A:102:LEU:HD12 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG2 | 1:A:102:LEU:HD13 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG2 | 1:A:102:LEU:HD21 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG2 | 1:A:102:LEU:HD22 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG2 | 1:A:102:LEU:HD23 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG3 | 1:A:102:LEU:HD11 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG3 | 1:A:102:LEU:HD12 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG3 | 1:A:102:LEU:HD13 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG3 | 1:A:102:LEU:HD21 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG3 | 1:A:102:LEU:HD22 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,2886) | 1:A:80:LYS:HG3 | 1:A:102:LEU:HD23 | 2                   | 0.12     | 0.0                 | 0.12       |
| (2,1916) | 1:A:18:TRP:HB3 | 1:A:45:LEU:HG    | 2                   | 0.11     | 0.0                 | 0.11       |
| (2,2589) | 1:A:43:LYS:H   | 1:A:47:VAL:HG11  | 2                   | 0.11     | 0.0                 | 0.11       |
| (2,2589) | 1:A:43:LYS:H   | 1:A:47:VAL:HG12  | 2                   | 0.11     | 0.0                 | 0.11       |
| (2,2589) | 1:A:43:LYS:H   | 1:A:47:VAL:HG13  | 2                   | 0.11     | 0.0                 | 0.11       |
| (2,2589) | 1:A:43:LYS:H   | 1:A:47:VAL:HG21  | 2                   | 0.11     | 0.0                 | 0.11       |
| (2,2589) | 1:A:43:LYS:H   | 1:A:47:VAL:HG22  | 2                   | 0.11     | 0.0                 | 0.11       |
| (2,2589) | 1:A:43:LYS:H   | 1:A:47:VAL:HG23  | 2                   | 0.11     | 0.0                 | 0.11       |

<sup>1</sup>Number of violated models, <sup>2</sup>Standard deviation

## 9.5 All violated distance restraints [i](#)

### 9.5.1 Histogram : Distribution of distance violations [i](#)

The following histogram shows the distribution of the absolute value of the violation for all violated restraints in the ensemble.



### 9.5.2 Table : All distance violations [i](#)

The following table lists the absolute value of the violation for each restraint in the ensemble sorted by its value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint. Rows with same key represent combinatorial or ambiguous restraints and are counted as a single restraint.

| Key      | Atom-1         | Atom-2          | Model ID | Violation (Å) |
|----------|----------------|-----------------|----------|---------------|
| (2,1864) | 1:A:35:ASN:HB2 | 1:A:38:LEU:HB2  | 2        | 0.88          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD11 | 6        | 0.42          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD12 | 6        | 0.42          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD13 | 6        | 0.42          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD21 | 6        | 0.42          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD22 | 6        | 0.42          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD23 | 6        | 0.42          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD11 | 1        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD12 | 1        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD13 | 1        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD21 | 1        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD22 | 1        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD23 | 1        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD11 | 9        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD12 | 9        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD13 | 9        | 0.39          |

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| Key      | Atom-1         | Atom-2          | Model ID | Violation (Å) |
|----------|----------------|-----------------|----------|---------------|
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD21 | 9        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD22 | 9        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD23 | 9        | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD11 | 13       | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD12 | 13       | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD13 | 13       | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD21 | 13       | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD22 | 13       | 0.39          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD23 | 13       | 0.39          |
| (2,2278) | 1:A:124:ILE:HA | 1:A:126:LYS:HG3 | 7        | 0.38          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD11 | 20       | 0.37          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD12 | 20       | 0.37          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD13 | 20       | 0.37          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD21 | 20       | 0.37          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD22 | 20       | 0.37          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD23 | 20       | 0.37          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD11 | 14       | 0.35          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD12 | 14       | 0.35          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD13 | 14       | 0.35          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD21 | 14       | 0.35          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD22 | 14       | 0.35          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD23 | 14       | 0.35          |
| (2,2117) | 1:A:4:ILE:HD11 | 1:A:29:ILE:HB   | 12       | 0.35          |
| (2,2117) | 1:A:4:ILE:HD12 | 1:A:29:ILE:HB   | 12       | 0.35          |
| (2,2117) | 1:A:4:ILE:HD13 | 1:A:29:ILE:HB   | 12       | 0.35          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD11 | 7        | 0.34          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD12 | 7        | 0.34          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD13 | 7        | 0.34          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD21 | 7        | 0.34          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD22 | 7        | 0.34          |
| (2,2694) | 1:A:57:GLU:H   | 1:A:58:LEU:HD23 | 7        | 0.34          |
| (2,3109) | 1:A:104:LYS:H  | 1:A:104:LYS:HG2 | 11       | 0.33          |
| (2,3109) | 1:A:104:LYS:H  | 1:A:104:LYS:HG3 | 11       | 0.33          |
| (2,2772) | 1:A:65:LYS:HA  | 1:A:65:LYS:HD2  | 13       | 0.31          |
| (2,2772) | 1:A:65:LYS:HA  | 1:A:65:LYS:HD3  | 13       | 0.31          |
| (2,1865) | 1:A:35:ASN:HB3 | 1:A:38:LEU:HB2  | 11       | 0.31          |
| (2,1865) | 1:A:35:ASN:HB3 | 1:A:38:LEU:HB2  | 12       | 0.31          |
| (2,2257) | 1:A:94:ASN:HA  | 1:A:115:GLN:HG3 | 5        | 0.3           |
| (2,1865) | 1:A:35:ASN:HB3 | 1:A:38:LEU:HB2  | 10       | 0.3           |
| (2,2257) | 1:A:94:ASN:HA  | 1:A:115:GLN:HG3 | 10       | 0.29          |
| (2,1865) | 1:A:35:ASN:HB3 | 1:A:38:LEU:HB2  | 18       | 0.29          |
| (2,1865) | 1:A:35:ASN:HB3 | 1:A:38:LEU:HB2  | 20       | 0.29          |

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| Key      | Atom-1          | Atom-2          | Model ID | Violation (Å) |
|----------|-----------------|-----------------|----------|---------------|
| (2,2834) | 1:A:75:ASN:HA   | 1:A:75:ASN:HD21 | 19       | 0.28          |
| (2,2834) | 1:A:75:ASN:HA   | 1:A:75:ASN:HD22 | 19       | 0.28          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD11 | 17       | 0.28          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD12 | 17       | 0.28          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD13 | 17       | 0.28          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD21 | 17       | 0.28          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD22 | 17       | 0.28          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD23 | 17       | 0.28          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 16       | 0.28          |
| (2,2892) | 1:A:80:LYS:HE2  | 1:A:101:GLU:HB3 | 15       | 0.27          |
| (2,2892) | 1:A:80:LYS:HE3  | 1:A:101:GLU:HB3 | 15       | 0.27          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD11 | 8        | 0.27          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD12 | 8        | 0.27          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD13 | 8        | 0.27          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD21 | 8        | 0.27          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD22 | 8        | 0.27          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD23 | 8        | 0.27          |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD11 | 7        | 0.27          |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD12 | 7        | 0.27          |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD13 | 7        | 0.27          |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD11 | 7        | 0.27          |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD12 | 7        | 0.27          |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD13 | 7        | 0.27          |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD11 | 7        | 0.27          |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD12 | 7        | 0.27          |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD13 | 7        | 0.27          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 15       | 0.27          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 4        | 0.26          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 6        | 0.26          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 7        | 0.26          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 9        | 0.26          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 19       | 0.26          |
| (2,242)  | 1:A:100:LYS:HD2 | 1:A:101:GLU:H   | 17       | 0.25          |
| (2,2277) | 1:A:124:ILE:HA  | 1:A:126:LYS:HG2 | 2        | 0.25          |
| (2,2257) | 1:A:94:ASN:HA   | 1:A:115:GLN:HG3 | 3        | 0.25          |
| (2,1942) | 1:A:47:VAL:HB   | 1:A:50:ILE:HD11 | 4        | 0.25          |
| (2,1942) | 1:A:47:VAL:HB   | 1:A:50:ILE:HD12 | 4        | 0.25          |
| (2,1942) | 1:A:47:VAL:HB   | 1:A:50:ILE:HD13 | 4        | 0.25          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 3        | 0.25          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 13       | 0.25          |
| (2,1613) | 1:A:96:GLU:HG2  | 1:A:97:GLN:H    | 13       | 0.25          |
| (2,992)  | 1:A:116:THR:HB  | 1:A:119:ASP:H   | 7        | 0.24          |

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| Key      | Atom-1          | Atom-2           | Model ID | Violation (Å) |
|----------|-----------------|------------------|----------|---------------|
| (2,3220) | 1:A:124:ILE:H   | 1:A:127:ILE:HG12 | 2        | 0.24          |
| (2,3220) | 1:A:124:ILE:H   | 1:A:127:ILE:HG13 | 2        | 0.24          |
| (2,3)    | 1:A:3:ILE:HA    | 1:A:28:ARG:H     | 12       | 0.24          |
| (2,2850) | 1:A:77:ASP:H    | 1:A:80:LYS:HE2   | 6        | 0.24          |
| (2,2850) | 1:A:77:ASP:H    | 1:A:80:LYS:HE3   | 6        | 0.24          |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD11  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD12  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD13  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD21  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD22  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG2  | 1:A:58:LEU:HD23  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD11  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD12  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD13  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD21  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD22  | 14       | 0.24          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD23  | 14       | 0.24          |
| (2,2140) | 1:A:72:PHE:HE1  | 1:A:90:ILE:HG13  | 18       | 0.24          |
| (2,2140) | 1:A:72:PHE:HE2  | 1:A:90:ILE:HG13  | 18       | 0.24          |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD11  | 15       | 0.24          |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD12  | 15       | 0.24          |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD13  | 15       | 0.24          |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD11  | 15       | 0.24          |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD12  | 15       | 0.24          |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD13  | 15       | 0.24          |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD11  | 15       | 0.24          |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD12  | 15       | 0.24          |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD13  | 15       | 0.24          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2   | 8        | 0.24          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2   | 17       | 0.24          |
| (2,1805) | 1:A:26:VAL:HA   | 1:A:29:ILE:HB    | 4        | 0.24          |
| (2,1778) | 1:A:21:LEU:HG   | 1:A:22:LYS:HA    | 5        | 0.24          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2   | 14       | 0.23          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG11 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG12 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG13 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG21 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG22 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG23 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG11 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG12 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG13 | 8        | 0.22          |

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| Key      | Atom-1          | Atom-2           | Model ID | Violation (Å) |
|----------|-----------------|------------------|----------|---------------|
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG21 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG22 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG23 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG11 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG12 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG13 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG21 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG22 | 8        | 0.22          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG23 | 8        | 0.22          |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H     | 14       | 0.22          |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H     | 14       | 0.22          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD11  | 11       | 0.22          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD12  | 11       | 0.22          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD13  | 11       | 0.22          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD21  | 11       | 0.22          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD22  | 11       | 0.22          |
| (2,2694) | 1:A:57:GLU:H    | 1:A:58:LEU:HD23  | 11       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD11  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD12  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD13  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD21  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD22  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD23  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD11  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD12  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD13  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD21  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD22  | 10       | 0.22          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD23  | 10       | 0.22          |
| (2,2117) | 1:A:4:ILE:HD11  | 1:A:29:ILE:HB    | 2        | 0.22          |
| (2,2117) | 1:A:4:ILE:HD12  | 1:A:29:ILE:HB    | 2        | 0.22          |
| (2,2117) | 1:A:4:ILE:HD13  | 1:A:29:ILE:HB    | 2        | 0.22          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG21  | 12       | 0.22          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG22  | 12       | 0.22          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG23  | 12       | 0.22          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2   | 5        | 0.22          |
| (2,1778) | 1:A:21:LEU:HG   | 1:A:22:LYS:HA    | 19       | 0.22          |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG    | 14       | 0.21          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD11  | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD12  | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD13  | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD21  | 5        | 0.21          |

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| Key      | Atom-1          | Atom-2          | Model ID | Violation (Å) |
|----------|-----------------|-----------------|----------|---------------|
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD22 | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD23 | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD11 | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD12 | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD13 | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD21 | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD22 | 5        | 0.21          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD23 | 5        | 0.21          |
| (2,2117) | 1:A:4:ILE:HD11  | 1:A:29:ILE:HB   | 20       | 0.21          |
| (2,2117) | 1:A:4:ILE:HD12  | 1:A:29:ILE:HB   | 20       | 0.21          |
| (2,2117) | 1:A:4:ILE:HD13  | 1:A:29:ILE:HB   | 20       | 0.21          |
| (2,906)  | 1:A:76:ARG:H    | 1:A:98:LEU:HD11 | 7        | 0.2           |
| (2,906)  | 1:A:76:ARG:H    | 1:A:98:LEU:HD12 | 7        | 0.2           |
| (2,906)  | 1:A:76:ARG:H    | 1:A:98:LEU:HD13 | 7        | 0.2           |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H    | 11       | 0.2           |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H    | 11       | 0.2           |
| (2,242)  | 1:A:100:LYS:HD2 | 1:A:101:GLU:H   | 1        | 0.2           |
| (2,2257) | 1:A:94:ASN:HA   | 1:A:115:GLN:HG3 | 4        | 0.2           |
| (2,2140) | 1:A:72:PHE:HE1  | 1:A:90:ILE:HG13 | 4        | 0.2           |
| (2,2140) | 1:A:72:PHE:HE2  | 1:A:90:ILE:HG13 | 4        | 0.2           |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD11 | 5        | 0.2           |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD12 | 5        | 0.2           |
| (2,1914) | 1:A:31:ILE:HD11 | 1:A:45:LEU:HD13 | 5        | 0.2           |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD11 | 5        | 0.2           |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD12 | 5        | 0.2           |
| (2,1914) | 1:A:31:ILE:HD12 | 1:A:45:LEU:HD13 | 5        | 0.2           |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD11 | 5        | 0.2           |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD12 | 5        | 0.2           |
| (2,1914) | 1:A:31:ILE:HD13 | 1:A:45:LEU:HD13 | 5        | 0.2           |
| (2,1825) | 1:A:31:ILE:HD11 | 1:A:43:LYS:H    | 6        | 0.2           |
| (2,1825) | 1:A:31:ILE:HD12 | 1:A:43:LYS:H    | 6        | 0.2           |
| (2,1825) | 1:A:31:ILE:HD13 | 1:A:43:LYS:H    | 6        | 0.2           |
| (2,1825) | 1:A:31:ILE:HD11 | 1:A:43:LYS:H    | 19       | 0.2           |
| (2,1825) | 1:A:31:ILE:HD12 | 1:A:43:LYS:H    | 19       | 0.2           |
| (2,1825) | 1:A:31:ILE:HD13 | 1:A:43:LYS:H    | 19       | 0.2           |
| (2,1785) | 1:A:26:VAL:HB   | 1:A:29:ILE:HD11 | 11       | 0.2           |
| (2,1785) | 1:A:26:VAL:HB   | 1:A:29:ILE:HD12 | 11       | 0.2           |
| (2,1785) | 1:A:26:VAL:HB   | 1:A:29:ILE:HD13 | 11       | 0.2           |
| (2,131)  | 1:A:52:LEU:HD21 | 1:A:53:LEU:H    | 16       | 0.2           |
| (2,131)  | 1:A:52:LEU:HD22 | 1:A:53:LEU:H    | 16       | 0.2           |
| (2,131)  | 1:A:52:LEU:HD23 | 1:A:53:LEU:H    | 16       | 0.2           |
| (2,3167) | 1:A:116:THR:H   | 1:A:119:ASP:HB2 | 3        | 0.19          |

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| Key      | Atom-1         | Atom-2           | Model ID | Violation (Å) |
|----------|----------------|------------------|----------|---------------|
| (2,3167) | 1:A:116:THR:H  | 1:A:119:ASP:HB3  | 3        | 0.19          |
| (2,3167) | 1:A:116:THR:H  | 1:A:119:ASP:HB2  | 13       | 0.19          |
| (2,3167) | 1:A:116:THR:H  | 1:A:119:ASP:HB3  | 13       | 0.19          |
| (2,3097) | 1:A:103:GLN:HA | 1:A:111:VAL:HG11 | 17       | 0.19          |
| (2,3097) | 1:A:103:GLN:HA | 1:A:111:VAL:HG12 | 17       | 0.19          |
| (2,3097) | 1:A:103:GLN:HA | 1:A:111:VAL:HG13 | 17       | 0.19          |
| (2,3097) | 1:A:103:GLN:HA | 1:A:111:VAL:HG21 | 17       | 0.19          |
| (2,3097) | 1:A:103:GLN:HA | 1:A:111:VAL:HG22 | 17       | 0.19          |
| (2,3097) | 1:A:103:GLN:HA | 1:A:111:VAL:HG23 | 17       | 0.19          |
| (2,2781) | 1:A:65:LYS:HD2 | 1:A:66:LEU:H     | 12       | 0.19          |
| (2,2781) | 1:A:65:LYS:HD3 | 1:A:66:LEU:H     | 12       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD11  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD12  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD13  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD21  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD22  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD23  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD11  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD12  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD13  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD21  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD22  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD23  | 8        | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD11  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD12  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD13  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD21  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD22  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD23  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD11  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD12  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD13  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD21  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD22  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD23  | 11       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD11  | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD12  | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD13  | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD21  | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD22  | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG2 | 1:A:58:LEU:HD23  | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3 | 1:A:58:LEU:HD11  | 17       | 0.19          |

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| Key      | Atom-1          | Atom-2          | Model ID | Violation (Å) |
|----------|-----------------|-----------------|----------|---------------|
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD12 | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD13 | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD21 | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD22 | 17       | 0.19          |
| (2,2703) | 1:A:57:GLU:HG3  | 1:A:58:LEU:HD23 | 17       | 0.19          |
| (2,242)  | 1:A:100:LYS:HD2 | 1:A:101:GLU:H   | 16       | 0.19          |
| (2,2300) | 1:A:35:ASN:HB2  | 1:A:38:LEU:HB3  | 2        | 0.19          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG21 | 14       | 0.19          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG22 | 14       | 0.19          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG23 | 14       | 0.19          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG21 | 19       | 0.19          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG22 | 19       | 0.19          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG23 | 19       | 0.19          |
| (2,1949) | 1:A:43:LYS:HB3  | 1:A:50:ILE:HG21 | 15       | 0.19          |
| (2,1949) | 1:A:43:LYS:HB3  | 1:A:50:ILE:HG22 | 15       | 0.19          |
| (2,1949) | 1:A:43:LYS:HB3  | 1:A:50:ILE:HG23 | 15       | 0.19          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD11 | 1        | 0.19          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD12 | 1        | 0.19          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD13 | 1        | 0.19          |
| (2,1865) | 1:A:35:ASN:HB3  | 1:A:38:LEU:HB2  | 1        | 0.19          |
| (2,131)  | 1:A:52:LEU:HD21 | 1:A:53:LEU:H    | 20       | 0.19          |
| (2,131)  | 1:A:52:LEU:HD22 | 1:A:53:LEU:H    | 20       | 0.19          |
| (2,131)  | 1:A:52:LEU:HD23 | 1:A:53:LEU:H    | 20       | 0.19          |
| (2,909)  | 1:A:77:ASP:H    | 1:A:78:ILE:HD11 | 10       | 0.18          |
| (2,909)  | 1:A:77:ASP:H    | 1:A:78:ILE:HD12 | 10       | 0.18          |
| (2,909)  | 1:A:77:ASP:H    | 1:A:78:ILE:HD13 | 10       | 0.18          |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG   | 4        | 0.18          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD11 | 20       | 0.18          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD12 | 20       | 0.18          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD13 | 20       | 0.18          |
| (2,3013) | 1:A:95:ASP:HB2  | 1:A:98:LEU:HD11 | 13       | 0.18          |
| (2,3013) | 1:A:95:ASP:HB2  | 1:A:98:LEU:HD12 | 13       | 0.18          |
| (2,3013) | 1:A:95:ASP:HB2  | 1:A:98:LEU:HD13 | 13       | 0.18          |
| (2,3013) | 1:A:95:ASP:HB3  | 1:A:98:LEU:HD11 | 13       | 0.18          |
| (2,3013) | 1:A:95:ASP:HB3  | 1:A:98:LEU:HD12 | 13       | 0.18          |
| (2,3013) | 1:A:95:ASP:HB3  | 1:A:98:LEU:HD13 | 13       | 0.18          |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H    | 20       | 0.18          |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H    | 20       | 0.18          |
| (2,2552) | 1:A:36:LYS:HB2  | 1:A:37:GLN:H    | 1        | 0.18          |
| (2,2552) | 1:A:36:LYS:HB3  | 1:A:37:GLN:H    | 1        | 0.18          |
| (2,242)  | 1:A:100:LYS:HD2 | 1:A:101:GLU:H   | 4        | 0.18          |
| (2,2140) | 1:A:72:PHE:HE1  | 1:A:90:ILE:HG13 | 16       | 0.18          |

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| Key      | Atom-1          | Atom-2          | Model ID | Violation (Å) |
|----------|-----------------|-----------------|----------|---------------|
| (2,2140) | 1:A:72:PHE:HE2  | 1:A:90:ILE:HG13 | 16       | 0.18          |
| (2,2136) | 1:A:69:ASP:HA   | 1:A:89:ILE:HD11 | 13       | 0.18          |
| (2,2136) | 1:A:69:ASP:HA   | 1:A:89:ILE:HD12 | 13       | 0.18          |
| (2,2136) | 1:A:69:ASP:HA   | 1:A:89:ILE:HD13 | 13       | 0.18          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD11 | 4        | 0.18          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD12 | 4        | 0.18          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD13 | 4        | 0.18          |
| (2,1949) | 1:A:43:LYS:HB3  | 1:A:50:ILE:HG21 | 11       | 0.18          |
| (2,1949) | 1:A:43:LYS:HB3  | 1:A:50:ILE:HG22 | 11       | 0.18          |
| (2,1949) | 1:A:43:LYS:HB3  | 1:A:50:ILE:HG23 | 11       | 0.18          |
| (2,1778) | 1:A:21:LEU:HG   | 1:A:22:LYS:HA   | 4        | 0.18          |
| (2,824)  | 1:A:37:GLN:HE22 | 1:A:38:LEU:HB2  | 18       | 0.17          |
| (2,2782) | 1:A:65:LYS:HE2  | 1:A:66:LEU:H    | 12       | 0.17          |
| (2,2782) | 1:A:65:LYS:HE3  | 1:A:66:LEU:H    | 12       | 0.17          |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H    | 1        | 0.17          |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H    | 1        | 0.17          |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H    | 17       | 0.17          |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H    | 17       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD11 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD12 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD13 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD21 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD22 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD23 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD11 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD12 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD13 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD21 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD22 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD23 | 2        | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD11 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD12 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD13 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD21 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD22 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD23 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD11 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD12 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD13 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD21 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD22 | 14       | 0.17          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD23 | 14       | 0.17          |

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| Key      | Atom-1          | Atom-2          | Model ID | Violation (Å) |
|----------|-----------------|-----------------|----------|---------------|
| (2,2278) | 1:A:124:ILE:HA  | 1:A:126:LYS:HG3 | 10       | 0.17          |
| (2,2257) | 1:A:94:ASN:HA   | 1:A:115:GLN:HG3 | 6        | 0.17          |
| (2,2257) | 1:A:94:ASN:HA   | 1:A:115:GLN:HG3 | 20       | 0.17          |
| (2,2149) | 1:A:70:ILE:HD11 | 1:A:90:ILE:HD11 | 16       | 0.17          |
| (2,2149) | 1:A:70:ILE:HD11 | 1:A:90:ILE:HD12 | 16       | 0.17          |
| (2,2149) | 1:A:70:ILE:HD11 | 1:A:90:ILE:HD13 | 16       | 0.17          |
| (2,2149) | 1:A:70:ILE:HD12 | 1:A:90:ILE:HD11 | 16       | 0.17          |
| (2,2149) | 1:A:70:ILE:HD12 | 1:A:90:ILE:HD12 | 16       | 0.17          |
| (2,2149) | 1:A:70:ILE:HD12 | 1:A:90:ILE:HD13 | 16       | 0.17          |
| (2,2149) | 1:A:70:ILE:HD13 | 1:A:90:ILE:HD11 | 16       | 0.17          |
| (2,2149) | 1:A:70:ILE:HD13 | 1:A:90:ILE:HD12 | 16       | 0.17          |
| (2,2149) | 1:A:70:ILE:HD13 | 1:A:90:ILE:HD13 | 16       | 0.17          |
| (2,2140) | 1:A:72:PHE:HE1  | 1:A:90:ILE:HG13 | 10       | 0.17          |
| (2,2140) | 1:A:72:PHE:HE2  | 1:A:90:ILE:HG13 | 10       | 0.17          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG21 | 5        | 0.17          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG22 | 5        | 0.17          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG23 | 5        | 0.17          |
| (2,1777) | 1:A:22:LYS:HA   | 1:A:29:ILE:HD11 | 3        | 0.17          |
| (2,1777) | 1:A:22:LYS:HA   | 1:A:29:ILE:HD12 | 3        | 0.17          |
| (2,1777) | 1:A:22:LYS:HA   | 1:A:29:ILE:HD13 | 3        | 0.17          |
| (2,1725) | 1:A:118:GLN:HA  | 1:A:121:LYS:HB3 | 17       | 0.17          |
| (2,1613) | 1:A:96:GLU:HG2  | 1:A:97:GLN:H    | 17       | 0.17          |
| (2,1315) | 1:A:78:ILE:HG21 | 1:A:82:ILE:HG13 | 18       | 0.17          |
| (2,1315) | 1:A:78:ILE:HG22 | 1:A:82:ILE:HG13 | 18       | 0.17          |
| (2,1315) | 1:A:78:ILE:HG23 | 1:A:82:ILE:HG13 | 18       | 0.17          |
| (2,131)  | 1:A:52:LEU:HD21 | 1:A:53:LEU:H    | 6        | 0.17          |
| (2,131)  | 1:A:52:LEU:HD22 | 1:A:53:LEU:H    | 6        | 0.17          |
| (2,131)  | 1:A:52:LEU:HD23 | 1:A:53:LEU:H    | 6        | 0.17          |
| (2,131)  | 1:A:52:LEU:HD21 | 1:A:53:LEU:H    | 18       | 0.17          |
| (2,131)  | 1:A:52:LEU:HD22 | 1:A:53:LEU:H    | 18       | 0.17          |
| (2,131)  | 1:A:52:LEU:HD23 | 1:A:53:LEU:H    | 18       | 0.17          |
| (2,1157) | 1:A:41:ARG:HA   | 1:A:41:ARG:HD3  | 19       | 0.17          |
| (2,2889) | 1:A:80:LYS:HD2  | 1:A:105:GLU:HB3 | 8        | 0.16          |
| (2,2889) | 1:A:80:LYS:HD3  | 1:A:105:GLU:HB3 | 8        | 0.16          |
| (2,2782) | 1:A:65:LYS:HE2  | 1:A:66:LEU:H    | 7        | 0.16          |
| (2,2782) | 1:A:65:LYS:HE3  | 1:A:66:LEU:H    | 7        | 0.16          |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H    | 4        | 0.16          |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H    | 4        | 0.16          |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H    | 8        | 0.16          |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H    | 8        | 0.16          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD11 | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD12 | 16       | 0.16          |

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| Key      | Atom-1          | Atom-2           | Model ID | Violation (Å) |
|----------|-----------------|------------------|----------|---------------|
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD13  | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD21  | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD22  | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE1  | 1:A:58:LEU:HD23  | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD11  | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD12  | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD13  | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD21  | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD22  | 16       | 0.16          |
| (2,2645) | 1:A:51:PHE:HE2  | 1:A:58:LEU:HD23  | 16       | 0.16          |
| (2,242)  | 1:A:100:LYS:HD2 | 1:A:101:GLU:H    | 10       | 0.16          |
| (2,1925) | 1:A:26:VAL:HG21 | 1:A:48:ASP:HB2   | 13       | 0.16          |
| (2,1925) | 1:A:26:VAL:HG22 | 1:A:48:ASP:HB2   | 13       | 0.16          |
| (2,1925) | 1:A:26:VAL:HG23 | 1:A:48:ASP:HB2   | 13       | 0.16          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG21  | 8        | 0.16          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG22  | 8        | 0.16          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG23  | 8        | 0.16          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG21  | 17       | 0.16          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG22  | 17       | 0.16          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG23  | 17       | 0.16          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD11  | 14       | 0.16          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD12  | 14       | 0.16          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD13  | 14       | 0.16          |
| (2,1855) | 1:A:34:SER:HB3  | 1:A:52:LEU:HD21  | 10       | 0.16          |
| (2,1855) | 1:A:34:SER:HB3  | 1:A:52:LEU:HD22  | 10       | 0.16          |
| (2,1855) | 1:A:34:SER:HB3  | 1:A:52:LEU:HD23  | 10       | 0.16          |
| (2,1801) | 1:A:28:ARG:HB3  | 1:A:29:ILE:HG21  | 14       | 0.16          |
| (2,1801) | 1:A:28:ARG:HB3  | 1:A:29:ILE:HG22  | 14       | 0.16          |
| (2,1801) | 1:A:28:ARG:HB3  | 1:A:29:ILE:HG23  | 14       | 0.16          |
| (2,169)  | 1:A:70:ILE:HG21 | 1:A:71:VAL:H     | 8        | 0.16          |
| (2,169)  | 1:A:70:ILE:HG22 | 1:A:71:VAL:H     | 8        | 0.16          |
| (2,169)  | 1:A:70:ILE:HG23 | 1:A:71:VAL:H     | 8        | 0.16          |
| (2,131)  | 1:A:52:LEU:HD21 | 1:A:53:LEU:H     | 17       | 0.16          |
| (2,131)  | 1:A:52:LEU:HD22 | 1:A:53:LEU:H     | 17       | 0.16          |
| (2,131)  | 1:A:52:LEU:HD23 | 1:A:53:LEU:H     | 17       | 0.16          |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG    | 3        | 0.15          |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG    | 11       | 0.15          |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG    | 12       | 0.15          |
| (2,574)  | 1:A:104:LYS:H   | 1:A:104:LYS:HG2  | 11       | 0.15          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG11 | 7        | 0.15          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG12 | 7        | 0.15          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG13 | 7        | 0.15          |

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| Key      | Atom-1         | Atom-2           | Model ID | Violation (Å) |
|----------|----------------|------------------|----------|---------------|
| (2,3097) | 1:A:103:GLN:HA | 1:A:111:VAL:HG21 | 7        | 0.15          |
| (2,3097) | 1:A:103:GLN:HA | 1:A:111:VAL:HG22 | 7        | 0.15          |
| (2,3097) | 1:A:103:GLN:HA | 1:A:111:VAL:HG23 | 7        | 0.15          |
| (2,3)    | 1:A:3:ILE:HA   | 1:A:28:ARG:H     | 15       | 0.15          |
| (2,2866) | 1:A:79:ALA:HB1 | 1:A:102:LEU:HD11 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB1 | 1:A:102:LEU:HD12 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB1 | 1:A:102:LEU:HD13 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB1 | 1:A:102:LEU:HD21 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB1 | 1:A:102:LEU:HD22 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB1 | 1:A:102:LEU:HD23 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB2 | 1:A:102:LEU:HD11 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB2 | 1:A:102:LEU:HD12 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB2 | 1:A:102:LEU:HD13 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB2 | 1:A:102:LEU:HD21 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB2 | 1:A:102:LEU:HD22 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB2 | 1:A:102:LEU:HD23 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB3 | 1:A:102:LEU:HD11 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB3 | 1:A:102:LEU:HD12 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB3 | 1:A:102:LEU:HD13 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB3 | 1:A:102:LEU:HD21 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB3 | 1:A:102:LEU:HD22 | 7        | 0.15          |
| (2,2866) | 1:A:79:ALA:HB3 | 1:A:102:LEU:HD23 | 7        | 0.15          |
| (2,2834) | 1:A:75:ASN:HA  | 1:A:75:ASN:HD21  | 1        | 0.15          |
| (2,2834) | 1:A:75:ASN:HA  | 1:A:75:ASN:HD22  | 1        | 0.15          |
| (2,2762) | 1:A:64:LYS:HD2 | 1:A:65:LYS:H     | 5        | 0.15          |
| (2,2762) | 1:A:64:LYS:HD3 | 1:A:65:LYS:H     | 5        | 0.15          |
| (2,2762) | 1:A:64:LYS:HD2 | 1:A:65:LYS:H     | 13       | 0.15          |
| (2,2762) | 1:A:64:LYS:HD3 | 1:A:65:LYS:H     | 13       | 0.15          |
| (2,2604) | 1:A:43:LYS:HE2 | 1:A:44:GLU:H     | 6        | 0.15          |
| (2,2604) | 1:A:43:LYS:HE3 | 1:A:44:GLU:H     | 6        | 0.15          |
| (2,2257) | 1:A:94:ASN:HA  | 1:A:115:GLN:HG3  | 18       | 0.15          |
| (2,2185) | 1:A:93:SER:HB3 | 1:A:99:VAL:HG11  | 2        | 0.15          |
| (2,2185) | 1:A:93:SER:HB3 | 1:A:99:VAL:HG12  | 2        | 0.15          |
| (2,2185) | 1:A:93:SER:HB3 | 1:A:99:VAL:HG13  | 2        | 0.15          |
| (2,1973) | 1:A:55:ASP:HB2 | 1:A:58:LEU:HG    | 11       | 0.15          |
| (2,1856) | 1:A:34:SER:HB2 | 1:A:52:LEU:HD21  | 20       | 0.15          |
| (2,1856) | 1:A:34:SER:HB2 | 1:A:52:LEU:HD22  | 20       | 0.15          |
| (2,1856) | 1:A:34:SER:HB2 | 1:A:52:LEU:HD23  | 20       | 0.15          |
| (2,1855) | 1:A:34:SER:HB3 | 1:A:52:LEU:HD21  | 9        | 0.15          |
| (2,1855) | 1:A:34:SER:HB3 | 1:A:52:LEU:HD22  | 9        | 0.15          |
| (2,1855) | 1:A:34:SER:HB3 | 1:A:52:LEU:HD23  | 9        | 0.15          |
| (2,1647) | 1:A:19:GLU:HA  | 1:A:23:GLU:H     | 19       | 0.15          |

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| Key      | Atom-1          | Atom-2           | Model ID | Violation (Å) |
|----------|-----------------|------------------|----------|---------------|
| (2,1315) | 1:A:78:ILE:HG21 | 1:A:82:ILE:HG13  | 15       | 0.15          |
| (2,1315) | 1:A:78:ILE:HG22 | 1:A:82:ILE:HG13  | 15       | 0.15          |
| (2,1315) | 1:A:78:ILE:HG23 | 1:A:82:ILE:HG13  | 15       | 0.15          |
| (2,131)  | 1:A:52:LEU:HD21 | 1:A:53:LEU:H     | 8        | 0.15          |
| (2,131)  | 1:A:52:LEU:HD22 | 1:A:53:LEU:H     | 8        | 0.15          |
| (2,131)  | 1:A:52:LEU:HD23 | 1:A:53:LEU:H     | 8        | 0.15          |
| (1,59)   | 1:A:69:ASP:O    | 1:A:90:ILE:H     | 13       | 0.15          |
| (2,992)  | 1:A:116:THR:HB  | 1:A:119:ASP:H    | 18       | 0.14          |
| (2,91)   | 1:A:40:GLU:HG3  | 1:A:41:ARG:H     | 10       | 0.14          |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG    | 7        | 0.14          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD11  | 16       | 0.14          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD12  | 16       | 0.14          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD13  | 16       | 0.14          |
| (2,3)    | 1:A:3:ILE:HA    | 1:A:28:ARG:H     | 3        | 0.14          |
| (2,2892) | 1:A:80:LYS:HE2  | 1:A:101:GLU:HB3  | 17       | 0.14          |
| (2,2892) | 1:A:80:LYS:HE3  | 1:A:101:GLU:HB3  | 17       | 0.14          |
| (2,2889) | 1:A:80:LYS:HD2  | 1:A:105:GLU:HB3  | 19       | 0.14          |
| (2,2889) | 1:A:80:LYS:HD3  | 1:A:105:GLU:HB3  | 19       | 0.14          |
| (2,2834) | 1:A:75:ASN:HA   | 1:A:75:ASN:HD21  | 8        | 0.14          |
| (2,2834) | 1:A:75:ASN:HA   | 1:A:75:ASN:HD22  | 8        | 0.14          |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H     | 2        | 0.14          |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H     | 2        | 0.14          |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H     | 15       | 0.14          |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H     | 15       | 0.14          |
| (2,242)  | 1:A:100:LYS:HD2 | 1:A:101:GLU:H    | 9        | 0.14          |
| (2,2185) | 1:A:93:SER:HB3  | 1:A:99:VAL:HG11  | 7        | 0.14          |
| (2,2185) | 1:A:93:SER:HB3  | 1:A:99:VAL:HG12  | 7        | 0.14          |
| (2,2185) | 1:A:93:SER:HB3  | 1:A:99:VAL:HG13  | 7        | 0.14          |
| (2,2140) | 1:A:72:PHE:HE1  | 1:A:90:ILE:HG13  | 3        | 0.14          |
| (2,2140) | 1:A:72:PHE:HE2  | 1:A:90:ILE:HG13  | 3        | 0.14          |
| (2,2117) | 1:A:4:ILE:HD11  | 1:A:29:ILE:HB    | 8        | 0.14          |
| (2,2117) | 1:A:4:ILE:HD12  | 1:A:29:ILE:HB    | 8        | 0.14          |
| (2,2117) | 1:A:4:ILE:HD13  | 1:A:29:ILE:HB    | 8        | 0.14          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD11  | 8        | 0.14          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD12  | 8        | 0.14          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD13  | 8        | 0.14          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG21  | 17       | 0.14          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG22  | 17       | 0.14          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG23  | 17       | 0.14          |
| (2,1973) | 1:A:55:ASP:HB2  | 1:A:58:LEU:HG    | 7        | 0.14          |
| (2,1494) | 1:A:124:ILE:HA  | 1:A:127:ILE:HG21 | 17       | 0.14          |
| (2,1494) | 1:A:124:ILE:HA  | 1:A:127:ILE:HG22 | 17       | 0.14          |

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| Key      | Atom-1           | Atom-2           | Model ID | Violation (Å) |
|----------|------------------|------------------|----------|---------------|
| (2,1494) | 1:A:124:ILE:HA   | 1:A:127:ILE:HG23 | 17       | 0.14          |
| (2,1389) | 1:A:97:GLN:HA    | 1:A:97:GLN:HE21  | 2        | 0.14          |
| (2,1389) | 1:A:97:GLN:HA    | 1:A:97:GLN:HE21  | 5        | 0.14          |
| (2,131)  | 1:A:52:LEU:HD21  | 1:A:53:LEU:H     | 10       | 0.14          |
| (2,131)  | 1:A:52:LEU:HD22  | 1:A:53:LEU:H     | 10       | 0.14          |
| (2,131)  | 1:A:52:LEU:HD23  | 1:A:53:LEU:H     | 10       | 0.14          |
| (2,131)  | 1:A:52:LEU:HD21  | 1:A:53:LEU:H     | 13       | 0.14          |
| (2,131)  | 1:A:52:LEU:HD22  | 1:A:53:LEU:H     | 13       | 0.14          |
| (2,131)  | 1:A:52:LEU:HD23  | 1:A:53:LEU:H     | 13       | 0.14          |
| (1,9)    | 1:A:20:ILE:O     | 1:A:25:GLY:H     | 10       | 0.14          |
| (1,5)    | 1:A:20:ILE:O     | 1:A:23:GLU:H     | 20       | 0.14          |
| (2,811)  | 1:A:34:SER:H     | 1:A:38:LEU:HD11  | 12       | 0.13          |
| (2,811)  | 1:A:34:SER:H     | 1:A:38:LEU:HD12  | 12       | 0.13          |
| (2,811)  | 1:A:34:SER:H     | 1:A:38:LEU:HD13  | 12       | 0.13          |
| (2,3097) | 1:A:103:GLN:HA   | 1:A:111:VAL:HG11 | 5        | 0.13          |
| (2,3097) | 1:A:103:GLN:HA   | 1:A:111:VAL:HG12 | 5        | 0.13          |
| (2,3097) | 1:A:103:GLN:HA   | 1:A:111:VAL:HG13 | 5        | 0.13          |
| (2,3097) | 1:A:103:GLN:HA   | 1:A:111:VAL:HG21 | 5        | 0.13          |
| (2,3097) | 1:A:103:GLN:HA   | 1:A:111:VAL:HG22 | 5        | 0.13          |
| (2,3097) | 1:A:103:GLN:HA   | 1:A:111:VAL:HG23 | 5        | 0.13          |
| (2,2552) | 1:A:36:LYS:HB2   | 1:A:37:GLN:H     | 18       | 0.13          |
| (2,2552) | 1:A:36:LYS:HB3   | 1:A:37:GLN:H     | 18       | 0.13          |
| (2,242)  | 1:A:100:LYS:HD2  | 1:A:101:GLU:H    | 11       | 0.13          |
| (2,242)  | 1:A:100:LYS:HD2  | 1:A:101:GLU:H    | 15       | 0.13          |
| (2,2266) | 1:A:114:VAL:HG11 | 1:A:119:ASP:HB2  | 5        | 0.13          |
| (2,2266) | 1:A:114:VAL:HG12 | 1:A:119:ASP:HB2  | 5        | 0.13          |
| (2,2266) | 1:A:114:VAL:HG13 | 1:A:119:ASP:HB2  | 5        | 0.13          |
| (2,2257) | 1:A:94:ASN:HA    | 1:A:115:GLN:HG3  | 15       | 0.13          |
| (2,2224) | 1:A:106:ALA:HB1  | 1:A:111:VAL:HB   | 16       | 0.13          |
| (2,2224) | 1:A:106:ALA:HB2  | 1:A:111:VAL:HB   | 16       | 0.13          |
| (2,2224) | 1:A:106:ALA:HB3  | 1:A:111:VAL:HB   | 16       | 0.13          |
| (2,2140) | 1:A:72:PHE:HE1   | 1:A:90:ILE:HG13  | 5        | 0.13          |
| (2,2140) | 1:A:72:PHE:HE2   | 1:A:90:ILE:HG13  | 5        | 0.13          |
| (2,2112) | 1:A:79:ALA:HA    | 1:A:83:ILE:HD11  | 13       | 0.13          |
| (2,2112) | 1:A:79:ALA:HA    | 1:A:83:ILE:HD12  | 13       | 0.13          |
| (2,2112) | 1:A:79:ALA:HA    | 1:A:83:ILE:HD13  | 13       | 0.13          |
| (2,2068) | 1:A:71:VAL:HB    | 1:A:91:ILE:HG21  | 10       | 0.13          |
| (2,2068) | 1:A:71:VAL:HB    | 1:A:91:ILE:HG22  | 10       | 0.13          |
| (2,2068) | 1:A:71:VAL:HB    | 1:A:91:ILE:HG23  | 10       | 0.13          |
| (2,1955) | 1:A:34:SER:HA    | 1:A:52:LEU:HD21  | 10       | 0.13          |
| (2,1955) | 1:A:34:SER:HA    | 1:A:52:LEU:HD22  | 10       | 0.13          |
| (2,1955) | 1:A:34:SER:HA    | 1:A:52:LEU:HD23  | 10       | 0.13          |

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| Key      | Atom-1          | Atom-2           | Model ID | Violation (Å) |
|----------|-----------------|------------------|----------|---------------|
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD11  | 5        | 0.13          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD12  | 5        | 0.13          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD13  | 5        | 0.13          |
| (2,1809) | 1:A:24:ILE:H    | 1:A:29:ILE:HD11  | 6        | 0.13          |
| (2,1809) | 1:A:24:ILE:H    | 1:A:29:ILE:HD12  | 6        | 0.13          |
| (2,1809) | 1:A:24:ILE:H    | 1:A:29:ILE:HD13  | 6        | 0.13          |
| (2,1805) | 1:A:26:VAL:HA   | 1:A:29:ILE:HB    | 3        | 0.13          |
| (2,1702) | 1:A:81:LYS:HA   | 1:A:84:ARG:HB3   | 12       | 0.13          |
| (2,169)  | 1:A:70:ILE:HG21 | 1:A:71:VAL:H     | 14       | 0.13          |
| (2,169)  | 1:A:70:ILE:HG22 | 1:A:71:VAL:H     | 14       | 0.13          |
| (2,169)  | 1:A:70:ILE:HG23 | 1:A:71:VAL:H     | 14       | 0.13          |
| (2,169)  | 1:A:70:ILE:HG21 | 1:A:71:VAL:H     | 15       | 0.13          |
| (2,169)  | 1:A:70:ILE:HG22 | 1:A:71:VAL:H     | 15       | 0.13          |
| (2,169)  | 1:A:70:ILE:HG23 | 1:A:71:VAL:H     | 15       | 0.13          |
| (2,1666) | 1:A:40:GLU:HA   | 1:A:43:LYS:HB3   | 12       | 0.13          |
| (2,1646) | 1:A:19:GLU:HA   | 1:A:22:LYS:HB3   | 17       | 0.13          |
| (2,1613) | 1:A:96:GLU:HG2  | 1:A:97:GLN:H     | 8        | 0.13          |
| (2,1481) | 1:A:121:LYS:HB2 | 1:A:121:LYS:HD3  | 7        | 0.13          |
| (2,1389) | 1:A:97:GLN:HA   | 1:A:97:GLN:HE21  | 3        | 0.13          |
| (2,1389) | 1:A:97:GLN:HA   | 1:A:97:GLN:HE21  | 7        | 0.13          |
| (2,1389) | 1:A:97:GLN:HA   | 1:A:97:GLN:HE21  | 13       | 0.13          |
| (1,9)    | 1:A:20:ILE:O    | 1:A:25:GLY:H     | 16       | 0.13          |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG    | 2        | 0.12          |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG    | 10       | 0.12          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD11  | 5        | 0.12          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD12  | 5        | 0.12          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD13  | 5        | 0.12          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD11  | 15       | 0.12          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD12  | 15       | 0.12          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD13  | 15       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG11 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG12 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG13 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG21 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG22 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HG23 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG11 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG12 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG13 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG21 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG22 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HG23 | 16       | 0.12          |

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| Key      | Atom-1          | Atom-2           | Model ID | Violation (Å) |
|----------|-----------------|------------------|----------|---------------|
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG11 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG12 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG13 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG21 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG22 | 16       | 0.12          |
| (2,3125) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HG23 | 16       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG11 | 13       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG12 | 13       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG13 | 13       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG21 | 13       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG22 | 13       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG23 | 13       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG11 | 18       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG12 | 18       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG13 | 18       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG21 | 18       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG22 | 18       | 0.12          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG23 | 18       | 0.12          |
| (2,2985) | 1:A:92:LEU:HD11 | 1:A:114:VAL:HG11 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD11 | 1:A:114:VAL:HG12 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD11 | 1:A:114:VAL:HG13 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD12 | 1:A:114:VAL:HG11 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD12 | 1:A:114:VAL:HG12 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD12 | 1:A:114:VAL:HG13 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD13 | 1:A:114:VAL:HG11 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD13 | 1:A:114:VAL:HG12 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD13 | 1:A:114:VAL:HG13 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD21 | 1:A:114:VAL:HG11 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD21 | 1:A:114:VAL:HG12 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD21 | 1:A:114:VAL:HG13 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD22 | 1:A:114:VAL:HG11 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD22 | 1:A:114:VAL:HG12 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD22 | 1:A:114:VAL:HG13 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD23 | 1:A:114:VAL:HG11 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD23 | 1:A:114:VAL:HG12 | 9        | 0.12          |
| (2,2985) | 1:A:92:LEU:HD23 | 1:A:114:VAL:HG13 | 9        | 0.12          |
| (2,2889) | 1:A:80:LYS:HD2  | 1:A:105:GLU:HB3  | 7        | 0.12          |
| (2,2889) | 1:A:80:LYS:HD3  | 1:A:105:GLU:HB3  | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD11 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD12 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD13 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD21 | 7        | 0.12          |

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| Key      | Atom-1          | Atom-2           | Model ID | Violation (Å) |
|----------|-----------------|------------------|----------|---------------|
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD22 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD23 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD11 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD12 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD13 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD21 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD22 | 7        | 0.12          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD23 | 7        | 0.12          |
| (2,2866) | 1:A:79:ALA:HB1  | 1:A:102:LEU:HD11 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB1  | 1:A:102:LEU:HD12 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB1  | 1:A:102:LEU:HD13 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB1  | 1:A:102:LEU:HD21 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB1  | 1:A:102:LEU:HD22 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB1  | 1:A:102:LEU:HD23 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB2  | 1:A:102:LEU:HD11 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB2  | 1:A:102:LEU:HD12 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB2  | 1:A:102:LEU:HD13 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB2  | 1:A:102:LEU:HD21 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB2  | 1:A:102:LEU:HD22 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB2  | 1:A:102:LEU:HD23 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB3  | 1:A:102:LEU:HD11 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB3  | 1:A:102:LEU:HD12 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB3  | 1:A:102:LEU:HD13 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB3  | 1:A:102:LEU:HD21 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB3  | 1:A:102:LEU:HD22 | 15       | 0.12          |
| (2,2866) | 1:A:79:ALA:HB3  | 1:A:102:LEU:HD23 | 15       | 0.12          |
| (2,2576) | 1:A:41:ARG:HA   | 1:A:44:GLU:HB2   | 2        | 0.12          |
| (2,2576) | 1:A:41:ARG:HA   | 1:A:44:GLU:HB3   | 2        | 0.12          |
| (2,2576) | 1:A:41:ARG:HA   | 1:A:44:GLU:HB2   | 6        | 0.12          |
| (2,2576) | 1:A:41:ARG:HA   | 1:A:44:GLU:HB3   | 6        | 0.12          |
| (2,2482) | 1:A:22:LYS:HA   | 1:A:45:LEU:HD11  | 20       | 0.12          |
| (2,2482) | 1:A:22:LYS:HA   | 1:A:45:LEU:HD12  | 20       | 0.12          |
| (2,2482) | 1:A:22:LYS:HA   | 1:A:45:LEU:HD13  | 20       | 0.12          |
| (2,2482) | 1:A:22:LYS:HA   | 1:A:45:LEU:HD21  | 20       | 0.12          |
| (2,2482) | 1:A:22:LYS:HA   | 1:A:45:LEU:HD22  | 20       | 0.12          |
| (2,2482) | 1:A:22:LYS:HA   | 1:A:45:LEU:HD23  | 20       | 0.12          |
| (2,242)  | 1:A:100:LYS:HD2 | 1:A:101:GLU:H    | 2        | 0.12          |
| (2,242)  | 1:A:100:LYS:HD2 | 1:A:101:GLU:H    | 6        | 0.12          |
| (2,2257) | 1:A:94:ASN:HA   | 1:A:115:GLN:HG3  | 14       | 0.12          |
| (2,2224) | 1:A:106:ALA:HB1 | 1:A:111:VAL:HB   | 8        | 0.12          |
| (2,2224) | 1:A:106:ALA:HB2 | 1:A:111:VAL:HB   | 8        | 0.12          |
| (2,2224) | 1:A:106:ALA:HB3 | 1:A:111:VAL:HB   | 8        | 0.12          |

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| Key      | Atom-1          | Atom-2          | Model ID | Violation (Å) |
|----------|-----------------|-----------------|----------|---------------|
| (2,2140) | 1:A:72:PHE:HE1  | 1:A:90:ILE:HG13 | 19       | 0.12          |
| (2,2140) | 1:A:72:PHE:HE2  | 1:A:90:ILE:HG13 | 19       | 0.12          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD11 | 9        | 0.12          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD12 | 9        | 0.12          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD13 | 9        | 0.12          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD11 | 10       | 0.12          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD12 | 10       | 0.12          |
| (2,2112) | 1:A:79:ALA:HA   | 1:A:83:ILE:HD13 | 10       | 0.12          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG21 | 19       | 0.12          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG22 | 19       | 0.12          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG23 | 19       | 0.12          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG21 | 20       | 0.12          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG22 | 20       | 0.12          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG23 | 20       | 0.12          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG21 | 15       | 0.12          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG22 | 15       | 0.12          |
| (2,1969) | 1:A:52:LEU:HG   | 1:A:54:THR:HG23 | 15       | 0.12          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG21 | 7        | 0.12          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG22 | 7        | 0.12          |
| (2,1908) | 1:A:43:LYS:HB2  | 1:A:50:ILE:HG23 | 7        | 0.12          |
| (2,1825) | 1:A:31:ILE:HD11 | 1:A:43:LYS:H    | 15       | 0.12          |
| (2,1825) | 1:A:31:ILE:HD12 | 1:A:43:LYS:H    | 15       | 0.12          |
| (2,1825) | 1:A:31:ILE:HD13 | 1:A:43:LYS:H    | 15       | 0.12          |
| (2,1825) | 1:A:31:ILE:HD11 | 1:A:43:LYS:H    | 17       | 0.12          |
| (2,1825) | 1:A:31:ILE:HD12 | 1:A:43:LYS:H    | 17       | 0.12          |
| (2,1825) | 1:A:31:ILE:HD13 | 1:A:43:LYS:H    | 17       | 0.12          |
| (2,1825) | 1:A:31:ILE:HD11 | 1:A:43:LYS:H    | 18       | 0.12          |
| (2,1825) | 1:A:31:ILE:HD12 | 1:A:43:LYS:H    | 18       | 0.12          |
| (2,1825) | 1:A:31:ILE:HD13 | 1:A:43:LYS:H    | 18       | 0.12          |
| (2,1778) | 1:A:21:LEU:HG   | 1:A:22:LYS:HA   | 1        | 0.12          |
| (2,1725) | 1:A:118:GLN:HA  | 1:A:121:LYS:HB3 | 18       | 0.12          |
| (2,1666) | 1:A:40:GLU:HA   | 1:A:43:LYS:HB3  | 16       | 0.12          |
| (2,1666) | 1:A:40:GLU:HA   | 1:A:43:LYS:HB3  | 18       | 0.12          |
| (2,1508) | 1:A:14:ILE:HG21 | 1:A:14:ILE:HD11 | 15       | 0.12          |
| (2,1508) | 1:A:14:ILE:HG21 | 1:A:14:ILE:HD12 | 15       | 0.12          |
| (2,1508) | 1:A:14:ILE:HG21 | 1:A:14:ILE:HD13 | 15       | 0.12          |
| (2,1508) | 1:A:14:ILE:HG22 | 1:A:14:ILE:HD11 | 15       | 0.12          |
| (2,1508) | 1:A:14:ILE:HG22 | 1:A:14:ILE:HD12 | 15       | 0.12          |
| (2,1508) | 1:A:14:ILE:HG22 | 1:A:14:ILE:HD13 | 15       | 0.12          |
| (2,1508) | 1:A:14:ILE:HG23 | 1:A:14:ILE:HD11 | 15       | 0.12          |
| (2,1508) | 1:A:14:ILE:HG23 | 1:A:14:ILE:HD12 | 15       | 0.12          |
| (2,1508) | 1:A:14:ILE:HG23 | 1:A:14:ILE:HD13 | 15       | 0.12          |

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| Key      | Atom-1          | Atom-2           | Model ID | Violation (Å) |
|----------|-----------------|------------------|----------|---------------|
| (1,71)   | 1:A:100:LYS:O   | 1:A:104:LYS:H    | 18       | 0.12          |
| (2,928)  | 1:A:87:LYS:HG2  | 1:A:88:ASN:HD21  | 7        | 0.11          |
| (2,91)   | 1:A:40:GLU:HG3  | 1:A:41:ARG:H     | 7        | 0.11          |
| (2,862)  | 1:A:52:LEU:H    | 1:A:53:LEU:HG    | 17       | 0.11          |
| (2,824)  | 1:A:37:GLN:HE22 | 1:A:38:LEU:HB2   | 4        | 0.11          |
| (2,817)  | 1:A:35:ASN:HD21 | 1:A:37:GLN:HB2   | 2        | 0.11          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD11  | 3        | 0.11          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD12  | 3        | 0.11          |
| (2,811)  | 1:A:34:SER:H    | 1:A:38:LEU:HD13  | 3        | 0.11          |
| (2,779)  | 1:A:5:VAL:H     | 1:A:30:VAL:HB    | 5        | 0.11          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG11 | 19       | 0.11          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG12 | 19       | 0.11          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG13 | 19       | 0.11          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG21 | 19       | 0.11          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG22 | 19       | 0.11          |
| (2,3097) | 1:A:103:GLN:HA  | 1:A:111:VAL:HG23 | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB2  | 1:A:99:VAL:HG11  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB2  | 1:A:99:VAL:HG12  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB2  | 1:A:99:VAL:HG13  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB2  | 1:A:99:VAL:HG21  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB2  | 1:A:99:VAL:HG22  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB2  | 1:A:99:VAL:HG23  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB3  | 1:A:99:VAL:HG11  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB3  | 1:A:99:VAL:HG12  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB3  | 1:A:99:VAL:HG13  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB3  | 1:A:99:VAL:HG21  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB3  | 1:A:99:VAL:HG22  | 19       | 0.11          |
| (2,3024) | 1:A:96:GLU:HB3  | 1:A:99:VAL:HG23  | 19       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD11 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD12 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD13 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD21 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD22 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG2  | 1:A:102:LEU:HD23 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD11 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD12 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD13 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD21 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD22 | 15       | 0.11          |
| (2,2886) | 1:A:80:LYS:HG3  | 1:A:102:LEU:HD23 | 15       | 0.11          |
| (2,2762) | 1:A:64:LYS:HD2  | 1:A:65:LYS:H     | 10       | 0.11          |
| (2,2762) | 1:A:64:LYS:HD3  | 1:A:65:LYS:H     | 10       | 0.11          |

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| Key      | Atom-1           | Atom-2          | Model ID | Violation (Å) |
|----------|------------------|-----------------|----------|---------------|
| (2,2645) | 1:A:51:PHE:HE1   | 1:A:58:LEU:HD11 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE1   | 1:A:58:LEU:HD12 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE1   | 1:A:58:LEU:HD13 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE1   | 1:A:58:LEU:HD21 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE1   | 1:A:58:LEU:HD22 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE1   | 1:A:58:LEU:HD23 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE2   | 1:A:58:LEU:HD11 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE2   | 1:A:58:LEU:HD12 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE2   | 1:A:58:LEU:HD13 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE2   | 1:A:58:LEU:HD21 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE2   | 1:A:58:LEU:HD22 | 12       | 0.11          |
| (2,2645) | 1:A:51:PHE:HE2   | 1:A:58:LEU:HD23 | 12       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG11 | 10       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG12 | 10       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG13 | 10       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG21 | 10       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG22 | 10       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG23 | 10       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG11 | 14       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG12 | 14       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG13 | 14       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG21 | 14       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG22 | 14       | 0.11          |
| (2,2589) | 1:A:43:LYS:H     | 1:A:47:VAL:HG23 | 14       | 0.11          |
| (2,2266) | 1:A:114:VAL:HG11 | 1:A:119:ASP:HB2 | 8        | 0.11          |
| (2,2266) | 1:A:114:VAL:HG12 | 1:A:119:ASP:HB2 | 8        | 0.11          |
| (2,2266) | 1:A:114:VAL:HG13 | 1:A:119:ASP:HB2 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD11  | 1:A:90:ILE:HD11 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD11  | 1:A:90:ILE:HD12 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD11  | 1:A:90:ILE:HD13 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD12  | 1:A:90:ILE:HD11 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD12  | 1:A:90:ILE:HD12 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD12  | 1:A:90:ILE:HD13 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD13  | 1:A:90:ILE:HD11 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD13  | 1:A:90:ILE:HD12 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD13  | 1:A:90:ILE:HD13 | 8        | 0.11          |
| (2,2149) | 1:A:70:ILE:HD11  | 1:A:90:ILE:HD11 | 18       | 0.11          |
| (2,2149) | 1:A:70:ILE:HD11  | 1:A:90:ILE:HD12 | 18       | 0.11          |
| (2,2149) | 1:A:70:ILE:HD11  | 1:A:90:ILE:HD13 | 18       | 0.11          |
| (2,2149) | 1:A:70:ILE:HD12  | 1:A:90:ILE:HD11 | 18       | 0.11          |
| (2,2149) | 1:A:70:ILE:HD12  | 1:A:90:ILE:HD12 | 18       | 0.11          |
| (2,2149) | 1:A:70:ILE:HD12  | 1:A:90:ILE:HD13 | 18       | 0.11          |

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| Key      | Atom-1          | Atom-2          | Model ID | Violation (Å) |
|----------|-----------------|-----------------|----------|---------------|
| (2,2149) | 1:A:70:ILE:HD13 | 1:A:90:ILE:HD11 | 18       | 0.11          |
| (2,2149) | 1:A:70:ILE:HD13 | 1:A:90:ILE:HD12 | 18       | 0.11          |
| (2,2149) | 1:A:70:ILE:HD13 | 1:A:90:ILE:HD13 | 18       | 0.11          |
| (2,2077) | 1:A:7:ILE:HD11  | 1:A:73:SER:HB2  | 17       | 0.11          |
| (2,2077) | 1:A:7:ILE:HD12  | 1:A:73:SER:HB2  | 17       | 0.11          |
| (2,2077) | 1:A:7:ILE:HD13  | 1:A:73:SER:HB2  | 17       | 0.11          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG21 | 6        | 0.11          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG22 | 6        | 0.11          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG23 | 6        | 0.11          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG21 | 11       | 0.11          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG22 | 11       | 0.11          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG23 | 11       | 0.11          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG21 | 13       | 0.11          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG22 | 13       | 0.11          |
| (2,2068) | 1:A:71:VAL:HB   | 1:A:91:ILE:HG23 | 13       | 0.11          |
| (2,1955) | 1:A:34:SER:HA   | 1:A:52:LEU:HD21 | 9        | 0.11          |
| (2,1955) | 1:A:34:SER:HA   | 1:A:52:LEU:HD22 | 9        | 0.11          |
| (2,1955) | 1:A:34:SER:HA   | 1:A:52:LEU:HD23 | 9        | 0.11          |
| (2,1916) | 1:A:18:TRP:HB3  | 1:A:45:LEU:HG   | 5        | 0.11          |
| (2,1916) | 1:A:18:TRP:HB3  | 1:A:45:LEU:HG   | 11       | 0.11          |
| (2,1915) | 1:A:42:ALA:HA   | 1:A:45:LEU:HG   | 20       | 0.11          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD11 | 3        | 0.11          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD12 | 3        | 0.11          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD13 | 3        | 0.11          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD11 | 19       | 0.11          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD12 | 19       | 0.11          |
| (2,1877) | 1:A:33:THR:H    | 1:A:38:LEU:HD13 | 19       | 0.11          |
| (2,1864) | 1:A:35:ASN:HB2  | 1:A:38:LEU:HB2  | 15       | 0.11          |
| (2,1855) | 1:A:34:SER:HB3  | 1:A:52:LEU:HD21 | 2        | 0.11          |
| (2,1855) | 1:A:34:SER:HB3  | 1:A:52:LEU:HD22 | 2        | 0.11          |
| (2,1855) | 1:A:34:SER:HB3  | 1:A:52:LEU:HD23 | 2        | 0.11          |
| (2,1825) | 1:A:31:ILE:HD11 | 1:A:43:LYS:H    | 2        | 0.11          |
| (2,1825) | 1:A:31:ILE:HD12 | 1:A:43:LYS:H    | 2        | 0.11          |
| (2,1825) | 1:A:31:ILE:HD13 | 1:A:43:LYS:H    | 2        | 0.11          |
| (2,1825) | 1:A:31:ILE:HD11 | 1:A:43:LYS:H    | 3        | 0.11          |
| (2,1825) | 1:A:31:ILE:HD12 | 1:A:43:LYS:H    | 3        | 0.11          |
| (2,1825) | 1:A:31:ILE:HD13 | 1:A:43:LYS:H    | 3        | 0.11          |
| (2,1809) | 1:A:24:ILE:H    | 1:A:29:ILE:HD11 | 9        | 0.11          |
| (2,1809) | 1:A:24:ILE:H    | 1:A:29:ILE:HD12 | 9        | 0.11          |
| (2,1809) | 1:A:24:ILE:H    | 1:A:29:ILE:HD13 | 9        | 0.11          |
| (2,1801) | 1:A:28:ARG:HB3  | 1:A:29:ILE:HG21 | 10       | 0.11          |
| (2,1801) | 1:A:28:ARG:HB3  | 1:A:29:ILE:HG22 | 10       | 0.11          |

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| Key      | Atom-1          | Atom-2          | Model ID | Violation (Å) |
|----------|-----------------|-----------------|----------|---------------|
| (2,1801) | 1:A:28:ARG:HB3  | 1:A:29:ILE:HG23 | 10       | 0.11          |
| (2,169)  | 1:A:70:ILE:HG21 | 1:A:71:VAL:H    | 10       | 0.11          |
| (2,169)  | 1:A:70:ILE:HG22 | 1:A:71:VAL:H    | 10       | 0.11          |
| (2,169)  | 1:A:70:ILE:HG23 | 1:A:71:VAL:H    | 10       | 0.11          |
| (2,169)  | 1:A:70:ILE:HG21 | 1:A:71:VAL:H    | 12       | 0.11          |
| (2,169)  | 1:A:70:ILE:HG22 | 1:A:71:VAL:H    | 12       | 0.11          |
| (2,169)  | 1:A:70:ILE:HG23 | 1:A:71:VAL:H    | 12       | 0.11          |
| (2,1666) | 1:A:40:GLU:HA   | 1:A:43:LYS:HB3  | 19       | 0.11          |
| (2,1563) | 1:A:37:GLN:HE21 | 1:A:38:LEU:HA   | 20       | 0.11          |
| (2,1315) | 1:A:78:ILE:HG21 | 1:A:82:ILE:HG13 | 20       | 0.11          |
| (2,1315) | 1:A:78:ILE:HG22 | 1:A:82:ILE:HG13 | 20       | 0.11          |
| (2,1315) | 1:A:78:ILE:HG23 | 1:A:82:ILE:HG13 | 20       | 0.11          |
| (1,65)   | 1:A:98:LEU:O    | 1:A:101:GLU:H   | 8        | 0.11          |
| (1,51)   | 1:A:79:ALA:O    | 1:A:82:ILE:H    | 19       | 0.11          |

## 10 Dihedral-angle violation analysis [i](#)

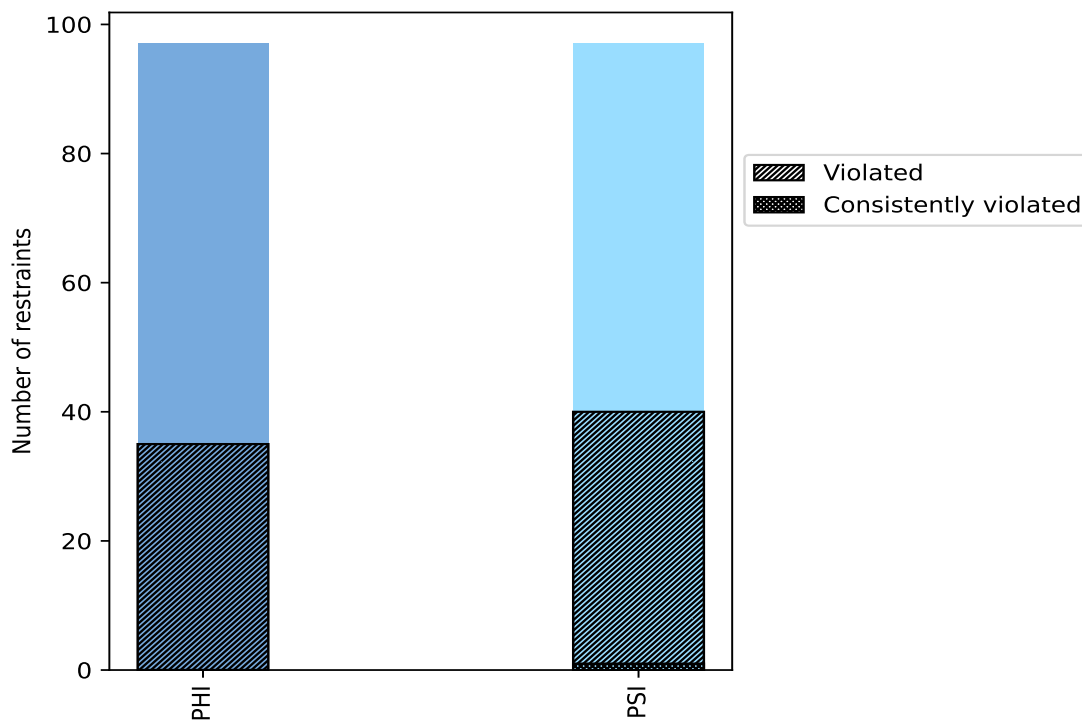
### 10.1 Summary of dihedral-angle violations [i](#)

The following table provides the summary of dihedral-angle violations in different dihedral-angle types. Violations less than 1° are not included in the calculation.

| Angle type | Count | % <sup>1</sup> | Violated <sup>3</sup> |                |                | Consistently Violated <sup>4</sup> |                |                |
|------------|-------|----------------|-----------------------|----------------|----------------|------------------------------------|----------------|----------------|
|            |       |                | Count                 | % <sup>2</sup> | % <sup>1</sup> | Count                              | % <sup>2</sup> | % <sup>1</sup> |
| PHI        | 97    | 50.0           | 35                    | 36.1           | 18.0           | 0                                  | 0.0            | 0.0            |
| PSI        | 97    | 50.0           | 40                    | 41.2           | 20.6           | 1                                  | 1.0            | 0.5            |
| Total      | 194   | 100.0          | 75                    | 38.7           | 38.7           | 1                                  | 0.5            | 0.5            |

<sup>1</sup> percentage calculated with respect to total number of dihedral-angle restraints, <sup>2</sup> percentage calculated with respect to number of restraints in a particular dihedral-angle type, <sup>3</sup> violated in at least one model, <sup>4</sup> violated in all the models

#### 10.1.1 Bar chart : Distribution of dihedral-angles and violations [i](#)



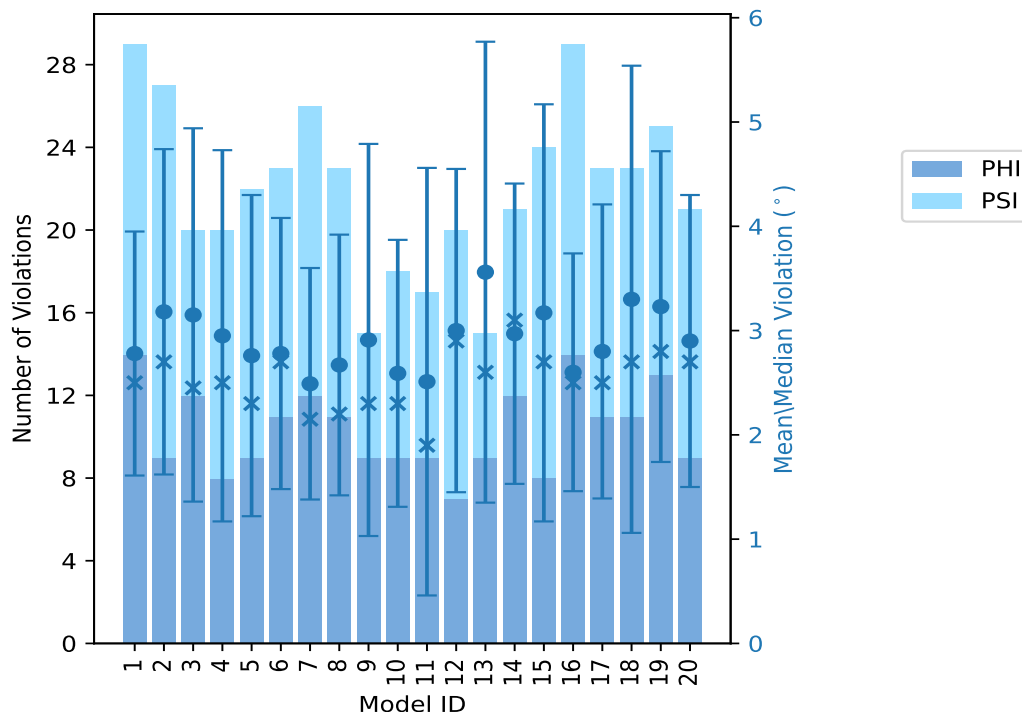
Violated and consistently violated restraints are shown using different hatch patterns in their respective categories

## 10.2 Dihedral-angle violation statistics for each model [i](#)

The following table provides the dihedral-angle violation statistics for each model in the ensemble. Violations less than 1° are not included in the statistics.

| Model ID | Number of violations |     |       | Mean (°) | Max (°) | SD (°) | Median (°) |
|----------|----------------------|-----|-------|----------|---------|--------|------------|
|          | PHI                  | PSI | Total |          |         |        |            |
| 1        | 14                   | 15  | 29    | 2.78     | 5.8     | 1.17   | 2.5        |
| 2        | 9                    | 18  | 27    | 3.18     | 6.2     | 1.56   | 2.7        |
| 3        | 12                   | 8   | 20    | 3.15     | 7.9     | 1.79   | 2.45       |
| 4        | 8                    | 12  | 20    | 2.95     | 8.4     | 1.78   | 2.5        |
| 5        | 9                    | 13  | 22    | 2.76     | 6.4     | 1.54   | 2.3        |
| 6        | 11                   | 12  | 23    | 2.78     | 5.7     | 1.3    | 2.7        |
| 7        | 12                   | 14  | 26    | 2.49     | 4.9     | 1.11   | 2.15       |
| 8        | 11                   | 12  | 23    | 2.67     | 5.6     | 1.25   | 2.2        |
| 9        | 9                    | 6   | 15    | 2.91     | 8.0     | 1.88   | 2.3        |
| 10       | 9                    | 9   | 18    | 2.59     | 5.9     | 1.28   | 2.3        |
| 11       | 9                    | 8   | 17    | 2.51     | 9.7     | 2.05   | 1.9        |
| 12       | 7                    | 13  | 20    | 3.0      | 6.1     | 1.55   | 2.9        |
| 13       | 9                    | 6   | 15    | 3.56     | 8.0     | 2.21   | 2.6        |
| 14       | 12                   | 9   | 21    | 2.97     | 7.1     | 1.44   | 3.1        |
| 15       | 8                    | 16  | 24    | 3.17     | 10.4    | 2.0    | 2.7        |
| 16       | 14                   | 15  | 29    | 2.6      | 5.1     | 1.14   | 2.5        |
| 17       | 11                   | 12  | 23    | 2.8      | 7.0     | 1.41   | 2.5        |
| 18       | 11                   | 12  | 23    | 3.3      | 11.6    | 2.24   | 2.7        |
| 19       | 13                   | 12  | 25    | 3.23     | 7.1     | 1.49   | 2.8        |
| 20       | 9                    | 12  | 21    | 2.9      | 5.7     | 1.4    | 2.7        |

### 10.2.1 Bar graph : Dihedral violation statistics for each model [i](#)



The mean(dot),median(x) and the standard deviation are shown in blue with respect to the y axis on the right

### 10.3 Dihedral-angle violation statistics for the ensemble [i](#)

Violation analysis may find that some restraints are violated in very few models and some are violated in most of models. The following table provides this information as number of violated restraints for a given fraction of ensemble.

| Number of violated restraints |     |       | Fraction of the ensemble |      |
|-------------------------------|-----|-------|--------------------------|------|
| PHI                           | PSI | Total | Count <sup>1</sup>       | %    |
| 11                            | 12  | 23    | 1                        | 5.0  |
| 4                             | 5   | 9     | 2                        | 10.0 |
| 3                             | 3   | 6     | 3                        | 15.0 |
| 2                             | 1   | 3     | 4                        | 20.0 |
| 0                             | 4   | 4     | 5                        | 25.0 |
| 2                             | 2   | 4     | 6                        | 30.0 |
| 1                             | 1   | 2     | 7                        | 35.0 |
| 2                             | 1   | 3     | 8                        | 40.0 |
| 0                             | 0   | 0     | 9                        | 45.0 |
| 2                             | 1   | 3     | 10                       | 50.0 |
| 1                             | 1   | 2     | 11                       | 55.0 |

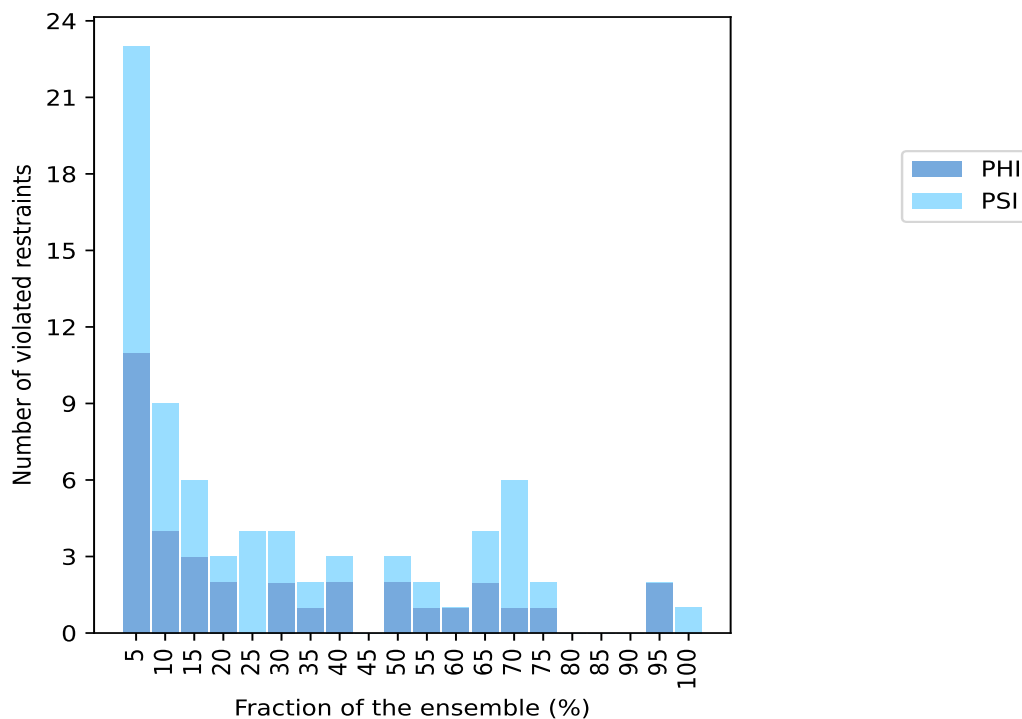
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| Number of violated restraints |     |       | Fraction of the ensemble |       |
|-------------------------------|-----|-------|--------------------------|-------|
| PHI                           | PSI | Total | Count <sup>1</sup>       | %     |
| 1                             | 0   | 1     | 12                       | 60.0  |
| 2                             | 2   | 4     | 13                       | 65.0  |
| 1                             | 5   | 6     | 14                       | 70.0  |
| 1                             | 1   | 2     | 15                       | 75.0  |
| 0                             | 0   | 0     | 16                       | 80.0  |
| 0                             | 0   | 0     | 17                       | 85.0  |
| 0                             | 0   | 0     | 18                       | 90.0  |
| 2                             | 0   | 2     | 19                       | 95.0  |
| 0                             | 1   | 1     | 20                       | 100.0 |

<sup>1</sup> Number of models with violations

### 10.3.1 Bar graph : Dihedral-angle Violation statistics for the ensemble [i](#)



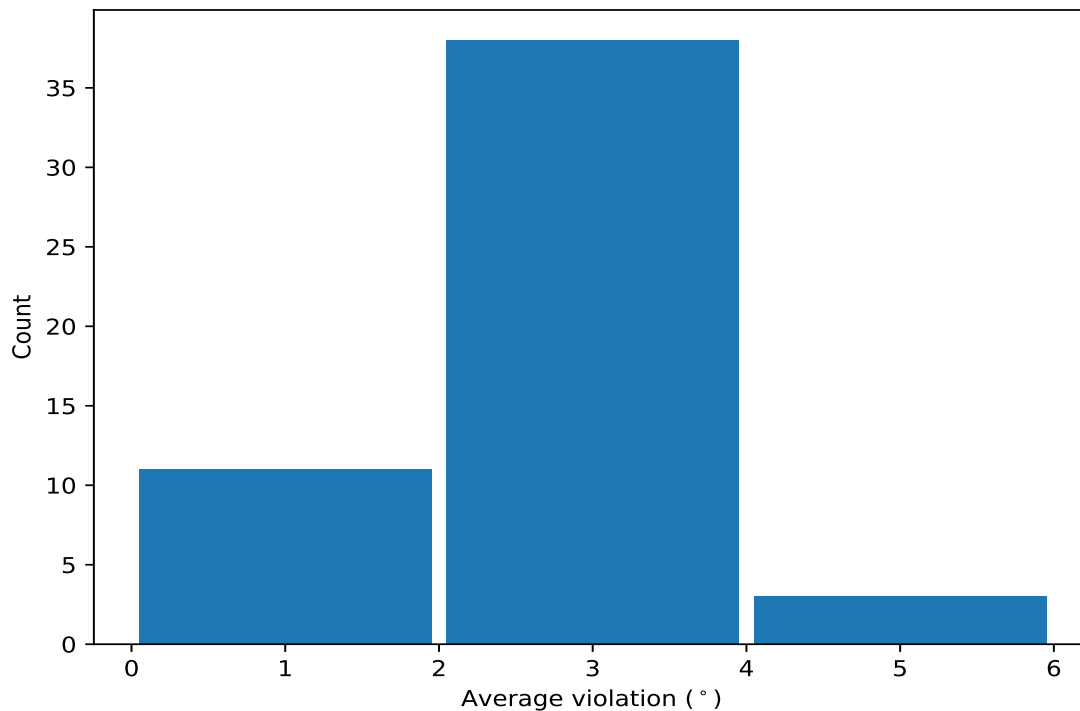
## 10.4 Most violated dihedral-angle restraints in the ensemble [i](#)

### 10.4.1 Histogram : Distribution of mean dihedral-angle violations [i](#)

The following histogram shows the distribution of the average value of the violation. The average is calculated for each restraint that is violated in more than one model over all the violated models



in the ensemble



#### 10.4.2 Table: Most violated dihedral-angle restraints [i](#)

The following table provides the mean and the standard deviation of the violation for each restraint sorted by number of violated models and the mean value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint.

| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Models <sup>1</sup> | Mean | SD <sup>2</sup> | Median |
|---------|---------------|----------------|----------------|---------------|---------------------|------|-----------------|--------|
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 20                  | 5.96 | 1.92            | 6.05   |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 19                  | 3.77 | 1.48            | 4.2    |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 19                  | 2.95 | 0.82            | 3.0    |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 15                  | 3.4  | 1.23            | 3.2    |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 15                  | 2.03 | 0.7             | 1.9    |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 14                  | 5.48 | 2.92            | 5.5    |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 14                  | 3.59 | 1.96            | 3.25   |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 14                  | 2.84 | 1.3             | 3.05   |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 14                  | 2.82 | 0.84            | 2.7    |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 14                  | 2.32 | 1.06            | 2.05   |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 14                  | 2.03 | 0.5             | 2.1    |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 13                  | 4.32 | 1.36            | 4.4    |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 13                  | 3.72 | 1.23            | 3.8    |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 13                  | 2.63 | 1.08            | 2.7    |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 13                  | 2.27 | 0.47            | 2.5    |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 12                  | 2.29 | 0.92            | 2.45   |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 11                  | 2.95 | 1.04            | 2.9    |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 11                  | 2.48 | 1.02            | 2.3    |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 10                  | 3.14 | 1.66            | 2.8    |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 10                  | 3.03 | 1.26            | 3.8    |

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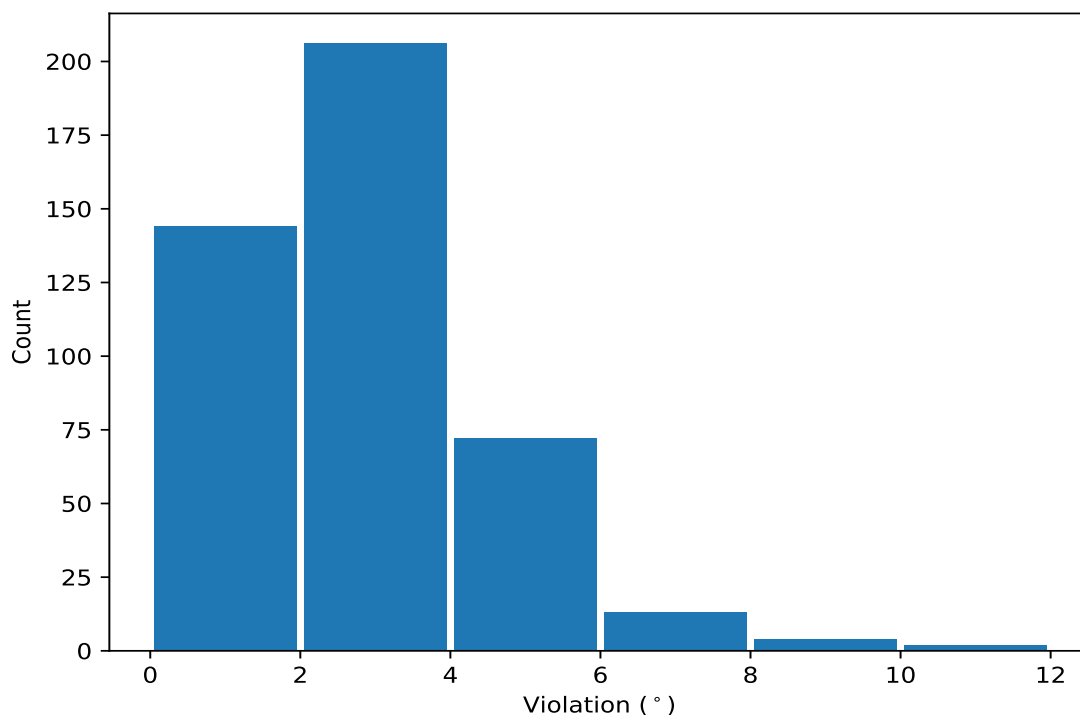
| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Models <sup>1</sup> | Mean | SD <sup>2</sup> | Median |
|---------|---------------|----------------|----------------|---------------|---------------------|------|-----------------|--------|
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 10                  | 2.88 | 1.35            | 2.4    |
| (1,62)  | 1:A:46:GLY:N  | 1:A:46:GLY:CA  | 1:A:46:GLY:C   | 1:A:47:VAL:N  | 8                   | 2.98 | 1.24            | 3.1    |
| (1,101) | 1:A:72:PHE:C  | 1:A:73:SER:N   | 1:A:73:SER:CA  | 1:A:73:SER:C  | 8                   | 2.62 | 1.34            | 2.45   |
| (1,123) | 1:A:84:ARG:C  | 1:A:85:LYS:N   | 1:A:85:LYS:CA  | 1:A:85:LYS:C  | 8                   | 2.01 | 0.46            | 2.2    |
| (1,8)   | 1:A:6:ILE:N   | 1:A:6:ILE:CA   | 1:A:6:ILE:C    | 1:A:7:ILE:N   | 7                   | 2.31 | 0.75            | 2.4    |
| (1,97)  | 1:A:70:ILE:C  | 1:A:71:VAL:N   | 1:A:71:VAL:CA  | 1:A:71:VAL:C  | 7                   | 2.17 | 0.52            | 2.2    |
| (1,1)   | 1:A:2:ARG:C   | 1:A:3:ILE:N    | 1:A:3:ILE:CA   | 1:A:3:ILE:C   | 6                   | 2.88 | 1.35            | 2.5    |
| (1,106) | 1:A:76:ARG:N  | 1:A:76:ARG:CA  | 1:A:76:ARG:C   | 1:A:77:ASP:N  | 6                   | 1.98 | 0.75            | 1.85   |
| (1,154) | 1:A:104:LYS:N | 1:A:104:LYS:CA | 1:A:104:LYS:C  | 1:A:105:GLU:N | 6                   | 1.8  | 0.5             | 1.95   |
| (1,75)  | 1:A:56:ASP:C  | 1:A:57:GLU:N   | 1:A:57:GLU:CA  | 1:A:57:GLU:C  | 6                   | 1.75 | 0.61            | 1.6    |
| (1,30)  | 1:A:27:ASP:N  | 1:A:27:ASP:CA  | 1:A:27:ASP:C   | 1:A:28:ARG:N  | 5                   | 2.82 | 0.89            | 2.7    |
| (1,170) | 1:A:114:VAL:N | 1:A:114:VAL:CA | 1:A:114:VAL:C  | 1:A:115:GLN:N | 5                   | 2.4  | 1.09            | 2.1    |
| (1,10)  | 1:A:7:ILE:N   | 1:A:7:ILE:CA   | 1:A:7:ILE:C    | 1:A:8:VAL:N   | 5                   | 2.32 | 1.37            | 1.6    |
| (1,160) | 1:A:108:ASP:N | 1:A:108:ASP:CA | 1:A:108:ASP:C  | 1:A:109:ALA:N | 5                   | 1.62 | 0.45            | 1.5    |
| (1,105) | 1:A:75:ASN:C  | 1:A:76:ARG:N   | 1:A:76:ARG:CA  | 1:A:76:ARG:C  | 4                   | 2.48 | 1.03            | 2.55   |
| (1,171) | 1:A:115:GLN:C | 1:A:116:THR:N  | 1:A:116:THR:CA | 1:A:116:THR:C | 4                   | 1.72 | 0.32            | 1.7    |
| (1,162) | 1:A:109:ALA:N | 1:A:109:ALA:CA | 1:A:109:ALA:C  | 1:A:110:ARG:N | 4                   | 1.5  | 0.25            | 1.45   |
| (1,31)  | 1:A:28:ARG:C  | 1:A:29:ILE:N   | 1:A:29:ILE:CA  | 1:A:29:ILE:C  | 3                   | 2.97 | 1.11            | 2.8    |
| (1,67)  | 1:A:50:ILE:C  | 1:A:51:PHE:N   | 1:A:51:PHE:CA  | 1:A:51:PHE:C  | 3                   | 2.67 | 0.7             | 2.5    |
| (1,2)   | 1:A:3:ILE:N   | 1:A:3:ILE:CA   | 1:A:3:ILE:C    | 1:A:4:ILE:N   | 3                   | 2.27 | 0.74            | 2.2    |
| (1,76)  | 1:A:57:GLU:N  | 1:A:57:GLU:CA  | 1:A:57:GLU:C   | 1:A:58:LEU:N  | 3                   | 2.23 | 0.62            | 1.9    |
| (1,132) | 1:A:91:ILE:N  | 1:A:91:ILE:CA  | 1:A:91:ILE:C   | 1:A:92:LEU:N  | 3                   | 2.0  | 0.62            | 2.1    |
| (1,163) | 1:A:110:ARG:C | 1:A:111:VAL:N  | 1:A:111:VAL:CA | 1:A:111:VAL:C | 3                   | 1.63 | 0.24            | 1.8    |
| (1,194) | 1:A:127:ILE:N | 1:A:127:ILE:CA | 1:A:127:ILE:C  | 1:A:128:LEU:N | 2                   | 3.05 | 0.75            | 3.05   |
| (1,68)  | 1:A:51:PHE:N  | 1:A:51:PHE:CA  | 1:A:51:PHE:C   | 1:A:52:LEU:N  | 2                   | 2.7  | 0.9             | 2.7    |
| (1,125) | 1:A:87:LYS:C  | 1:A:88:ASN:N   | 1:A:88:ASN:CA  | 1:A:88:ASN:C  | 2                   | 2.6  | 0.5             | 2.6    |
| (1,191) | 1:A:125:GLU:C | 1:A:126:LYS:N  | 1:A:126:LYS:CA | 1:A:126:LYS:C | 2                   | 2.55 | 1.05            | 2.55   |
| (1,192) | 1:A:126:LYS:N | 1:A:126:LYS:CA | 1:A:126:LYS:C  | 1:A:127:ILE:N | 2                   | 2.25 | 0.95            | 2.25   |
| (1,3)   | 1:A:3:ILE:C   | 1:A:4:ILE:N    | 1:A:4:ILE:CA   | 1:A:4:ILE:C   | 2                   | 1.45 | 0.05            | 1.45   |
| (1,6)   | 1:A:5:VAL:N   | 1:A:5:VAL:CA   | 1:A:5:VAL:C    | 1:A:6:ILE:N   | 2                   | 1.3  | 0.2             | 1.3    |
| (1,78)  | 1:A:58:LEU:N  | 1:A:58:LEU:CA  | 1:A:58:LEU:C   | 1:A:59:ILE:N  | 2                   | 1.2  | 0.0             | 1.2    |
| (1,153) | 1:A:103:GLN:C | 1:A:104:LYS:N  | 1:A:104:LYS:CA | 1:A:104:LYS:C | 2                   | 1.15 | 0.05            | 1.15   |

<sup>1</sup> Number of violated models, <sup>2</sup>Standard deviation, All angle values are in degree (°)

## 10.5 All violated dihedral-angle restraints

### 10.5.1 Histogram : Distribution of violations

The following histogram shows the distribution of the absolute value of the violation for all violated restraints in the ensemble.



### 10.5.2 Table: All violated dihedral-angle restraints [i](#)

The following table lists the absolute value of the violation for each restraint in the ensemble sorted by its value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint.

| Key     | Atom-1       | Atom-2        | Atom-3        | Atom-4       | Model ID | Violation (°) |
|---------|--------------|---------------|---------------|--------------|----------|---------------|
| (1,104) | 1:A:74:GLU:N | 1:A:74:GLU:CA | 1:A:74:GLU:C  | 1:A:75:ASN:N | 18       | 11.6          |
| (1,104) | 1:A:74:GLU:N | 1:A:74:GLU:CA | 1:A:74:GLU:C  | 1:A:75:ASN:N | 15       | 10.4          |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 11       | 9.7           |
| (1,104) | 1:A:74:GLU:N | 1:A:74:GLU:CA | 1:A:74:GLU:C  | 1:A:75:ASN:N | 4        | 8.4           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 9        | 8.0           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 13       | 8.0           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 3        | 7.9           |
| (1,102) | 1:A:73:SER:N | 1:A:73:SER:CA | 1:A:73:SER:C  | 1:A:74:GLU:N | 13       | 7.9           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 18       | 7.5           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 14       | 7.1           |
| (1,18)  | 1:A:20:ILE:N | 1:A:20:ILE:CA | 1:A:20:ILE:C  | 1:A:21:LEU:N | 19       | 7.1           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 17       | 7.0           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 15       | 6.9           |
| (1,102) | 1:A:73:SER:N | 1:A:73:SER:CA | 1:A:73:SER:C  | 1:A:74:GLU:N | 3        | 6.8           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 5        | 6.4           |
| (1,11)  | 1:A:7:ILE:C  | 1:A:8:VAL:N   | 1:A:8:VAL:CA  | 1:A:8:VAL:C  | 5        | 6.4           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 2        | 6.2           |
| (1,104) | 1:A:74:GLU:N | 1:A:74:GLU:CA | 1:A:74:GLU:C  | 1:A:75:ASN:N | 12       | 6.1           |
| (1,102) | 1:A:73:SER:N | 1:A:73:SER:CA | 1:A:73:SER:C  | 1:A:74:GLU:N | 2        | 6.1           |
| (1,25)  | 1:A:23:GLU:C | 1:A:24:ILE:N  | 1:A:24:ILE:CA | 1:A:24:ILE:C | 12       | 5.9           |
| (1,24)  | 1:A:23:GLU:N | 1:A:23:GLU:CA | 1:A:23:GLU:C  | 1:A:24:ILE:N | 10       | 5.9           |

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| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Model ID | Violation (°) |
|---------|---------------|----------------|----------------|---------------|----------|---------------|
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 19       | 5.9           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 2        | 5.9           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 9        | 5.9           |
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 1        | 5.8           |
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 12       | 5.8           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 19       | 5.8           |
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 4        | 5.7           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 20       | 5.7           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 6        | 5.7           |
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 8        | 5.6           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 2        | 5.6           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 6        | 5.5           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 13       | 5.5           |
| (1,62)  | 1:A:46:GLY:N  | 1:A:46:GLY:CA  | 1:A:46:GLY:C   | 1:A:47:VAL:N  | 2        | 5.4           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 8        | 5.4           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 20       | 5.3           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 9        | 5.2           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 18       | 5.2           |
| (1,101) | 1:A:72:PHE:C  | 1:A:73:SER:N   | 1:A:73:SER:CA  | 1:A:73:SER:C  | 19       | 5.2           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 4        | 5.1           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 13       | 5.1           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 16       | 5.1           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 20       | 5.0           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 1        | 5.0           |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 1        | 5.0           |
| (1,10)  | 1:A:7:ILE:N   | 1:A:7:ILE:CA   | 1:A:7:ILE:C    | 1:A:8:VAL:N   | 6        | 5.0           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 7        | 4.9           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 3        | 4.9           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 3        | 4.9           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 17       | 4.9           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 15       | 4.7           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 7        | 4.7           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 8        | 4.7           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 18       | 4.7           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 2        | 4.7           |
| (1,1)   | 1:A:2:ARG:C   | 1:A:3:ILE:N    | 1:A:3:ILE:CA   | 1:A:3:ILE:C   | 20       | 4.7           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 5        | 4.6           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 4        | 4.6           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 10       | 4.6           |
| (1,1)   | 1:A:2:ARG:C   | 1:A:3:ILE:N    | 1:A:3:ILE:CA   | 1:A:3:ILE:C   | 14       | 4.6           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 15       | 4.5           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 13       | 4.5           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 16       | 4.5           |
| (1,31)  | 1:A:28:ARG:C  | 1:A:29:ILE:N   | 1:A:29:ILE:CA  | 1:A:29:ILE:C  | 5        | 4.4           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 14       | 4.4           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 16       | 4.4           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 11       | 4.4           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 13       | 4.4           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 12       | 4.3           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 17       | 4.3           |
| (1,30)  | 1:A:27:ASP:N  | 1:A:27:ASP:CA  | 1:A:27:ASP:C   | 1:A:28:ARG:N  | 10       | 4.3           |

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| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Model ID | Violation (°) |
|---------|---------------|----------------|----------------|---------------|----------|---------------|
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 19       | 4.3           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 17       | 4.2           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 2        | 4.2           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 7        | 4.2           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 3        | 4.2           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 16       | 4.2           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 8        | 4.2           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 1        | 4.1           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 14       | 4.1           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 16       | 4.1           |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 8        | 4.1           |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 19       | 4.1           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 6        | 4.0           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 20       | 4.0           |
| (1,28)  | 1:A:26:VAL:N  | 1:A:26:VAL:CA  | 1:A:26:VAL:C   | 1:A:27:ASP:N  | 15       | 4.0           |
| (1,170) | 1:A:114:VAL:N | 1:A:114:VAL:CA | 1:A:114:VAL:C  | 1:A:115:GLN:N | 19       | 4.0           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 15       | 4.0           |
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 7        | 4.0           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 7        | 4.0           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 11       | 3.9           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 15       | 3.9           |
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 1        | 3.9           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 17       | 3.9           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 12       | 3.9           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 17       | 3.9           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 14       | 3.9           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 4        | 3.8           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 14       | 3.8           |
| (1,194) | 1:A:127:ILE:N | 1:A:127:ILE:CA | 1:A:127:ILE:C  | 1:A:128:LEU:N | 20       | 3.8           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 1        | 3.8           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 3        | 3.8           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 19       | 3.8           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 5        | 3.8           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 2        | 3.8           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 12       | 3.8           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 20       | 3.7           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 14       | 3.7           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 2        | 3.7           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 18       | 3.7           |
| (1,105) | 1:A:75:ASN:C  | 1:A:76:ARG:N   | 1:A:76:ARG:CA  | 1:A:76:ARG:C  | 17       | 3.7           |
| (1,101) | 1:A:72:PHE:C  | 1:A:73:SER:N   | 1:A:73:SER:CA  | 1:A:73:SER:C  | 16       | 3.7           |
| (1,68)  | 1:A:51:PHE:N  | 1:A:51:PHE:CA  | 1:A:51:PHE:C   | 1:A:52:LEU:N  | 19       | 3.6           |
| (1,67)  | 1:A:50:ILE:C  | 1:A:51:PHE:N   | 1:A:51:PHE:CA  | 1:A:51:PHE:C  | 18       | 3.6           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 5        | 3.6           |
| (1,191) | 1:A:125:GLU:C | 1:A:126:LYS:N  | 1:A:126:LYS:CA | 1:A:126:LYS:C | 16       | 3.6           |
| (1,8)   | 1:A:6:ILE:N   | 1:A:6:ILE:CA   | 1:A:6:ILE:C    | 1:A:7:ILE:N   | 19       | 3.5           |
| (1,62)  | 1:A:46:GLY:N  | 1:A:46:GLY:CA  | 1:A:46:GLY:C   | 1:A:47:VAL:N  | 6        | 3.5           |
| (1,62)  | 1:A:46:GLY:N  | 1:A:46:GLY:CA  | 1:A:46:GLY:C   | 1:A:47:VAL:N  | 10       | 3.5           |
| (1,62)  | 1:A:46:GLY:N  | 1:A:46:GLY:CA  | 1:A:46:GLY:C   | 1:A:47:VAL:N  | 14       | 3.5           |
| (1,61)  | 1:A:45:LEU:C  | 1:A:46:GLY:N   | 1:A:46:GLY:CA  | 1:A:46:GLY:C  | 13       | 3.5           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 10       | 3.5           |

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| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Model ID | Violation (°) |
|---------|---------------|----------------|----------------|---------------|----------|---------------|
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 12       | 3.5           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 3        | 3.5           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 19       | 3.5           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 17       | 3.5           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 1        | 3.5           |
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 15       | 3.5           |
| (1,106) | 1:A:76:ARG:N  | 1:A:76:ARG:CA  | 1:A:76:ARG:C   | 1:A:77:ASP:N  | 6        | 3.5           |
| (1,101) | 1:A:72:PHE:C  | 1:A:73:SER:N   | 1:A:73:SER:CA  | 1:A:73:SER:C  | 14       | 3.5           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 18       | 3.4           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 7        | 3.4           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 3        | 3.3           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 1        | 3.3           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 6        | 3.3           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 4        | 3.3           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 1        | 3.3           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 5        | 3.3           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 12       | 3.3           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 2        | 3.3           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 11       | 3.3           |
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 20       | 3.3           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 14       | 3.3           |
| (1,170) | 1:A:114:VAL:N | 1:A:114:VAL:CA | 1:A:114:VAL:C  | 1:A:115:GLN:N | 2        | 3.3           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 9        | 3.3           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 16       | 3.3           |
| (1,97)  | 1:A:70:ILE:C  | 1:A:71:VAL:N   | 1:A:71:VAL:CA  | 1:A:71:VAL:C  | 16       | 3.2           |
| (1,2)   | 1:A:3:ILE:N   | 1:A:3:ILE:CA   | 1:A:3:ILE:C    | 1:A:4:ILE:N   | 3        | 3.2           |
| (1,192) | 1:A:126:LYS:N | 1:A:126:LYS:CA | 1:A:126:LYS:C  | 1:A:127:ILE:N | 2        | 3.2           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 6        | 3.2           |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 18       | 3.2           |
| (1,105) | 1:A:75:ASN:C  | 1:A:76:ARG:N   | 1:A:76:ARG:CA  | 1:A:76:ARG:C  | 1        | 3.2           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 6        | 3.2           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 18       | 3.2           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 15       | 3.2           |
| (1,95)  | 1:A:69:ASP:C  | 1:A:70:ILE:N   | 1:A:70:ILE:CA  | 1:A:70:ILE:C  | 1        | 3.1           |
| (1,76)  | 1:A:57:GLU:N  | 1:A:57:GLU:CA  | 1:A:57:GLU:C   | 1:A:58:LEU:N  | 7        | 3.1           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 16       | 3.1           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 4        | 3.1           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 5        | 3.1           |
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 7        | 3.1           |
| (1,190) | 1:A:125:GLU:N | 1:A:125:GLU:CA | 1:A:125:GLU:C  | 1:A:126:LYS:N | 8        | 3.1           |
| (1,159) | 1:A:107:SER:C | 1:A:108:ASP:N  | 1:A:108:ASP:CA | 1:A:108:ASP:C | 2        | 3.1           |
| (1,125) | 1:A:87:LYS:C  | 1:A:88:ASN:N   | 1:A:88:ASN:CA  | 1:A:88:ASN:C  | 14       | 3.1           |
| (1,8)   | 1:A:6:ILE:N   | 1:A:6:ILE:CA   | 1:A:6:ILE:C    | 1:A:7:ILE:N   | 5        | 3.0           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 20       | 3.0           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 8        | 3.0           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 14       | 3.0           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 6        | 2.9           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 16       | 2.9           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 12       | 2.9           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 12       | 2.9           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 16       | 2.9           |

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| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Model ID | Violation (°) |
|---------|---------------|----------------|----------------|---------------|----------|---------------|
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 18       | 2.9           |
| (1,30)  | 1:A:27:ASP:N  | 1:A:27:ASP:CA  | 1:A:27:ASP:C   | 1:A:28:ARG:N  | 20       | 2.9           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 11       | 2.9           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 19       | 2.9           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 7        | 2.9           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 4        | 2.9           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 12       | 2.9           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 17       | 2.9           |
| (1,1)   | 1:A:2:ARG:C   | 1:A:3:ILE:N    | 1:A:3:ILE:CA   | 1:A:3:ILE:C   | 1        | 2.9           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 10       | 2.8           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 19       | 2.8           |
| (1,31)  | 1:A:28:ARG:C  | 1:A:29:ILE:N   | 1:A:29:ILE:CA  | 1:A:29:ILE:C  | 15       | 2.8           |
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 6        | 2.8           |
| (1,17)  | 1:A:19:GLU:C  | 1:A:20:ILE:N   | 1:A:20:ILE:CA  | 1:A:20:ILE:C  | 16       | 2.8           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 18       | 2.8           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 1        | 2.8           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 15       | 2.8           |
| (1,123) | 1:A:84:ARG:C  | 1:A:85:LYS:N   | 1:A:85:LYS:CA  | 1:A:85:LYS:C  | 1        | 2.8           |
| (1,75)  | 1:A:56:ASP:C  | 1:A:57:GLU:N   | 1:A:57:GLU:CA  | 1:A:57:GLU:C  | 6        | 2.7           |
| (1,62)  | 1:A:46:GLY:N  | 1:A:46:GLY:CA  | 1:A:46:GLY:C   | 1:A:47:VAL:N  | 18       | 2.7           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 2        | 2.7           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 9        | 2.7           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 15       | 2.7           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 19       | 2.7           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 15       | 2.7           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 20       | 2.7           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 4        | 2.7           |
| (1,30)  | 1:A:27:ASP:N  | 1:A:27:ASP:CA  | 1:A:27:ASP:C   | 1:A:28:ARG:N  | 2        | 2.7           |
| (1,30)  | 1:A:27:ASP:N  | 1:A:27:ASP:CA  | 1:A:27:ASP:C   | 1:A:28:ARG:N  | 5        | 2.7           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 8        | 2.7           |
| (1,132) | 1:A:91:ILE:N  | 1:A:91:ILE:CA  | 1:A:91:ILE:C   | 1:A:92:LEU:N  | 2        | 2.7           |
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 8        | 2.7           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 9        | 2.6           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 7        | 2.6           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 16       | 2.6           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 18       | 2.6           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 19       | 2.6           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 7        | 2.6           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 18       | 2.6           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 10       | 2.6           |
| (1,126) | 1:A:88:ASN:N  | 1:A:88:ASN:CA  | 1:A:88:ASN:C   | 1:A:89:ILE:N  | 15       | 2.6           |
| (1,116) | 1:A:81:LYS:N  | 1:A:81:LYS:CA  | 1:A:81:LYS:C   | 1:A:82:ILE:N  | 17       | 2.6           |
| (1,107) | 1:A:76:ARG:C  | 1:A:77:ASP:N   | 1:A:77:ASP:CA  | 1:A:77:ASP:C  | 13       | 2.6           |
| (1,8)   | 1:A:6:ILE:N   | 1:A:6:ILE:CA   | 1:A:6:ILE:C    | 1:A:7:ILE:N   | 1        | 2.5           |
| (1,67)  | 1:A:50:ILE:C  | 1:A:51:PHE:N   | 1:A:51:PHE:CA  | 1:A:51:PHE:C  | 4        | 2.5           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 5        | 2.5           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 4        | 2.5           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 17       | 2.5           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 3        | 2.5           |
| (1,20)  | 1:A:21:LEU:N  | 1:A:21:LEU:CA  | 1:A:21:LEU:C   | 1:A:22:LYS:N  | 16       | 2.5           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 2        | 2.5           |

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| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Model ID | Violation (°) |
|---------|---------------|----------------|----------------|---------------|----------|---------------|
| (1,154) | 1:A:104:LYS:N | 1:A:104:LYS:CA | 1:A:104:LYS:C  | 1:A:105:GLU:N | 17       | 2.5           |
| (1,101) | 1:A:72:PHE:C  | 1:A:73:SER:N   | 1:A:73:SER:CA  | 1:A:73:SER:C  | 1        | 2.5           |
| (1,97)  | 1:A:70:ILE:C  | 1:A:71:VAL:N   | 1:A:71:VAL:CA  | 1:A:71:VAL:C  | 3        | 2.4           |
| (1,8)   | 1:A:6:ILE:N   | 1:A:6:ILE:CA   | 1:A:6:ILE:C    | 1:A:7:ILE:N   | 7        | 2.4           |
| (1,75)  | 1:A:56:ASP:C  | 1:A:57:GLU:N   | 1:A:57:GLU:CA  | 1:A:57:GLU:C  | 13       | 2.4           |
| (1,62)  | 1:A:46:GLY:N  | 1:A:46:GLY:CA  | 1:A:46:GLY:C   | 1:A:47:VAL:N  | 16       | 2.4           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 6        | 2.4           |
| (1,43)  | 1:A:36:LYS:C  | 1:A:37:GLN:N   | 1:A:37:GLN:CA  | 1:A:37:GLN:C  | 12       | 2.4           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 10       | 2.4           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 10       | 2.4           |
| (1,160) | 1:A:108:ASP:N | 1:A:108:ASP:CA | 1:A:108:ASP:C  | 1:A:109:ALA:N | 4        | 2.4           |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 3        | 2.4           |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 20       | 2.4           |
| (1,101) | 1:A:72:PHE:C  | 1:A:73:SER:N   | 1:A:73:SER:CA  | 1:A:73:SER:C  | 8        | 2.4           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 19       | 2.3           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 1        | 2.3           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 11       | 2.3           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 13       | 2.3           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 17       | 2.3           |
| (1,24)  | 1:A:23:GLU:N  | 1:A:23:GLU:CA  | 1:A:23:GLU:C   | 1:A:24:ILE:N  | 16       | 2.3           |
| (1,194) | 1:A:127:ILE:N | 1:A:127:ILE:CA | 1:A:127:ILE:C  | 1:A:128:LEU:N | 1        | 2.3           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 17       | 2.3           |
| (1,123) | 1:A:84:ARG:C  | 1:A:85:LYS:N   | 1:A:85:LYS:CA  | 1:A:85:LYS:C  | 7        | 2.3           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 9        | 2.3           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 9        | 2.3           |
| (1,97)  | 1:A:70:ILE:C  | 1:A:71:VAL:N   | 1:A:71:VAL:CA  | 1:A:71:VAL:C  | 11       | 2.2           |
| (1,97)  | 1:A:70:ILE:C  | 1:A:71:VAL:N   | 1:A:71:VAL:CA  | 1:A:71:VAL:C  | 18       | 2.2           |
| (1,8)   | 1:A:6:ILE:N   | 1:A:6:ILE:CA   | 1:A:6:ILE:C    | 1:A:7:ILE:N   | 8        | 2.2           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 3        | 2.2           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 6        | 2.2           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 18       | 2.2           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 4        | 2.2           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 1        | 2.2           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 2        | 2.2           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 8        | 2.2           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 18       | 2.2           |
| (1,2)   | 1:A:3:ILE:N   | 1:A:3:ILE:CA   | 1:A:3:ILE:C    | 1:A:4:ILE:N   | 6        | 2.2           |
| (1,171) | 1:A:115:GLN:C | 1:A:116:THR:N  | 1:A:116:THR:CA | 1:A:116:THR:C | 19       | 2.2           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 13       | 2.2           |
| (1,124) | 1:A:85:LYS:N  | 1:A:85:LYS:CA  | 1:A:85:LYS:C   | 1:A:86:LEU:N  | 2        | 2.2           |
| (1,123) | 1:A:84:ARG:C  | 1:A:85:LYS:N   | 1:A:85:LYS:CA  | 1:A:85:LYS:C  | 10       | 2.2           |
| (1,123) | 1:A:84:ARG:C  | 1:A:85:LYS:N   | 1:A:85:LYS:CA  | 1:A:85:LYS:C  | 15       | 2.2           |
| (1,123) | 1:A:84:ARG:C  | 1:A:85:LYS:N   | 1:A:85:LYS:CA  | 1:A:85:LYS:C  | 20       | 2.2           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 15       | 2.2           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 1        | 2.2           |
| (1,10)  | 1:A:7:ILE:N   | 1:A:7:ILE:CA   | 1:A:7:ILE:C    | 1:A:8:VAL:N   | 10       | 2.2           |
| (1,63)  | 1:A:47:VAL:C  | 1:A:48:ASP:N   | 1:A:48:ASP:CA  | 1:A:48:ASP:C  | 2        | 2.1           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 18       | 2.1           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 8        | 2.1           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 14       | 2.1           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 19       | 2.1           |

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| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Model ID | Violation (°) |
|---------|---------------|----------------|----------------|---------------|----------|---------------|
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 15       | 2.1           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 17       | 2.1           |
| (1,170) | 1:A:114:VAL:N | 1:A:114:VAL:CA | 1:A:114:VAL:C  | 1:A:115:GLN:N | 12       | 2.1           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 12       | 2.1           |
| (1,154) | 1:A:104:LYS:N | 1:A:104:LYS:CA | 1:A:104:LYS:C  | 1:A:105:GLU:N | 18       | 2.1           |
| (1,132) | 1:A:91:ILE:N  | 1:A:91:ILE:CA  | 1:A:91:ILE:C   | 1:A:92:LEU:N  | 15       | 2.1           |
| (1,125) | 1:A:87:LYS:C  | 1:A:88:ASN:N   | 1:A:88:ASN:CA  | 1:A:88:ASN:C  | 6        | 2.1           |
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 5        | 2.1           |
| (1,106) | 1:A:76:ARG:N  | 1:A:76:ARG:CA  | 1:A:76:ARG:C   | 1:A:77:ASP:N  | 16       | 2.1           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 19       | 2.1           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 20       | 2.1           |
| (1,1)   | 1:A:2:ARG:C   | 1:A:3:ILE:N    | 1:A:3:ILE:CA   | 1:A:3:ILE:C   | 8        | 2.1           |
| (1,97)  | 1:A:70:ILE:C  | 1:A:71:VAL:N   | 1:A:71:VAL:CA  | 1:A:71:VAL:C  | 8        | 2.0           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 10       | 2.0           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 2        | 2.0           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 9        | 2.0           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 7        | 2.0           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 19       | 2.0           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 16       | 2.0           |
| (1,154) | 1:A:104:LYS:N | 1:A:104:LYS:CA | 1:A:104:LYS:C  | 1:A:105:GLU:N | 7        | 2.0           |
| (1,106) | 1:A:76:ARG:N  | 1:A:76:ARG:CA  | 1:A:76:ARG:C   | 1:A:77:ASP:N  | 1        | 2.0           |
| (1,76)  | 1:A:57:GLU:N  | 1:A:57:GLU:CA  | 1:A:57:GLU:C   | 1:A:58:LEU:N  | 1        | 1.9           |
| (1,67)  | 1:A:50:ILE:C  | 1:A:51:PHE:N   | 1:A:51:PHE:CA  | 1:A:51:PHE:C  | 14       | 1.9           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 11       | 1.9           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 8        | 1.9           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 2        | 1.9           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 7        | 1.9           |
| (1,162) | 1:A:109:ALA:N | 1:A:109:ALA:CA | 1:A:109:ALA:C  | 1:A:110:ARG:N | 20       | 1.9           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 7        | 1.9           |
| (1,154) | 1:A:104:LYS:N | 1:A:104:LYS:CA | 1:A:104:LYS:C  | 1:A:105:GLU:N | 5        | 1.9           |
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 11       | 1.9           |
| (1,105) | 1:A:75:ASN:C  | 1:A:76:ARG:N   | 1:A:76:ARG:CA  | 1:A:76:ARG:C  | 3        | 1.9           |
| (1,1)   | 1:A:2:ARG:C   | 1:A:3:ILE:N    | 1:A:3:ILE:CA   | 1:A:3:ILE:C   | 16       | 1.9           |
| (1,97)  | 1:A:70:ILE:C  | 1:A:71:VAL:N   | 1:A:71:VAL:CA  | 1:A:71:VAL:C  | 1        | 1.8           |
| (1,68)  | 1:A:51:PHE:N  | 1:A:51:PHE:CA  | 1:A:51:PHE:C   | 1:A:52:LEU:N  | 20       | 1.8           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 4        | 1.8           |
| (1,44)  | 1:A:37:GLN:N  | 1:A:37:GLN:CA  | 1:A:37:GLN:C   | 1:A:38:LEU:N  | 6        | 1.8           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 19       | 1.8           |
| (1,163) | 1:A:110:ARG:C | 1:A:111:VAL:N  | 1:A:111:VAL:CA | 1:A:111:VAL:C | 3        | 1.8           |
| (1,163) | 1:A:110:ARG:C | 1:A:111:VAL:N  | 1:A:111:VAL:CA | 1:A:111:VAL:C | 14       | 1.8           |
| (1,160) | 1:A:108:ASP:N | 1:A:108:ASP:CA | 1:A:108:ASP:C  | 1:A:109:ALA:N | 15       | 1.8           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 1        | 1.8           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 19       | 1.8           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 8        | 1.8           |
| (1,76)  | 1:A:57:GLU:N  | 1:A:57:GLU:CA  | 1:A:57:GLU:C   | 1:A:58:LEU:N  | 9        | 1.7           |
| (1,75)  | 1:A:56:ASP:C  | 1:A:57:GLU:N   | 1:A:57:GLU:CA  | 1:A:57:GLU:C  | 7        | 1.7           |
| (1,62)  | 1:A:46:GLY:N  | 1:A:46:GLY:CA  | 1:A:46:GLY:C   | 1:A:47:VAL:N  | 12       | 1.7           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 9        | 1.7           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 19       | 1.7           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 2        | 1.7           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 16       | 1.7           |

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| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Model ID | Violation (°) |
|---------|---------------|----------------|----------------|---------------|----------|---------------|
| (1,31)  | 1:A:28:ARG:C  | 1:A:29:ILE:N   | 1:A:29:ILE:CA  | 1:A:29:ILE:C  | 9        | 1.7           |
| (1,171) | 1:A:115:GLN:C | 1:A:116:THR:N  | 1:A:116:THR:CA | 1:A:116:THR:C | 8        | 1.7           |
| (1,171) | 1:A:115:GLN:C | 1:A:116:THR:N  | 1:A:116:THR:CA | 1:A:116:THR:C | 10       | 1.7           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 5        | 1.7           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 7        | 1.7           |
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 14       | 1.7           |
| (1,106) | 1:A:76:ARG:N  | 1:A:76:ARG:CA  | 1:A:76:ARG:C   | 1:A:77:ASP:N  | 17       | 1.7           |
| (1,69)  | 1:A:51:PHE:C  | 1:A:52:LEU:N   | 1:A:52:LEU:CA  | 1:A:52:LEU:C  | 5        | 1.6           |
| (1,60)  | 1:A:45:LEU:N  | 1:A:45:LEU:CA  | 1:A:45:LEU:C   | 1:A:46:GLY:N  | 18       | 1.6           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 10       | 1.6           |
| (1,23)  | 1:A:22:LYS:C  | 1:A:23:GLU:N   | 1:A:23:GLU:CA  | 1:A:23:GLU:C  | 7        | 1.6           |
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 3        | 1.6           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 3        | 1.6           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 6        | 1.6           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 5        | 1.6           |
| (1,10)  | 1:A:7:ILE:N   | 1:A:7:ILE:CA   | 1:A:7:ILE:C    | 1:A:8:VAL:N   | 15       | 1.6           |
| (1,75)  | 1:A:56:ASP:C  | 1:A:57:GLU:N   | 1:A:57:GLU:CA  | 1:A:57:GLU:C  | 8        | 1.5           |
| (1,64)  | 1:A:48:ASP:N  | 1:A:48:ASP:CA  | 1:A:48:ASP:C   | 1:A:49:ARG:N  | 12       | 1.5           |
| (1,6)   | 1:A:5:VAL:N   | 1:A:5:VAL:CA   | 1:A:5:VAL:C    | 1:A:6:ILE:N   | 8        | 1.5           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 4        | 1.5           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 5        | 1.5           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 20       | 1.5           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 14       | 1.5           |
| (1,30)  | 1:A:27:ASP:N  | 1:A:27:ASP:CA  | 1:A:27:ASP:C   | 1:A:28:ARG:N  | 1        | 1.5           |
| (1,3)   | 1:A:3:ILE:C   | 1:A:4:ILE:N    | 1:A:4:ILE:CA   | 1:A:4:ILE:C   | 8        | 1.5           |
| (1,191) | 1:A:125:GLU:C | 1:A:126:LYS:N  | 1:A:126:LYS:CA | 1:A:126:LYS:C | 11       | 1.5           |
| (1,167) | 1:A:112:PHE:C | 1:A:113:ASN:N  | 1:A:113:ASN:CA | 1:A:113:ASN:C | 9        | 1.5           |
| (1,162) | 1:A:109:ALA:N | 1:A:109:ALA:CA | 1:A:109:ALA:C  | 1:A:110:ARG:N | 12       | 1.5           |
| (1,160) | 1:A:108:ASP:N | 1:A:108:ASP:CA | 1:A:108:ASP:C  | 1:A:109:ALA:N | 17       | 1.5           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 4        | 1.5           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 17       | 1.5           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 13       | 1.5           |
| (1,123) | 1:A:84:ARG:C  | 1:A:85:LYS:N   | 1:A:85:LYS:CA  | 1:A:85:LYS:C  | 3        | 1.5           |
| (1,123) | 1:A:84:ARG:C  | 1:A:85:LYS:N   | 1:A:85:LYS:CA  | 1:A:85:LYS:C  | 19       | 1.5           |
| (1,12)  | 1:A:8:VAL:N   | 1:A:8:VAL:CA   | 1:A:8:VAL:C    | 1:A:9:THR:N   | 17       | 1.5           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 8        | 1.5           |
| (1,100) | 1:A:72:PHE:N  | 1:A:72:PHE:CA  | 1:A:72:PHE:C   | 1:A:73:SER:N  | 18       | 1.5           |
| (1,10)  | 1:A:7:ILE:N   | 1:A:7:ILE:CA   | 1:A:7:ILE:C    | 1:A:8:VAL:N   | 5        | 1.5           |
| (1,97)  | 1:A:70:ILE:C  | 1:A:71:VAL:N   | 1:A:71:VAL:CA  | 1:A:71:VAL:C  | 17       | 1.4           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 11       | 1.4           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 14       | 1.4           |
| (1,5)   | 1:A:4:ILE:C   | 1:A:5:VAL:N    | 1:A:5:VAL:CA   | 1:A:5:VAL:C   | 15       | 1.4           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 14       | 1.4           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 17       | 1.4           |
| (1,35)  | 1:A:30:VAL:C  | 1:A:31:ILE:N   | 1:A:31:ILE:CA  | 1:A:31:ILE:C  | 9        | 1.4           |
| (1,32)  | 1:A:29:ILE:N  | 1:A:29:ILE:CA  | 1:A:29:ILE:C   | 1:A:30:VAL:N  | 1        | 1.4           |
| (1,3)   | 1:A:3:ILE:C   | 1:A:4:ILE:N    | 1:A:4:ILE:CA   | 1:A:4:ILE:C   | 19       | 1.4           |
| (1,2)   | 1:A:3:ILE:N   | 1:A:3:ILE:CA   | 1:A:3:ILE:C    | 1:A:4:ILE:N   | 17       | 1.4           |
| (1,170) | 1:A:114:VAL:N | 1:A:114:VAL:CA | 1:A:114:VAL:C  | 1:A:115:GLN:N | 8        | 1.4           |
| (1,162) | 1:A:109:ALA:N | 1:A:109:ALA:CA | 1:A:109:ALA:C  | 1:A:110:ARG:N | 3        | 1.4           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 4        | 1.4           |

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| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Model ID | Violation (°) |
|---------|---------------|----------------|----------------|---------------|----------|---------------|
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 5        | 1.4           |
| (1,128) | 1:A:89:ILE:N  | 1:A:89:ILE:CA  | 1:A:89:ILE:C   | 1:A:90:ILE:N  | 15       | 1.4           |
| (1,123) | 1:A:84:ARG:C  | 1:A:85:LYS:N   | 1:A:85:LYS:CA  | 1:A:85:LYS:C  | 9        | 1.4           |
| (1,106) | 1:A:76:ARG:N  | 1:A:76:ARG:CA  | 1:A:76:ARG:C   | 1:A:77:ASP:N  | 15       | 1.4           |
| (1,104) | 1:A:74:GLU:N  | 1:A:74:GLU:CA  | 1:A:74:GLU:C   | 1:A:75:ASN:N  | 7        | 1.4           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 11       | 1.4           |
| (1,8)   | 1:A:6:ILE:N   | 1:A:6:ILE:CA   | 1:A:6:ILE:C    | 1:A:7:ILE:N   | 2        | 1.3           |
| (1,8)   | 1:A:6:ILE:N   | 1:A:6:ILE:CA   | 1:A:6:ILE:C    | 1:A:7:ILE:N   | 16       | 1.3           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 10       | 1.3           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 17       | 1.3           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 5        | 1.3           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 6        | 1.3           |
| (1,39)  | 1:A:32:ILE:C  | 1:A:33:THR:N   | 1:A:33:THR:CA  | 1:A:33:THR:C  | 16       | 1.3           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 6        | 1.3           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 16       | 1.3           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 1        | 1.3           |
| (1,192) | 1:A:126:LYS:N | 1:A:126:LYS:CA | 1:A:126:LYS:C  | 1:A:127:ILE:N | 10       | 1.3           |
| (1,174) | 1:A:117:LYS:N | 1:A:117:LYS:CA | 1:A:117:LYS:C  | 1:A:118:GLN:N | 18       | 1.3           |
| (1,171) | 1:A:115:GLN:C | 1:A:116:THR:N  | 1:A:116:THR:CA | 1:A:116:THR:C | 16       | 1.3           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 4        | 1.3           |
| (1,163) | 1:A:110:ARG:C | 1:A:111:VAL:N  | 1:A:111:VAL:CA | 1:A:111:VAL:C | 6        | 1.3           |
| (1,160) | 1:A:108:ASP:N | 1:A:108:ASP:CA | 1:A:108:ASP:C  | 1:A:109:ALA:N | 16       | 1.3           |
| (1,156) | 1:A:105:GLU:N | 1:A:105:GLU:CA | 1:A:105:GLU:C  | 1:A:106:ALA:N | 7        | 1.3           |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 6        | 1.3           |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 16       | 1.3           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 20       | 1.3           |
| (1,102) | 1:A:73:SER:N  | 1:A:73:SER:CA  | 1:A:73:SER:C   | 1:A:74:GLU:N  | 14       | 1.3           |
| (1,101) | 1:A:72:PHE:C  | 1:A:73:SER:N   | 1:A:73:SER:CA  | 1:A:73:SER:C  | 7        | 1.3           |
| (1,10)  | 1:A:7:ILE:N   | 1:A:7:ILE:CA   | 1:A:7:ILE:C    | 1:A:8:VAL:N   | 7        | 1.3           |
| (1,84)  | 1:A:61:GLU:N  | 1:A:61:GLU:CA  | 1:A:61:GLU:C   | 1:A:62:ILE:N  | 16       | 1.2           |
| (1,78)  | 1:A:58:LEU:N  | 1:A:58:LEU:CA  | 1:A:58:LEU:C   | 1:A:59:ILE:N  | 4        | 1.2           |
| (1,78)  | 1:A:58:LEU:N  | 1:A:58:LEU:CA  | 1:A:58:LEU:C   | 1:A:59:ILE:N  | 13       | 1.2           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 7        | 1.2           |
| (1,71)  | 1:A:52:LEU:C  | 1:A:53:LEU:N   | 1:A:53:LEU:CA  | 1:A:53:LEU:C  | 13       | 1.2           |
| (1,46)  | 1:A:38:LEU:N  | 1:A:38:LEU:CA  | 1:A:38:LEU:C   | 1:A:39:ALA:N  | 12       | 1.2           |
| (1,45)  | 1:A:37:GLN:C  | 1:A:38:LEU:N   | 1:A:38:LEU:CA  | 1:A:38:LEU:C  | 10       | 1.2           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 3        | 1.2           |
| (1,36)  | 1:A:31:ILE:N  | 1:A:31:ILE:CA  | 1:A:31:ILE:C   | 1:A:32:ILE:N  | 5        | 1.2           |
| (1,25)  | 1:A:23:GLU:C  | 1:A:24:ILE:N   | 1:A:24:ILE:CA  | 1:A:24:ILE:C  | 16       | 1.2           |
| (1,170) | 1:A:114:VAL:N | 1:A:114:VAL:CA | 1:A:114:VAL:C  | 1:A:115:GLN:N | 11       | 1.2           |
| (1,164) | 1:A:111:VAL:N | 1:A:111:VAL:CA | 1:A:111:VAL:C  | 1:A:112:PHE:N | 11       | 1.2           |
| (1,162) | 1:A:109:ALA:N | 1:A:109:ALA:CA | 1:A:109:ALA:C  | 1:A:110:ARG:N | 7        | 1.2           |
| (1,157) | 1:A:105:GLU:C | 1:A:106:ALA:N  | 1:A:106:ALA:CA | 1:A:106:ALA:C | 5        | 1.2           |
| (1,154) | 1:A:104:LYS:N | 1:A:104:LYS:CA | 1:A:104:LYS:C  | 1:A:105:GLU:N | 4        | 1.2           |
| (1,153) | 1:A:103:GLN:C | 1:A:104:LYS:N  | 1:A:104:LYS:CA | 1:A:104:LYS:C | 20       | 1.2           |
| (1,141) | 1:A:97:GLN:C  | 1:A:98:LEU:N   | 1:A:98:LEU:CA  | 1:A:98:LEU:C  | 1        | 1.2           |
| (1,132) | 1:A:91:ILE:N  | 1:A:91:ILE:CA  | 1:A:91:ILE:C   | 1:A:92:LEU:N  | 20       | 1.2           |
| (1,11)  | 1:A:7:ILE:C   | 1:A:8:VAL:N    | 1:A:8:VAL:CA   | 1:A:8:VAL:C   | 11       | 1.2           |
| (1,106) | 1:A:76:ARG:N  | 1:A:76:ARG:CA  | 1:A:76:ARG:C   | 1:A:77:ASP:N  | 2        | 1.2           |
| (1,103) | 1:A:73:SER:C  | 1:A:74:GLU:N   | 1:A:74:GLU:CA  | 1:A:74:GLU:C  | 14       | 1.2           |
| (1,101) | 1:A:72:PHE:C  | 1:A:73:SER:N   | 1:A:73:SER:CA  | 1:A:73:SER:C  | 6        | 1.2           |

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| Key     | Atom-1        | Atom-2         | Atom-3         | Atom-4        | Model ID | Violation (°) |
|---------|---------------|----------------|----------------|---------------|----------|---------------|
| (1,101) | 1:A:72:PHE:C  | 1:A:73:SER:N   | 1:A:73:SER:CA  | 1:A:73:SER:C  | 10       | 1.2           |
| (1,75)  | 1:A:56:ASP:C  | 1:A:57:GLU:N   | 1:A:57:GLU:CA  | 1:A:57:GLU:C  | 1        | 1.1           |
| (1,75)  | 1:A:56:ASP:C  | 1:A:57:GLU:N   | 1:A:57:GLU:CA  | 1:A:57:GLU:C  | 12       | 1.1           |
| (1,62)  | 1:A:46:GLY:N  | 1:A:46:GLY:CA  | 1:A:46:GLY:C   | 1:A:47:VAL:N  | 11       | 1.1           |
| (1,6)   | 1:A:5:VAL:N   | 1:A:5:VAL:CA   | 1:A:5:VAL:C    | 1:A:6:ILE:N   | 2        | 1.1           |
| (1,18)  | 1:A:20:ILE:N  | 1:A:20:ILE:CA  | 1:A:20:ILE:C   | 1:A:21:LEU:N  | 18       | 1.1           |
| (1,165) | 1:A:111:VAL:C | 1:A:112:PHE:N  | 1:A:112:PHE:CA | 1:A:112:PHE:C | 15       | 1.1           |
| (1,160) | 1:A:108:ASP:N | 1:A:108:ASP:CA | 1:A:108:ASP:C  | 1:A:109:ALA:N | 11       | 1.1           |
| (1,154) | 1:A:104:LYS:N | 1:A:104:LYS:CA | 1:A:104:LYS:C  | 1:A:105:GLU:N | 20       | 1.1           |
| (1,153) | 1:A:103:GLN:C | 1:A:104:LYS:N  | 1:A:104:LYS:CA | 1:A:104:LYS:C | 12       | 1.1           |
| (1,105) | 1:A:75:ASN:C  | 1:A:76:ARG:N   | 1:A:76:ARG:CA  | 1:A:76:ARG:C  | 2        | 1.1           |
| (1,1)   | 1:A:2:ARG:C   | 1:A:3:ILE:N    | 1:A:3:ILE:CA   | 1:A:3:ILE:C   | 13       | 1.1           |