



## Full wwPDB EM Validation Report ⓘ

Oct 28, 2024 – 02:13 PM JST

PDB ID : 8WHW  
EMDB ID : EMD-37550  
Title : Spike Trimer of BA.2.86 with single RBD up  
Authors : Yue, C.; Liu, P.  
Deposited on : 2023-09-23  
Resolution : 3.85 Å (reported)

This is a Full wwPDB EM 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/EMValidationReportHelp>

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:

EMDB validation analysis : **FAILED**  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : **FAILED**  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

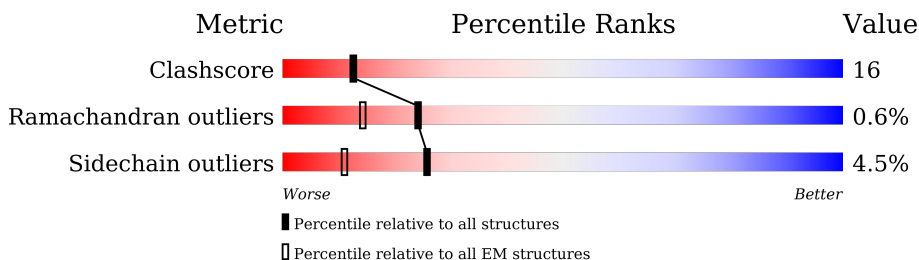
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*





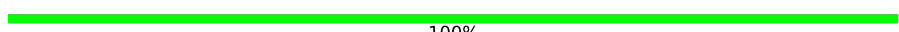
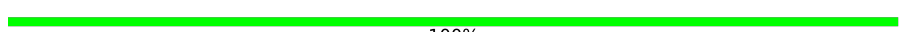



The reported resolution of this entry is 3.85 Å.

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 (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. 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	1206	
1	B	1206	
1	C	1206	
2	D	2	
2	E	2	
2	F	2	
2	G	2	
2	H	2	
2	I	2	

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Mol	Chain	Length	Quality of chain
2	J	2	 100%
2	K	2	 100%
2	L	2	 100%
2	M	2	 100%
2	N	2	 100%
2	O	2	 100%
2	P	2	 100%
2	Q	2	 100%
2	R	2	 100%
2	S	2	 100%
2	T	2	 100%

## 2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 25807 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1063	8316	5322	1383	1573	38	0	0
1	B	1063	8316	5322	1383	1573	38	0	0
1	C	1063	8316	5322	1383	1573	38	0	0

There are 273 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	ALA	-	expression tag	UNP P0DTC2
A	-1	THR	-	expression tag	UNP P0DTC2
A	0	MET	-	expression tag	UNP P0DTC2
A	1	PHE	-	expression tag	UNP P0DTC2
A	2	VAL	-	expression tag	UNP P0DTC2
A	3	PHE	-	expression tag	UNP P0DTC2
A	4	LEU	-	expression tag	UNP P0DTC2
A	5	VAL	-	expression tag	UNP P0DTC2
A	6	LEU	-	expression tag	UNP P0DTC2
A	7	LEU	-	expression tag	UNP P0DTC2
A	8	PRO	-	expression tag	UNP P0DTC2
A	9	LEU	-	expression tag	UNP P0DTC2
A	10	VAL	-	expression tag	UNP P0DTC2
A	11	SER	-	expression tag	UNP P0DTC2
A	12	SER	-	expression tag	UNP P0DTC2
A	13	GLN	-	expression tag	UNP P0DTC2
A	14	CYS	-	expression tag	UNP P0DTC2
A	15	VAL	-	expression tag	UNP P0DTC2
A	16	MET	-	expression tag	UNP P0DTC2
A	17	PRO	-	expression tag	UNP P0DTC2
A	18	LEU	-	expression tag	UNP P0DTC2
A	19	PHE	-	expression tag	UNP P0DTC2
A	20	ASN	-	expression tag	UNP P0DTC2
A	21	LEU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	22	ILE	-	expression tag	UNP P0DTC2
A	23	THR	-	expression tag	UNP P0DTC2
A	24	THR	-	expression tag	UNP P0DTC2
A	25	THR	-	expression tag	UNP P0DTC2
A	26	GLN	-	expression tag	UNP P0DTC2
A	27	SER	-	expression tag	UNP P0DTC2
A	50	LEU	SER	conflict	UNP P0DTC2
A	?	-	HIS	deletion	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	127	PHE	VAL	conflict	UNP P0DTC2
A	143	ASP	GLY	variant	UNP P0DTC2
A	?	-	TYR	deletion	UNP P0DTC2
A	157	SER	PHE	conflict	UNP P0DTC2
A	158	GLY	ARG	conflict	UNP P0DTC2
A	?	-	ASN	deletion	UNP P0DTC2
A	212	ILE	LEU	variant	UNP P0DTC2
A	213	GLY	VAL	variant	UNP P0DTC2
A	216	PHE	LEU	conflict	UNP P0DTC2
A	245	ASN	HIS	conflict	UNP P0DTC2
A	264	ASP	ALA	conflict	UNP P0DTC2
A	332	VAL	ILE	conflict	UNP P0DTC2
A	339	HIS	GLY	variant	UNP P0DTC2
A	356	THR	LYS	conflict	UNP P0DTC2
A	371	PHE	SER	variant	UNP P0DTC2
A	373	PRO	SER	variant	UNP P0DTC2
A	375	PHE	SER	variant	UNP P0DTC2
A	376	ALA	THR	variant	UNP P0DTC2
A	403	LYS	ARG	conflict	UNP P0DTC2
A	405	ASN	ASP	variant	UNP P0DTC2
A	408	SER	ARG	variant	UNP P0DTC2
A	417	ASN	LYS	variant	UNP P0DTC2
A	440	LYS	ASN	conflict	UNP P0DTC2
A	445	HIS	VAL	variant	UNP P0DTC2
A	446	SER	GLY	conflict	UNP P0DTC2
A	450	ASP	ASN	conflict	UNP P0DTC2
A	452	TRP	LEU	conflict	UNP P0DTC2
A	460	LYS	ASN	variant	UNP P0DTC2
A	477	ASN	SER	variant	UNP P0DTC2
A	478	LYS	THR	variant	UNP P0DTC2
A	481	LYS	ASN	conflict	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	484	LYS	GLU	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	486	PRO	PHE	variant	UNP P0DTC2
A	498	ARG	GLN	variant	UNP P0DTC2
A	501	TYR	ASN	variant	UNP P0DTC2
A	505	HIS	TYR	variant	UNP P0DTC2
A	554	LYS	GLU	conflict	UNP P0DTC2
A	570	VAL	ALA	conflict	UNP P0DTC2
A	614	GLY	ASP	variant	UNP P0DTC2
A	621	SER	PRO	conflict	UNP P0DTC2
A	655	TYR	HIS	variant	UNP P0DTC2
A	679	LYS	ASN	variant	UNP P0DTC2
A	681	ARG	PRO	variant	UNP P0DTC2
A	683	ALA	ARG	conflict	UNP P0DTC2
A	685	ALA	ARG	conflict	UNP P0DTC2
A	764	LYS	ASN	variant	UNP P0DTC2
A	796	TYR	ASP	variant	UNP P0DTC2
A	817	PRO	PHE	conflict	UNP P0DTC2
A	892	PRO	ALA	conflict	UNP P0DTC2
A	899	PRO	ALA	conflict	UNP P0DTC2
A	939	PHE	SER	conflict	UNP P0DTC2
A	942	PRO	ALA	conflict	UNP P0DTC2
A	954	HIS	GLN	variant	UNP P0DTC2
A	969	LYS	ASN	variant	UNP P0DTC2
A	986	PRO	LYS	variant	UNP P0DTC2
A	987	PRO	VAL	variant	UNP P0DTC2
A	1143	LEU	PRO	conflict	UNP P0DTC2
B	-2	ALA	-	expression tag	UNP P0DTC2
B	-1	THR	-	expression tag	UNP P0DTC2
B	0	MET	-	expression tag	UNP P0DTC2
B	1	PHE	-	expression tag	UNP P0DTC2
B	2	VAL	-	expression tag	UNP P0DTC2
B	3	PHE	-	expression tag	UNP P0DTC2
B	4	LEU	-	expression tag	UNP P0DTC2
B	5	VAL	-	expression tag	UNP P0DTC2
B	6	LEU	-	expression tag	UNP P0DTC2
B	7	LEU	-	expression tag	UNP P0DTC2
B	8	PRO	-	expression tag	UNP P0DTC2
B	9	LEU	-	expression tag	UNP P0DTC2
B	10	VAL	-	expression tag	UNP P0DTC2
B	11	SER	-	expression tag	UNP P0DTC2
B	12	SER	-	expression tag	UNP P0DTC2
B	13	GLN	-	expression tag	UNP P0DTC2
B	14	CYS	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	15	VAL	-	expression tag	UNP P0DTC2
B	16	MET	-	expression tag	UNP P0DTC2
B	17	PRO	-	expression tag	UNP P0DTC2
B	18	LEU	-	expression tag	UNP P0DTC2
B	19	PHE	-	expression tag	UNP P0DTC2
B	20	ASN	-	expression tag	UNP P0DTC2
B	21	LEU	-	expression tag	UNP P0DTC2
B	22	ILE	-	expression tag	UNP P0DTC2
B	23	THR	-	expression tag	UNP P0DTC2
B	24	THR	-	expression tag	UNP P0DTC2
B	25	THR	-	expression tag	UNP P0DTC2
B	26	GLN	-	expression tag	UNP P0DTC2
B	27	SER	-	expression tag	UNP P0DTC2
B	50	LEU	SER	conflict	UNP P0DTC2
B	?	-	HIS	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	127	PHE	VAL	conflict	UNP P0DTC2
B	143	ASP	GLY	variant	UNP P0DTC2
B	?	-	TYR	deletion	UNP P0DTC2
B	157	SER	PHE	conflict	UNP P0DTC2
B	158	GLY	ARG	conflict	UNP P0DTC2
B	?	-	ASN	deletion	UNP P0DTC2
B	212	ILE	LEU	variant	UNP P0DTC2
B	213	GLY	VAL	variant	UNP P0DTC2
B	216	PHE	LEU	conflict	UNP P0DTC2
B	245	ASN	HIS	conflict	UNP P0DTC2
B	264	ASP	ALA	conflict	UNP P0DTC2
B	332	VAL	ILE	conflict	UNP P0DTC2
B	339	HIS	GLY	variant	UNP P0DTC2
B	356	THR	LYS	conflict	UNP P0DTC2
B	371	PHE	SER	variant	UNP P0DTC2
B	373	PRO	SER	variant	UNP P0DTC2
B	375	PHE	SER	variant	UNP P0DTC2
B	376	ALA	THR	variant	UNP P0DTC2
B	403	LYS	ARG	conflict	UNP P0DTC2
B	405	ASN	ASP	variant	UNP P0DTC2
B	408	SER	ARG	variant	UNP P0DTC2
B	417	ASN	LYS	variant	UNP P0DTC2
B	440	LYS	ASN	conflict	UNP P0DTC2
B	445	HIS	VAL	variant	UNP P0DTC2
B	446	SER	GLY	conflict	UNP P0DTC2
B	450	ASP	ASN	conflict	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	452	TRP	LEU	conflict	UNP P0DTC2
B	460	LYS	ASN	variant	UNP P0DTC2
B	477	ASN	SER	variant	UNP P0DTC2
B	478	LYS	THR	variant	UNP P0DTC2
B	481	LYS	ASN	conflict	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	484	LYS	GLU	variant	UNP P0DTC2
B	486	PRO	PHE	variant	UNP P0DTC2
B	498	ARG	GLN	variant	UNP P0DTC2
B	501	TYR	ASN	variant	UNP P0DTC2
B	505	HIS	TYR	variant	UNP P0DTC2
B	554	LYS	GLU	conflict	UNP P0DTC2
B	570	VAL	ALA	conflict	UNP P0DTC2
B	614	GLY	ASP	variant	UNP P0DTC2
B	621	SER	PRO	conflict	UNP P0DTC2
B	655	TYR	HIS	variant	UNP P0DTC2
B	679	LYS	ASN	variant	UNP P0DTC2
B	681	ARG	PRO	variant	UNP P0DTC2
B	683	ALA	ARG	conflict	UNP P0DTC2
B	685	ALA	ARG	conflict	UNP P0DTC2
B	764	LYS	ASN	variant	UNP P0DTC2
B	796	TYR	ASP	variant	UNP P0DTC2
B	817	PRO	PHE	conflict	UNP P0DTC2
B	892	PRO	ALA	conflict	UNP P0DTC2
B	899	PRO	ALA	conflict	UNP P0DTC2
B	939	PHE	SER	conflict	UNP P0DTC2
B	942	PRO	ALA	conflict	UNP P0DTC2
B	954	HIS	GLN	variant	UNP P0DTC2
B	969	LYS	ASN	variant	UNP P0DTC2
B	986	PRO	LYS	variant	UNP P0DTC2
B	987	PRO	VAL	variant	UNP P0DTC2
B	1143	LEU	PRO	conflict	UNP P0DTC2
C	-2	ALA	-	expression tag	UNP P0DTC2
C	-1	THR	-	expression tag	UNP P0DTC2
C	0	MET	-	expression tag	UNP P0DTC2
C	1	PHE	-	expression tag	UNP P0DTC2
C	2	VAL	-	expression tag	UNP P0DTC2
C	3	PHE	-	expression tag	UNP P0DTC2
C	4	LEU	-	expression tag	UNP P0DTC2
C	5	VAL	-	expression tag	UNP P0DTC2
C	6	LEU	-	expression tag	UNP P0DTC2
C	7	LEU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	8	PRO	-	expression tag	UNP P0DTC2
C	9	LEU	-	expression tag	UNP P0DTC2
C	10	VAL	-	expression tag	UNP P0DTC2
C	11	SER	-	expression tag	UNP P0DTC2
C	12	SER	-	expression tag	UNP P0DTC2
C	13	GLN	-	expression tag	UNP P0DTC2
C	14	CYS	-	expression tag	UNP P0DTC2
C	15	VAL	-	expression tag	UNP P0DTC2
C	16	MET	-	expression tag	UNP P0DTC2
C	17	PRO	-	expression tag	UNP P0DTC2
C	18	LEU	-	expression tag	UNP P0DTC2
C	19	PHE	-	expression tag	UNP P0DTC2
C	20	ASN	-	expression tag	UNP P0DTC2
C	21	LEU	-	expression tag	UNP P0DTC2
C	22	ILE	-	expression tag	UNP P0DTC2
C	23	THR	-	expression tag	UNP P0DTC2
C	24	THR	-	expression tag	UNP P0DTC2
C	25	THR	-	expression tag	UNP P0DTC2
C	26	GLN	-	expression tag	UNP P0DTC2
C	27	SER	-	expression tag	UNP P0DTC2
C	50	LEU	SER	conflict	UNP P0DTC2
C	?	-	HIS	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	127	PHE	VAL	conflict	UNP P0DTC2
C	143	ASP	GLY	variant	UNP P0DTC2
C	?	-	TYR	deletion	UNP P0DTC2
C	157	SER	PHE	conflict	UNP P0DTC2
C	158	GLY	ARG	conflict	UNP P0DTC2
C	?	-	ASN	deletion	UNP P0DTC2
C	212	ILE	LEU	variant	UNP P0DTC2
C	213	GLY	VAL	variant	UNP P0DTC2
C	216	PHE	LEU	conflict	UNP P0DTC2
C	245	ASN	HIS	conflict	UNP P0DTC2
C	264	ASP	ALA	conflict	UNP P0DTC2
C	332	VAL	ILE	conflict	UNP P0DTC2
C	339	HIS	GLY	variant	UNP P0DTC2
C	356	THR	LYS	conflict	UNP P0DTC2
C	371	PHE	SER	variant	UNP P0DTC2
C	373	PRO	SER	variant	UNP P0DTC2
C	375	PHE	SER	variant	UNP P0DTC2
C	376	ALA	THR	variant	UNP P0DTC2
C	403	LYS	ARG	conflict	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	405	ASN	ASP	variant	UNP P0DTC2
C	408	SER	ARG	variant	UNP P0DTC2
C	417	ASN	LYS	variant	UNP P0DTC2
C	440	LYS	ASN	conflict	UNP P0DTC2
C	445	HIS	VAL	variant	UNP P0DTC2
C	446	SER	GLY	conflict	UNP P0DTC2
C	450	ASP	ASN	conflict	UNP P0DTC2
C	452	TRP	LEU	conflict	UNP P0DTC2
C	460	LYS	ASN	variant	UNP P0DTC2
C	477	ASN	SER	variant	UNP P0DTC2
C	478	LYS	THR	variant	UNP P0DTC2
C	481	LYS	ASN	conflict	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	484	LYS	GLU	variant	UNP P0DTC2
C	486	PRO	PHE	variant	UNP P0DTC2
C	498	ARG	GLN	variant	UNP P0DTC2
C	501	TYR	ASN	variant	UNP P0DTC2
C	505	HIS	TYR	variant	UNP P0DTC2
C	554	LYS	GLU	conflict	UNP P0DTC2
C	570	VAL	ALA	conflict	UNP P0DTC2
C	614	GLY	ASP	variant	UNP P0DTC2
C	621	SER	PRO	conflict	UNP P0DTC2
C	655	TYR	HIS	variant	UNP P0DTC2
C	679	LYS	ASN	variant	UNP P0DTC2
C	681	ARG	PRO	variant	UNP P0DTC2
C	683	ALA	ARG	conflict	UNP P0DTC2
C	685	ALA	ARG	conflict	UNP P0DTC2
C	764	LYS	ASN	variant	UNP P0DTC2
C	796	TYR	ASP	variant	UNP P0DTC2
C	817	PRO	PHE	conflict	UNP P0DTC2
C	892	PRO	ALA	conflict	UNP P0DTC2
C	899	PRO	ALA	conflict	UNP P0DTC2
C	939	PHE	SER	conflict	UNP P0DTC2
C	942	PRO	ALA	conflict	UNP P0DTC2
C	954	HIS	GLN	variant	UNP P0DTC2
C	969	LYS	ASN	variant	UNP P0DTC2
C	986	PRO	LYS	variant	UNP P0DTC2
C	987	PRO	VAL	variant	UNP P0DTC2
C	1143	LEU	PRO	conflict	UNP P0DTC2

- Molecule 2 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	D	2	25	14	1	10	0	0
2	E	2	25	14	1	10	0	0
2	F	2	25	14	1	10	0	0
2	G	2	25	14	1	10	0	0
2	H	2	25	14	1	10	0	0
2	I	2	25	14	1	10	0	0
2	J	2	25	14	1	10	0	0
2	K	2	25	14	1	10	0	0
2	L	2	25	14	1	10	0	0
2	M	2	25	14	1	10	0	0
2	N	2	25	14	1	10	0	0
2	O	2	25	14	1	10	0	0
2	P	2	25	14	1	10	0	0
2	Q	2	25	14	1	10	0	0
2	R	2	25	14	1	10	0	0
2	S	2	25	14	1	10	0	0
2	T	2	25	14	1	10	0	0

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C<sub>8</sub>H<sub>15</sub>NO<sub>6</sub>).



Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	A	1	14	8	1	5	0
3	B	1	14	8	1	5	0
3	B	1	14	8	1	5	0
3	B	1	14	8	1	5	0
3	B	1	14	8	1	5	0

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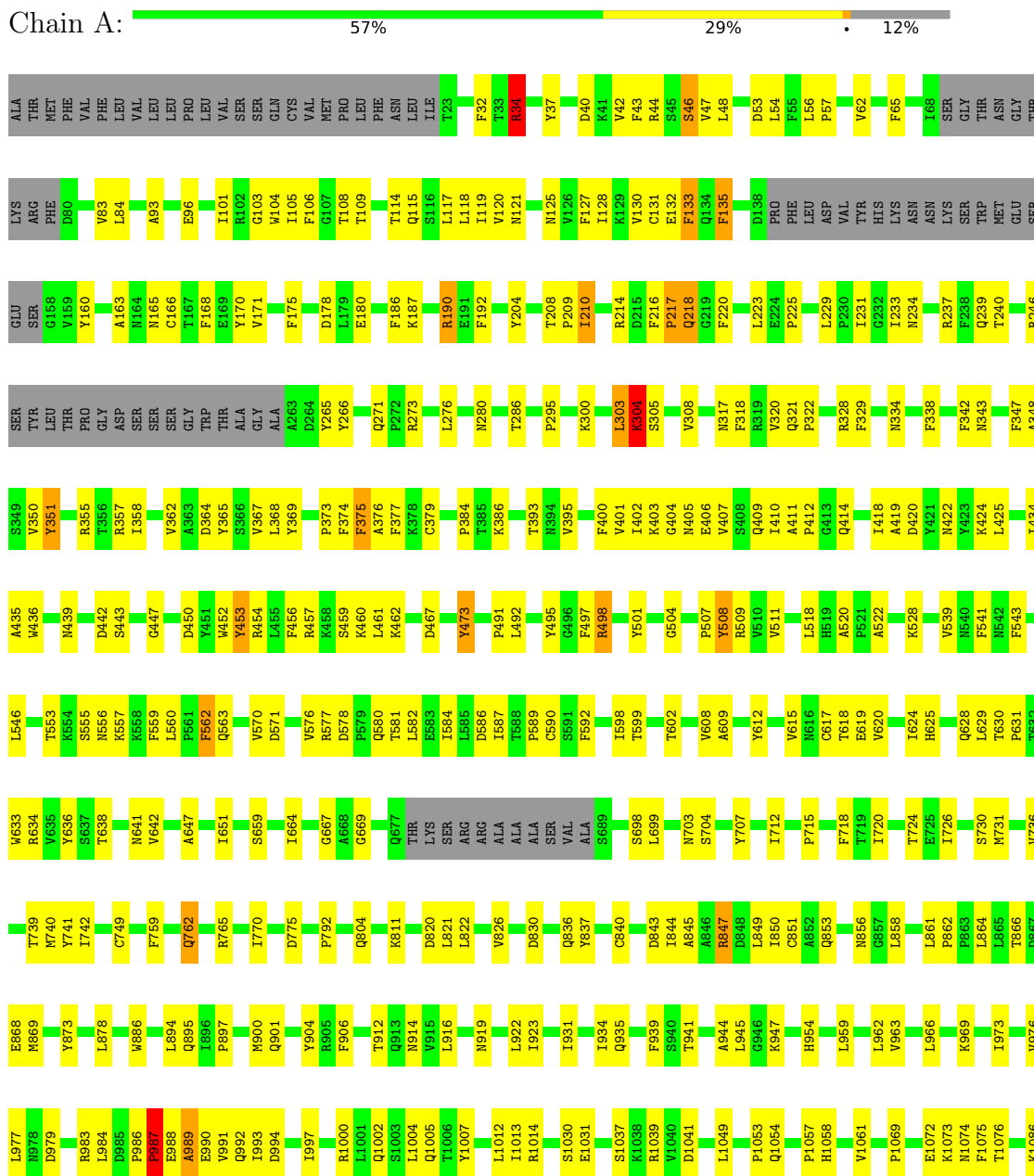
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Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
3	B	1	Total 14	8	1	5	0
3	B	1	Total 14	8	1	5	0
3	B	1	Total 14	8	1	5	0
3	B	1	Total 14	8	1	5	0
3	B	1	Total 14	8	1	5	0
3	B	1	Total 14	8	1	5	0
3	B	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0
3	C	1	Total 14	8	1	5	0

### 3 Residue-property plots i

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-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 outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Spike glycoprotein





• Molecule 1: Spike glycoprotein



ALA	THR	THR	MET	PHE	ASN	GLY	VAL	PHE	THR	LEU	VAL	LEU	LEU	LEU	PRO	PRO	LEU	VAL	VAL	SER	SER	SER	GLN	CYS	VAL	MET	PRO	PRO	LEU	LEU	LEU	ASN	LEU	ILE	T23	T24	T25	N30	T33	R34	Y37	P39	D40	K41	R44	V47	L48	T51	F55	L56	P57	F58	F59	S60	N61	V62	P65	H66	A67	L68
SER	GLY	THR	ASN	GLY	THR	LYS	ARG	PHE	D80	N81	L84	E96	K97	S98	I100	I101	R102	G103	F106	K113	T114	Q115	S116	L117	L118	I119	V120	T124	N125	V126	F127	I128	K129	Y204	S205	K206	H207	T208	P209	I210	R214	D215	F216	P217	Q218	G219	F220	HIS	LYS	ASN	ASN	LYS	SER							
TRP	MET	GLU	SER	GLU	SER	G168	V169	S162	N164	N165	C166	T167	F168	E169	P174	F175	M176	D177	G178	G184	N188	L189	R190	E191	F194	I197	D198	G199	Y200	F201	Y204	S205	K300	C301	H207	T208	P209	I210	R214	D215	F216	P217	Q218	G219	F220	HIS	LYS	ASN	ASN	LYS	SER									
P230	L231	G232	L233	N234	L235	F238	Q239	T240	R246	SER	TRP	LEU	THR	PRO	GLY	ASP	SER	SER	GLY	TRP	THR	ALA	GLY	A263	D264	Y265	R273	L276	L277	K278	P295	T299	K300	C301	T302	L303	K304	S305	F306	T307	V308	E309	K310	G311	L312	F313	Y313	F318	R319	V320	Q321									
P322	T323	E324	S325	I326	V327	R328	F329	P330	N334	L335	C336	P337	F338	H339	E340	N343	R346	F347	I358	S359	N360	A363	D364	Y365	S366	V367	F374	F377	K378	G381	K386	L387	N388	D389	L390	C391	F392	T393	N394	V395	D398	S399	F400	V401	L402	K403	G404	N405	E406											
Q409	I410	A411	Q414	T415	G416	M417	I418	A419	D420	Y421	M422	Y423	T430	G431	C432	V433	N437	S438	N439	K440	L441	D442	S443	G447	D450	Y451	W452	Y453	F456	K460	F464	E465	R466	A475	P486	N487	P491	Y495	G496	F497	R498	Y501	G502	N405	H505															
Q506	P507	Y508	R509	V512	F515	E516	P521	A522	T523	Y524	C525	K528	S530	T531	N532	V534	C538	V539	F543	L533	N544	G545	L552	T553	K554	S555	N556	K557	K558	L560	F561	Q563	Q564	R567	F569	V570	D571	D574	A575	V576	R577	F497	D578	P579	Q580	T581	L582	E583												
I584	L585	D586	I587	P588	F589	F592	V595	T599	T523	T524	T525	T602	V608	V615	I624	D627	Q628	L629	T630	P631	T632	W633	R634	V635	Y636	R646	N657	S658	S659	C662	D663	I664	Q675	T676	THR	LYS	SER	ARG	ARG	ALA	ALA	V576	SER	VAL	ALA	S689	I693													
M697	S698	L699	Y707	P589	F592	I714	P715	F718	T719	I720	S721	V722	T723	T724	E725	I726	D736	V737	T630	M740	Y741	C743	G744	C749	L752	Q755	S758	F759	C760	T761	L763	I770	E780	Q784	V785	K786	Q787	T791	N919	I923	F802	S803	Q804	I805	L806	F823														
V826	L841	G842	D843	I844	A845	I850	C851	A852	Q853	K854	F855	L858	P862	P863	L864	M869	Y873	L878	A879	G880	T881	I882	T883	S884	L894	Q895	A903	T904	R905	F906	N907	G908	T912	Q913	N914	V915	L916	Y917	E918	N919	I923	F802	S803	Q804	I805	L806	F823													
I934	L945	G946	K947	L948	Q949	D950	Q957	T961	L962	I963	K964	Q965	S968	I973	S974	S975	Y976	D979	L984	P987	F988	A989	Q992	T993	D994	I997	R1000	L1004	L1005	L1006	L1012	I1013	M1029	S1030	V1033	Q1036	S1037	L1049	F1052	P1053	Q1054																			
P1057	V1061	H1064	E1072	F1075	T1076	C1082	H1083	E1092	G1093	V1094	F1095	V1096	S1097	N1098	G1099	T1100	H1101	R1107	I1132	F988	T1136	V1137	Q1142	L1143	E1144	ASP	SER	PHE	LYS	GLU	GLU	LEU	ASP	LYS	TYR	GLN	LYS	THR	GLY	GLY	ASP	LEU	GLY	ASP																
ILE	SER	GLY	ILE	ALA	SER	VAL	VAL	ASN	ASN	GLN	LYS	GLU	ILE	ARG	LEU	ASN	ASN	ASN	VAL	VAL	LYS	ASN	LEU	ASN	GLN	GLU	LEU	GLY	LYS	TYR	GLU	GLN	ASP	SER	PHE	LYS	GLU	GLU	LEU	ASP	LYS	TYR	GLY	GLY	ASP	LEU	GLY	ASP												

• Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



MAG1	BMA2
------	------



- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:  100%



- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:  100%



- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:  100%




- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:  50% 50%



- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:  100%



- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:  100%



- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:  100%



- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain L:  100%

MAG1  
BMA2

- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain M:  100%MAG1  
BMA2

- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:  100%MAG1  
BMA2

- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:  100%MAG1  
BMA2

- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P:  100%MAG1  
BMA2

- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Q:  100%MAG1  
BMA2


- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain R:  100%MAG1  
BMA2

- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain S:  100%MAG1  
BMA2

- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain T:  100%

EM61  
EM62

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	50577	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	60	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: BMA, NAG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.36	0/8516	0.53	0/11591
1	B	0.33	0/8516	0.54	0/11591
1	C	0.36	0/8516	0.54	1/11591 (0.0%)
All	All	0.35	0/25548	0.54	1/34773 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	3
1	B	0	1
1	C	0	2
All	All	0	6

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	387	LEU	CA-CB-CG	5.41	127.75	115.30

There are no chirality outliers.

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	190	ARG	Sidechain
1	A	34	ARG	Sidechain
1	A	847	ARG	Sidechain

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Mol	Chain	Res	Type	Group
1	B	567	ARG	Sidechain
1	C	328	ARG	Sidechain
1	C	466	ARG	Sidechain

## 5.2 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 the 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 within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8316	0	8101	281	0
1	B	8316	0	8102	324	0
1	C	8316	0	8104	301	0
2	D	25	0	22	1	0
2	E	25	0	22	0	0
2	F	25	0	22	0	0
2	G	25	0	22	0	0
2	H	25	0	22	2	0
2	I	25	0	22	0	0
2	J	25	0	22	0	0
2	K	25	0	22	0	0
2	L	25	0	22	0	0
2	M	25	0	22	0	0
2	N	25	0	22	0	0
2	O	25	0	22	0	0
2	P	25	0	22	0	0
2	Q	25	0	22	0	0
2	R	25	0	22	0	0
2	S	25	0	22	0	0
2	T	25	0	22	0	0
3	A	140	0	130	2	0
3	B	154	0	143	2	0
3	C	140	0	130	3	0
All	All	25807	0	25084	839	0

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 16.

All (839) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:210:ILE:CG2	1:B:212:ILE:H	1.45	1.26
1:B:210:ILE:HG22	1:B:212:ILE:N	1.47	1.15
1:B:189:LEU:HD22	1:B:210:ILE:CD1	1.81	1.10
1:C:188:ASN:CA	1:C:209:PRO:HA	1.90	1.00
1:C:188:ASN:HA	1:C:209:PRO:CA	1.94	0.96
1:B:189:LEU:HD22	1:B:210:ILE:HD12	0.99	0.96
1:B:645:THR:HG22	1:B:647:ALA:H	1.31	0.95
1:C:188:ASN:HA	1:C:209:PRO:HA	0.97	0.94
1:B:189:LEU:CD2	1:B:210:ILE:HD12	1.96	0.89
1:B:34:ARG:HG2	1:B:216:PHE:HE1	1.38	0.88
1:B:369:TYR:HA	1:B:374:PHE:HZ	1.39	0.87
1:C:62:VAL:HG21	1:C:216:PHE:CE2	2.13	0.84
1:C:486:PRO:O	1:C:487:ASN:ND2	2.13	0.81
1:B:210:ILE:HG22	1:B:212:ILE:H	0.66	0.78
1:C:557:LYS:HB2	1:C:584:ILE:HG21	1.65	0.78
1:A:190:ARG:HB3	1:A:192:PHE:HE1	1.49	0.77
1:C:521:PRO:HG3	1:C:564:GLN:HE21	1.50	0.77
1:A:53:ASP:OD1	1:A:54:LEU:N	2.18	0.76
1:B:210:ILE:HG22	1:B:212:ILE:CG1	2.14	0.76
1:C:189:LEU:HG	1:C:208:THR:O	1.86	0.75
1:C:578:ASP:C	1:C:580:GLN:H	1.89	0.75
1:C:310:LYS:HG2	1:C:664:ILE:HD11	1.68	0.75
1:B:330:PRO:HA	1:B:579:PRO:HB2	1.67	0.75
1:A:759:PHE:HE1	1:A:1005:GLN:HE21	1.34	0.75
1:A:699:LEU:HD21	1:C:869:MET:HB2	1.69	0.74
1:C:417:ASN:O	1:C:422:ASN:ND2	2.20	0.74
1:A:895:GLN:NE2	1:B:1074:ASN:OD1	2.20	0.73
1:B:108:THR:HG22	1:B:109:THR:HG23	1.71	0.73
1:A:577:ARG:HD3	1:A:582:LEU:HD13	1.68	0.73
1:C:329:PHE:HB2	1:C:528:LYS:HG3	1.71	0.73
1:B:48:LEU:HD13	1:B:305:SER:HA	1.71	0.72
1:A:131:CYS:SG	1:A:132:GLU:N	2.63	0.72
1:A:214:ARG:HB2	1:A:217:PRO:HB3	1.71	0.72
1:B:96:GLU:OE1	1:B:100:ILE:N	2.23	0.72
1:C:581:THR:O	1:C:583:GLU:N	2.23	0.72
1:B:904:TYR:HE1	1:C:1107:ARG:HG2	1.54	0.71
1:C:65:PHE:HB2	1:C:265:TYR:HB3	1.72	0.71
1:A:724:THR:HB	1:A:934:ILE:HD11	1.72	0.71
1:C:96:GLU:OE1	1:C:100:ILE:N	2.24	0.71
1:C:987:PRO:HD2	1:C:988:GLU:OE2	1.92	0.70
1:B:131:CYS:SG	1:B:132:GLU:N	2.65	0.70
1:C:44:ARG:HB3	1:C:47:VAL:HG11	1.72	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:189:LEU:HB3	1:B:208:THR:O	1.91	0.69
1:B:822:LEU:HD22	1:B:945:LEU:HD21	1.73	0.69
1:B:208:THR:O	1:B:210:ILE:N	2.26	0.69
1:C:770:ILE:HD11	1:C:1012:LEU:HD23	1.75	0.69
1:A:447:GLY:HA2	1:A:498:ARG:HG3	1.74	0.69
1:A:856:ASN:HD21	1:A:963:VAL:HG13	1.57	0.69
1:A:498:ARG:H	1:A:501:TYR:HE1	1.39	0.69
1:B:31:SER:HA	1:B:216:PHE:CE2	2.27	0.69
1:B:276:LEU:HD11	1:B:304:LYS:HA	1.73	0.69
1:A:128:ILE:HB	1:A:170:TYR:HB3	1.74	0.68
1:C:791:THR:HG21	1:C:806:LEU:HD23	1.75	0.68
1:A:861:LEU:HD12	1:A:862:PRO:HD2	1.75	0.68
1:A:866:THR:HG22	1:A:868:GLU:H	1.59	0.68
1:B:462:LYS:HD2	1:B:465:GLU:HB2	1.74	0.68
1:A:454:ARG:NH1	1:A:467:ASP:O	2.26	0.68
1:C:559:PHE:HB2	1:C:584:ILE:HD11	1.74	0.68
1:C:486:PRO:C	1:C:487:ASN:HD22	1.97	0.68
1:B:128:ILE:HD11	1:B:175:PHE:HZ	1.59	0.67
1:B:190:ARG:HD3	1:B:207:HIS:CE1	2.29	0.67
1:C:131:CYS:SG	1:C:132:GLU:N	2.67	0.67
1:A:900:MET:SD	1:B:1077:THR:OG1	2.51	0.67
1:C:456:PHE:HB2	1:C:491:PRO:HA	1.75	0.67
1:C:128:ILE:HD11	1:C:175:PHE:HZ	1.59	0.67
1:C:347:PHE:HD2	1:C:399:SER:HB2	1.58	0.66
1:B:208:THR:HB	1:B:210:ILE:HG13	1.76	0.66
1:C:903:ALA:HB1	1:C:913:GLN:HB3	1.78	0.66
1:B:454:ARG:NH1	1:B:467:ASP:O	2.27	0.66
1:C:555:SER:HB3	1:C:584:ILE:HG22	1.78	0.66
1:B:125:ASN:HB2	3:B:1301:NAG:H61	1.75	0.66
1:B:533:LEU:HD23	1:B:535:LYS:HE3	1.76	0.65
1:A:619:GLU:OE1	1:A:619:GLU:N	2.29	0.65
1:A:792:PRO:HG3	1:B:707:TYR:HB3	1.77	0.65
1:B:187:LYS:O	1:B:209:PRO:HA	1.95	0.65
1:B:43:PHE:CE1	1:B:283:GLY:HA3	2.32	0.65
1:B:210:ILE:HG22	1:B:212:ILE:HG13	1.78	0.65
1:A:726:ILE:HG12	1:A:1061:VAL:HG22	1.79	0.64
1:C:200:TYR:HA	1:C:230:PRO:HA	1.78	0.64
1:C:34:ARG:NH2	1:C:217:PRO:O	2.30	0.64
1:C:360:ASN:H	1:C:523:THR:HB	1.61	0.64
1:C:533:LEU:HD11	1:C:552:LEU:HD12	1.77	0.64
1:B:117:LEU:HD12	1:B:118:LEU:H	1.63	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:406:GLU:HG2	1:A:418:ILE:HG13	1.80	0.64
1:B:422:ASN:ND2	1:B:454:ARG:O	2.23	0.64
1:A:617:CYS:HA	1:A:620:VAL:HG22	1.80	0.64
1:B:409:GLN:HE22	1:B:418:ILE:H	1.43	0.64
1:B:576:VAL:HG23	1:B:587:ILE:HD11	1.79	0.64
1:B:208:THR:HB	1:B:210:ILE:CG1	2.27	0.64
1:C:406:GLU:OE1	1:C:406:GLU:N	2.30	0.64
1:A:983:ARG:HE	1:A:984:LEU:HG	1.62	0.63
1:C:442:ASP:OD1	1:C:509:ARG:NH2	2.30	0.63
1:B:427:ASP:OD1	1:B:428:ASP:N	2.31	0.63
1:B:215:ASP:HB2	1:B:266:TYR:CE2	2.34	0.63
1:A:1074:ASN:OD1	1:C:895:GLN:NE2	2.30	0.63
1:B:726:ILE:HG12	1:B:1061:VAL:HG22	1.80	0.63
1:C:311:GLY:HA2	1:C:664:ILE:HD12	1.81	0.63
1:A:358:ILE:HB	1:A:395:VAL:HB	1.80	0.63
1:A:1013:ILE:HD13	1:B:1013:ILE:HD11	1.79	0.63
1:B:210:ILE:CG2	1:B:212:ILE:N	2.20	0.63
1:B:773:GLU:OE2	1:B:774:GLN:NE2	2.31	0.63
1:A:239:GLN:HE21	1:A:240:THR:H	1.47	0.62
1:A:393:THR:HG21	1:A:520:ALA:HB3	1.81	0.62
1:B:792:PRO:HG3	1:C:707:TYR:HD1	1.64	0.62
1:B:208:THR:O	1:B:210:ILE:HG13	1.99	0.62
1:B:1096:VAL:O	1:B:1103:PHE:N	2.26	0.62
1:A:742:ILE:O	1:A:1000:ARG:NH1	2.31	0.62
1:B:23:THR:N	1:B:80:ASP:OD1	2.31	0.62
1:B:34:ARG:HG2	1:B:216:PHE:CE1	2.29	0.62
1:B:32:PHE:HB3	1:B:218:GLN:OE1	2.00	0.62
1:C:229:LEU:HD23	1:C:229:LEU:H	1.64	0.62
1:C:578:ASP:N	1:C:583:GLU:O	2.22	0.62
1:C:39:PRO:HG3	1:C:55:PHE:HZ	1.64	0.62
1:B:62:VAL:HG21	1:B:216:PHE:HE2	1.64	0.62
1:A:190:ARG:HB3	1:A:192:PHE:CE1	2.34	0.61
1:A:894:LEU:HD13	1:B:715:PRO:HD3	1.81	0.61
1:B:62:VAL:HG21	1:B:216:PHE:CE2	2.35	0.61
1:C:441:LEU:HD22	1:C:509:ARG:HH12	1.65	0.61
1:B:369:TYR:HA	1:B:374:PHE:CZ	2.29	0.61
1:C:328:ARG:HD2	1:C:579:PRO:HG2	1.82	0.61
1:C:381:GLY:HA3	1:C:430:THR:HG23	1.82	0.61
1:A:96:GLU:OE1	1:A:101:ILE:HG22	2.01	0.61
1:A:977:LEU:HD11	1:A:993:ILE:HG23	1.81	0.61
1:A:271:GLN:OE1	1:A:271:GLN:N	2.34	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:856:ASN:HD22	1:B:966:LEU:HD13	1.65	0.61
1:C:34:ARG:NH1	1:C:191:GLU:OE2	2.34	0.61
1:C:533:LEU:HD11	1:C:552:LEU:CD1	2.31	0.61
1:B:486:PRO:O	1:B:487:ASN:ND2	2.33	0.60
1:B:770:ILE:HD11	1:B:1012:LEU:HD23	1.81	0.60
1:A:878:LEU:HD11	1:A:1054:GLN:HE22	1.66	0.60
1:A:108:THR:HG22	1:A:109:THR:HG23	1.83	0.60
1:C:307:THR:HA	1:C:602:THR:HG21	1.84	0.60
1:C:659:SER:HB3	1:C:698:SER:HB2	1.84	0.60
1:A:922:LEU:HD11	2:H:1:NAG:H3	1.84	0.60
1:A:989:ALA:O	1:A:990:GLU:C	2.40	0.60
1:A:329:PHE:O	1:A:580:GLN:NE2	2.31	0.60
1:B:43:PHE:HE1	1:B:283:GLY:HA3	1.66	0.60
1:C:712:ILE:HD13	1:C:1094:VAL:HG11	1.83	0.60
1:A:570:VAL:HG21	1:C:852:ALA:HB1	1.84	0.60
1:A:962:LEU:HD13	1:A:1007:TYR:HB2	1.84	0.59
1:B:312:ILE:HB	1:B:598:ILE:HG22	1.84	0.59
1:A:864:LEU:HA	1:B:667:GLY:HA2	1.84	0.59
1:B:93:ALA:HB3	1:B:266:TYR:HB2	1.84	0.59
1:C:393:THR:OG1	1:C:516:GLU:OE1	2.20	0.59
1:B:577:ARG:HD3	1:B:582:LEU:HD13	1.82	0.59
1:A:57:PRO:HG3	1:A:273:ARG:HD2	1.84	0.59
1:A:912:THR:OG1	1:A:914:ASN:OD1	2.21	0.59
1:C:475:ALA:HB3	1:C:487:ASN:HB2	1.83	0.59
1:C:567:ARG:HD3	1:C:571:ASP:HA	1.85	0.59
1:C:392:PHE:HD1	1:C:524:VAL:HG23	1.66	0.59
1:C:420:ASP:HB3	1:C:460:LYS:HD2	1.85	0.59
1:B:239:GLN:NE2	1:B:240:THR:O	2.35	0.59
1:C:1142:GLN:OE1	1:C:1142:GLN:N	2.36	0.59
1:A:108:THR:HB	1:A:114:THR:HG21	1.83	0.58
1:A:914:ASN:ND2	1:B:1123:SER:OG	2.35	0.58
1:A:322:PRO:HB3	1:A:539:VAL:HA	1.84	0.58
1:B:1076:THR:HB	1:B:1097:SER:HB3	1.84	0.58
1:A:988:GLU:O	1:A:991:VAL:N	2.28	0.58
1:C:578:ASP:C	1:C:580:GLN:N	2.57	0.58
1:B:41:LYS:HB3	1:C:563:GLN:HA	1.86	0.58
1:B:1053:PRO:O	1:B:1054:GLN:NE2	2.33	0.58
1:A:703:ASN:ND2	1:C:787:GLN:OE1	2.36	0.58
1:C:398:ASP:HB2	1:C:512:VAL:HG12	1.85	0.58
1:A:456:PHE:HB3	1:A:473:TYR:HD2	1.69	0.58
1:C:358:ILE:HB	1:C:395:VAL:HB	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:468:ILE:HD12	1:B:468:ILE:H	1.69	0.58
1:B:107:GLY:H	1:B:235:ILE:HG23	1.67	0.58
1:C:200:TYR:HD1	1:C:230:PRO:HB3	1.67	0.58
1:A:65:PHE:HB2	1:A:265:TYR:CD2	2.39	0.58
1:A:1115:ILE:HG12	1:A:1137:VAL:HG23	1.85	0.58
1:B:189:LEU:O	1:B:190:ARG:HG2	2.04	0.58
1:B:1075:PHE:O	1:B:1076:THR:OG1	2.21	0.58
1:C:334:ASN:ND2	1:C:360:ASN:O	2.35	0.58
1:B:447:GLY:HA2	1:B:498:ARG:HG2	1.86	0.58
1:C:447:GLY:HA2	1:C:498:ARG:HG2	1.86	0.57
1:A:48:LEU:HD12	1:A:276:LEU:HD21	1.87	0.57
1:A:1041:ASP:HB3	1:C:1030:SER:HB3	1.86	0.57
1:C:976:VAL:HG12	1:C:979:ASP:H	1.69	0.57
1:C:806:LEU:HD12	1:C:806:LEU:H	1.69	0.57
1:A:109:THR:H	1:A:237:ARG:HD3	1.68	0.57
1:B:778:THR:HG22	1:B:865:LEU:HD12	1.86	0.57
1:C:48:LEU:HD13	1:C:305:SER:HA	1.86	0.57
1:A:712:ILE:HD13	1:A:1094:VAL:HG11	1.85	0.57
1:C:303:LEU:O	1:C:304:LYS:C	2.42	0.57
1:C:1053:PRO:O	1:C:1054:GLN:NE2	2.28	0.57
1:C:336:CYS:HB2	1:C:338:PHE:CE2	2.39	0.57
1:A:1031:GLU:OE2	1:B:1039:ARG:NE	2.34	0.57
1:A:1075:PHE:O	1:A:1076:THR:OG1	2.22	0.57
1:B:328:ARG:HD3	1:B:579:PRO:HD2	1.87	0.57
1:A:32:PHE:HD2	1:A:218:GLN:HB3	1.69	0.56
1:B:117:LEU:HD12	1:B:118:LEU:N	2.20	0.56
1:A:317:ASN:ND2	1:C:737:ASP:OD2	2.38	0.56
1:A:853:GLN:HG2	1:A:858:LEU:HD23	1.87	0.56
1:A:989:ALA:O	1:A:992:GLN:N	2.38	0.56
1:B:118:LEU:HD21	1:B:120:VAL:HG12	1.87	0.56
1:B:220:PHE:HE2	1:B:285:ILE:HG22	1.71	0.56
1:B:303:LEU:O	1:B:304:LYS:C	2.44	0.56
1:B:666:ILE:HG12	1:B:671:CYS:HA	1.88	0.56
1:C:115:GLN:HE21	1:C:233:ILE:HB	1.71	0.56
1:B:178:ASP:OD1	1:B:178:ASP:N	2.37	0.56
1:C:39:PRO:HG2	1:C:51:THR:HG21	1.87	0.56
1:A:375:PHE:HE2	1:A:407:VAL:HG11	1.69	0.56
1:B:596:SER:HB2	1:B:611:LEU:HD22	1.88	0.56
1:C:393:THR:HA	1:C:522:ALA:HA	1.86	0.56
1:B:638:THR:HG23	1:B:640:SER:H	1.69	0.56
1:C:131:CYS:HB3	1:C:133:PHE:CZ	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1144:GLU:N	1:C:1144:GLU:OE2	2.38	0.55
1:A:988:GLU:O	1:A:989:ALA:C	2.45	0.55
1:C:453:TYR:CD1	1:C:495:TYR:HD1	2.24	0.55
1:C:736:VAL:HG22	1:C:858:LEU:HD22	1.87	0.55
1:B:104:TRP:CD1	1:B:240:THR:HG23	2.41	0.55
1:A:739:THR:OG1	1:A:740:MET:N	2.40	0.55
1:C:975:SER:O	1:C:975:SER:OG	2.25	0.55
1:A:40:ASP:OD1	1:A:42:VAL:N	2.34	0.55
1:A:119:ILE:HD12	1:A:128:ILE:HD12	1.89	0.55
1:C:102:ARG:HH12	1:C:176:LEU:HD12	1.72	0.55
1:A:121:ASN:HD21	1:A:175:PHE:HB2	1.72	0.55
1:A:811:LYS:NZ	1:A:820:ASP:OD2	2.36	0.55
1:B:215:ASP:HB2	1:B:266:TYR:HE2	1.71	0.55
1:B:103:GLY:HA3	1:B:120:VAL:HA	1.89	0.55
1:C:965:GLN:O	1:C:968:SER:OG	2.22	0.55
1:B:906:PHE:HE1	1:B:1049:LEU:HD11	1.72	0.54
1:A:1053:PRO:O	1:A:1054:GLN:NE2	2.31	0.54
1:B:599:THR:HB	1:B:608:VAL:HG12	1.88	0.54
1:C:418:ILE:H	1:C:418:ILE:HD12	1.72	0.54
1:C:826:VAL:HB	1:C:1057:PRO:HG2	1.90	0.54
1:B:904:TYR:CE1	1:C:1107:ARG:HG2	2.40	0.54
1:B:976:VAL:HB	1:B:979:ASP:HB3	1.88	0.54
1:A:1002:GLN:HG2	1:C:759:PHE:HZ	1.73	0.54
1:B:200:TYR:HA	1:B:230:PRO:HA	1.88	0.54
1:B:1098:ASN:OD1	1:B:1101:HIS:N	2.37	0.54
1:A:904:TYR:CE2	1:B:1107:ARG:HG2	2.43	0.54
1:C:309:GLU:HG2	1:C:313:TYR:OH	2.07	0.54
1:B:338:PHE:HE2	1:B:358:ILE:HD13	1.73	0.54
1:B:894:LEU:HD13	1:C:715:PRO:HD3	1.90	0.54
1:C:720:ILE:HD12	1:C:923:ILE:HD11	1.90	0.54
1:A:44:ARG:HB3	1:A:47:VAL:HG11	1.89	0.54
1:A:121:ASN:ND2	1:A:175:PHE:HB2	2.23	0.54
1:A:342:PHE:CZ	1:A:368:LEU:HD13	2.43	0.54
1:A:843:ASP:O	1:A:845:ALA:N	2.40	0.54
1:B:323:THR:OG1	1:B:324:GLU:N	2.41	0.54
1:B:843:ASP:O	1:B:845:ALA:N	2.41	0.54
1:B:318:PHE:HZ	1:B:615:VAL:HG21	1.73	0.54
1:C:752:LEU:HD12	1:C:993:ILE:HG21	1.90	0.53
1:B:310:LYS:HG3	1:B:664:ILE:HD11	1.89	0.53
1:C:178:ASP:N	1:C:178:ASP:OD1	2.39	0.53
1:C:404:GLY:HA2	1:C:508:TYR:HD2	1.72	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:439:ASN:O	1:C:443:SER:OG	2.24	0.53
1:C:945:LEU:HD12	1:C:948:LEU:HD12	1.91	0.53
1:A:303:LEU:HD11	1:A:308:VAL:HG22	1.90	0.53
1:A:638:THR:N	1:A:641:ASN:OD1	2.41	0.53
1:B:130:VAL:HG21	1:B:231:ILE:HD12	1.91	0.53
1:B:457:ARG:HD3	1:B:458:LYS:N	2.23	0.53
1:A:442:ASP:OD1	1:A:509:ARG:NH2	2.42	0.53
1:A:629:LEU:HG	1:A:631:PRO:HD2	1.91	0.53
1:B:837:TYR:OH	1:C:589:PRO:O	2.25	0.53
1:C:117:LEU:HD12	1:C:118:LEU:N	2.24	0.53
1:A:178:ASP:N	1:A:178:ASP:OD1	2.40	0.53
1:A:321:GLN:NE2	1:A:630:THR:OG1	2.42	0.53
1:B:43:PHE:HD2	1:C:557:LYS:HD3	1.72	0.53
1:A:976:VAL:HB	1:A:979:ASP:HB3	1.91	0.53
1:B:37:TYR:HB3	1:B:223:LEU:HB2	1.91	0.53
1:B:290:ASP:OD1	1:B:291:CYS:N	2.40	0.53
1:B:404:GLY:HA2	1:B:508:TYR:HD2	1.74	0.53
1:C:403:LYS:HG2	1:C:505:HIS:HA	1.90	0.53
1:A:411:ALA:HB3	1:A:414:GLN:HG3	1.91	0.52
1:C:389:ASP:OD1	1:C:389:ASP:N	2.41	0.52
1:C:418:ILE:HA	1:C:422:ASN:HB2	1.91	0.52
1:C:578:ASP:CG	1:C:581:THR:H	2.12	0.52
1:A:410:ILE:HG13	1:A:410:ILE:O	2.08	0.52
1:B:210:ILE:HG22	1:B:212:ILE:HG12	1.91	0.52
1:C:37:TYR:HB3	1:C:223:LEU:HB2	1.92	0.52
1:A:900:MET:HE1	1:B:1077:THR:HG21	1.90	0.52
1:C:570:VAL:O	1:C:570:VAL:HG23	2.08	0.52
1:C:843:ASP:O	1:C:845:ALA:N	2.41	0.52
1:A:830:ASP:HB3	1:A:850:ILE:HD12	1.90	0.52
1:B:65:PHE:HD2	1:B:265:TYR:CD1	2.27	0.52
1:B:210:ILE:CG2	1:B:212:ILE:CG1	2.87	0.52
1:C:752:LEU:HD12	1:C:993:ILE:CG2	2.40	0.52
1:C:57:PRO:HG3	1:C:273:ARG:HD2	1.91	0.52
1:C:858:LEU:HD12	1:C:963:VAL:HG12	1.91	0.52
1:C:993:ILE:O	1:C:997:ILE:HG12	2.10	0.52
1:B:453:TYR:HB3	1:B:495:TYR:CE1	2.43	0.52
1:C:722:VAL:HG12	1:C:934:ILE:HD12	1.90	0.52
1:A:350:VAL:HG11	1:A:418:ILE:HD12	1.91	0.52
1:B:847:ARG:NE	1:C:574:ASP:OD1	2.43	0.52
1:A:37:TYR:HB3	1:A:223:LEU:HB3	1.92	0.51
1:A:667:GLY:HA2	1:C:864:LEU:HA	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:986:PRO:O	1:A:987:PRO:C	2.48	0.51
1:A:557:LYS:HB2	1:A:584:ILE:HG21	1.92	0.51
1:C:595:VAL:HG21	1:C:633:TRP:HZ2	1.75	0.51
1:B:578:ASP:OD2	1:B:581:THR:N	2.42	0.51
1:B:988:GLU:O	1:B:989:ALA:C	2.48	0.51
1:C:880:GLY:O	1:C:884:SER:OG	2.23	0.51
1:B:337:PRO:HD2	1:B:358:ILE:HG23	1.92	0.51
1:B:962:LEU:HD22	1:B:1007:TYR:CG	2.46	0.51
1:C:912:THR:O	1:C:915:VAL:HG12	2.10	0.51
1:C:1075:PHE:O	1:C:1076:THR:OG1	2.22	0.51
1:B:611:LEU:HD21	1:B:613:GLN:HG3	1.93	0.51
1:A:599:THR:HB	1:A:608:VAL:HG12	1.92	0.51
1:A:765:ARG:NE	1:B:957:GLN:OE1	2.44	0.51
1:B:319:ARG:O	1:B:630:THR:OG1	2.21	0.51
1:B:133:PHE:HB3	1:B:160:TYR:HB2	1.93	0.51
1:B:557:LYS:HB2	1:B:584:ILE:HD13	1.93	0.51
1:C:303:LEU:HD11	1:C:308:VAL:HG13	1.93	0.51
1:A:589:PRO:HB3	1:C:855:PHE:HA	1.93	0.51
1:B:210:ILE:CG2	1:B:212:ILE:HG13	2.39	0.51
1:C:662:CYS:HB2	1:C:697:MET:HE3	1.91	0.51
1:B:399:SER:HB3	1:B:511:VAL:HG22	1.93	0.51
1:C:431:GLY:HA2	1:C:515:PHE:CD2	2.46	0.50
1:A:931:ILE:O	1:A:934:ILE:HG22	2.11	0.50
1:B:105:ILE:HG22	1:B:239:GLN:OE1	2.12	0.50
1:B:406:GLU:N	1:B:406:GLU:OE1	2.43	0.50
1:B:1005:GLN:NE2	1:C:1006:THR:OG1	2.44	0.50
1:A:231:ILE:CG2	1:A:233:ILE:HG22	2.41	0.50
1:B:37:TYR:OH	1:B:54:LEU:O	2.28	0.50
1:A:373:PRO:HD2	1:A:436:TRP:CD1	2.46	0.50
1:A:578:ASP:OD2	1:A:581:THR:HG23	2.10	0.50
1:A:973:ILE:HG21	1:A:983:ARG:HH22	1.76	0.50
1:B:725:GLU:HG3	1:B:1064:HIS:CD2	2.46	0.50
1:B:749:CYS:SG	1:B:997:ILE:HD11	2.52	0.50
1:C:276:LEU:CD1	1:C:304:LYS:HA	2.42	0.50
1:C:329:PHE:HE1	1:C:545:GLY:H	1.58	0.50
1:A:618:THR:OG1	1:A:619:GLU:OE1	2.26	0.50
1:A:736:VAL:HG23	1:A:858:LEU:HD12	1.93	0.50
1:B:177:MET:H	1:B:207:HIS:CE1	2.30	0.50
1:B:307:THR:HA	1:B:602:THR:HG21	1.94	0.50
1:C:742:ILE:O	1:C:1000:ARG:NH1	2.43	0.50
1:A:104:TRP:CD1	1:A:240:THR:HG23	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:133:PHE:HE1	1:A:135:PHE:HA	1.76	0.50
1:B:160:TYR:HE1	1:B:163:ALA:HB2	1.76	0.50
1:B:459:SER:OG	1:B:460:LYS:N	2.45	0.50
1:B:931:ILE:O	1:B:934:ILE:HG22	2.12	0.50
1:C:113:LYS:HD2	1:C:113:LYS:O	2.12	0.50
1:C:675:GLN:HG3	1:C:693:ILE:HD11	1.94	0.50
1:A:1075:PHE:HB3	1:A:1097:SER:O	2.12	0.50
1:B:629:LEU:HG	1:B:631:PRO:HD2	1.94	0.50
1:C:392:PHE:CD1	1:C:524:VAL:HG23	2.46	0.50
1:C:403:LYS:HB3	1:C:406:GLU:OE1	2.12	0.50
1:C:578:ASP:O	1:C:580:GLN:N	2.44	0.50
1:A:1098:ASN:OD1	1:A:1099:GLY:N	2.45	0.50
1:B:598:ILE:HG21	1:B:666:ILE:HD12	1.94	0.50
1:C:30:ASN:HD21	1:C:59:PHE:HD1	1.60	0.50
1:C:200:TYR:CD1	1:C:230:PRO:HB3	2.45	0.50
1:A:840:CYS:HB2	1:B:588:THR:HG23	1.93	0.49
1:A:847:ARG:HH21	1:B:572:THR:HB	1.77	0.49
1:B:106:PHE:HB3	1:B:235:ILE:HG23	1.94	0.49
1:B:986:PRO:O	1:B:987:PRO:C	2.50	0.49
1:C:276:LEU:HD11	1:C:304:LYS:HA	1.93	0.49
1:C:758:SER:HB2	1:C:761:THR:HB	1.94	0.49
1:A:1012:LEU:HD12	1:B:1013:ILE:HG21	1.94	0.49
1:A:826:VAL:HB	1:A:1057:PRO:HG2	1.93	0.49
1:B:736:VAL:HG12	1:B:858:LEU:HG	1.94	0.49
1:C:295:PRO:HG3	1:C:633:TRP:CD1	2.48	0.49
1:C:930:ALA:HA	1:C:933:LYS:HG2	1.94	0.49
1:A:659:SER:HB3	1:A:698:SER:HB2	1.94	0.49
1:B:663:ASP:HB3	1:B:673:SER:HB2	1.95	0.49
1:B:1012:LEU:HB3	1:C:1013:ILE:HD13	1.95	0.49
1:C:318:PHE:HZ	1:C:615:VAL:HG21	1.76	0.49
1:A:439:ASN:O	1:A:443:SER:OG	2.25	0.49
1:B:347:PHE:HD2	1:B:399:SER:HB2	1.78	0.49
1:C:905:ARG:HD2	1:C:1049:LEU:O	2.12	0.49
1:A:598:ILE:HG23	1:A:664:ILE:HG21	1.94	0.49
1:A:770:ILE:HD11	1:A:1012:LEU:HD13	1.95	0.49
1:B:560:LEU:HD12	1:B:560:LEU:H	1.78	0.49
1:A:720:ILE:HG13	1:A:923:ILE:HG13	1.94	0.49
1:A:736:VAL:HG11	1:A:1004:LEU:HD11	1.93	0.49
1:B:325:SER:HB2	1:B:540:ASN:HB2	1.95	0.49
1:B:624:ILE:HG23	1:B:634:ARG:HD2	1.95	0.49
1:C:497:PHE:HA	1:C:501:TYR:HE2	1.78	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:749:CYS:SG	1:C:997:ILE:HD11	2.53	0.49
1:B:1098:ASN:CG	1:B:1101:HIS:H	2.14	0.48
1:C:44:ARG:HB3	1:C:47:VAL:CG1	2.41	0.48
1:C:81:ASN:ND2	1:C:240:THR:O	2.25	0.48
1:C:364:ASP:OD1	1:C:364:ASP:N	2.43	0.48
1:B:411:ALA:HB3	1:B:414:GLN:HG3	1.94	0.48
1:C:580:GLN:HG2	3:C:1310:NAG:H2	1.95	0.48
1:C:927:PHE:HZ	1:C:1052:PHE:HE2	1.61	0.48
1:C:946:GLY:O	1:C:950:ASP:HB2	2.12	0.48
1:A:34:ARG:O	1:A:56:LEU:HD23	2.12	0.48
1:A:231:ILE:HG22	1:A:233:ILE:HG22	1.94	0.48
1:A:328:ARG:NH1	1:A:578:ASP:OD1	2.46	0.48
1:B:175:PHE:O	1:B:207:HIS:CE1	2.67	0.48
1:C:588:THR:HG22	1:C:589:PRO:O	2.13	0.48
1:A:993:ILE:O	1:A:997:ILE:HG12	2.14	0.48
1:B:126:VAL:HG22	1:B:172:SER:H	1.77	0.48
1:A:280:ASN:HB2	1:A:286:THR:HG23	1.96	0.48
1:B:102:ARG:HB3	1:B:120:VAL:HG23	1.94	0.48
1:B:231:ILE:HG22	1:B:233:ILE:HG23	1.94	0.48
1:B:841:LEU:HB2	1:C:553:THR:HG21	1.96	0.48
1:B:959:LEU:O	1:B:963:VAL:HG23	2.14	0.48
1:A:320:VAL:O	1:A:590:CYS:SG	2.72	0.48
1:A:376:ALA:HB3	1:A:435:ALA:HB3	1.96	0.48
1:A:453:TYR:CD2	1:A:495:TYR:HE1	2.32	0.48
1:A:559:PHE:HB2	1:A:584:ILE:HD11	1.95	0.48
1:A:856:ASN:ND2	1:A:963:VAL:HG13	2.26	0.48
1:B:189:LEU:C	1:B:190:ARG:HG2	2.34	0.48
1:B:1089:PHE:O	1:B:1120:THR:OG1	2.30	0.48
1:C:878:LEU:HD13	1:C:1053:PRO:HD2	1.96	0.48
1:A:115:GLN:NE2	1:A:165:ASN:O	2.47	0.48
1:A:393:THR:CG2	1:A:520:ALA:HB3	2.44	0.48
1:A:715:PRO:HD3	1:C:894:LEU:HD13	1.96	0.48
1:B:378:LYS:HG2	1:B:433:VAL:HG22	1.96	0.48
1:B:450:ASP:OD1	1:B:450:ASP:N	2.47	0.48
1:B:526:GLY:O	1:B:528:LYS:NZ	2.46	0.48
1:C:126:VAL:HG11	1:C:175:PHE:CE1	2.49	0.48
1:C:177:MET:H	1:C:207:HIS:CE1	2.30	0.48
1:C:1082:CYS:HB2	1:C:1132:ILE:HD11	1.95	0.48
1:A:43:PHE:HA	1:B:563:GLN:HE22	1.79	0.48
1:A:379:CYS:HB2	1:A:384:PRO:HD3	1.96	0.48
1:C:191:GLU:HB2	1:C:223:LEU:HD11	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:726:ILE:HG23	1:C:1061:VAL:HG22	1.96	0.48
1:A:234:ASN:OD1	3:A:1310:NAG:N2	2.42	0.47
1:B:442:ASP:OD1	1:B:509:ARG:NH2	2.47	0.47
1:B:451:TYR:HB2	1:B:495:TYR:HB2	1.96	0.47
1:B:853:GLN:HG2	1:B:963:VAL:HG21	1.95	0.47
1:C:760:CYS:HA	1:C:763:LEU:HG	1.95	0.47
1:C:1072:GLU:N	1:C:1072:GLU:OE1	2.47	0.47
1:A:497:PHE:CG	1:A:507:PRO:HG3	2.49	0.47
1:B:406:GLU:HA	1:B:409:GLN:HB2	1.96	0.47
1:C:363:ALA:N	1:C:525:CYS:O	2.35	0.47
1:A:108:THR:O	1:A:109:THR:OG1	2.33	0.47
1:A:556:ASN:H	1:C:844:ILE:HG23	1.78	0.47
1:A:906:PHE:HE1	1:A:1049:LEU:HD11	1.78	0.47
1:B:188:ASN:HA	1:B:209:PRO:CA	2.44	0.47
1:C:84:LEU:HB2	1:C:238:PHE:HD2	1.79	0.47
1:A:425:LEU:HD12	1:A:425:LEU:H	1.78	0.47
1:A:864:LEU:O	1:B:669:GLY:N	2.40	0.47
1:B:393:THR:HG21	1:B:520:ALA:HB3	1.96	0.47
1:B:765:ARG:NE	1:C:957:GLN:OE1	2.47	0.47
1:B:880:GLY:O	1:B:884:SER:OG	2.27	0.47
1:B:975:SER:O	1:B:975:SER:OG	2.33	0.47
1:C:631:PRO:HB3	1:C:633:TRP:CH2	2.49	0.47
1:C:850:ILE:O	1:C:854:LYS:HG2	2.15	0.47
1:A:541:PHE:CZ	1:A:587:ILE:HD12	2.50	0.47
1:A:969:LYS:HE2	1:C:755:GLN:HG2	1.95	0.47
1:A:321:GLN:N	1:A:628:GLN:O	2.45	0.47
1:B:215:ASP:O	1:B:217:PRO:N	2.48	0.47
1:B:375:PHE:HD2	1:B:436:TRP:HA	1.79	0.47
1:B:826:VAL:HB	1:B:1057:PRO:HG2	1.96	0.47
1:C:581:THR:C	1:C:583:GLU:H	2.16	0.47
1:A:42:VAL:HG11	1:B:567:ARG:HB2	1.96	0.47
1:A:715:PRO:HG3	1:A:1069:PRO:HB3	1.97	0.47
1:A:954:HIS:HB3	1:A:1014:ARG:NH1	2.29	0.47
1:A:1128:VAL:HG11	1:C:918:GLU:HG3	1.96	0.47
1:B:212:ILE:HG13	1:B:217:PRO:HB3	1.97	0.47
1:B:533:LEU:HD21	1:B:585:LEU:HD11	1.97	0.47
1:B:574:ASP:O	1:B:587:ILE:HD12	2.15	0.47
1:C:387:LEU:HD12	1:C:387:LEU:O	2.14	0.47
1:C:392:PHE:HD2	1:C:515:PHE:HB3	1.80	0.47
1:B:804:GLN:O	1:B:818:ILE:HG12	2.15	0.47
1:C:823:PHE:CD1	1:C:1057:PRO:HG3	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:329:PHE:HE2	1:A:528:LYS:HG3	1.79	0.47
1:B:295:PRO:HG3	1:B:633:TRP:HD1	1.80	0.47
1:B:1127:ASP:OD1	1:B:1127:ASP:N	2.47	0.47
1:C:175:PHE:CD1	1:C:175:PHE:N	2.82	0.47
1:B:318:PHE:HD2	1:B:629:LEU:HD11	1.81	0.46
1:C:177:MET:HB2	1:C:207:HIS:ND1	2.31	0.46
1:C:295:PRO:HG3	1:C:633:TRP:HD1	1.78	0.46
1:C:973:ILE:HG22	1:C:992:GLN:HG3	1.96	0.46
1:B:735:SER:O	1:B:735:SER:OG	2.23	0.46
1:C:103:GLY:HA3	1:C:120:VAL:HA	1.95	0.46
1:C:324:GLU:HG3	1:C:534:VAL:HG21	1.97	0.46
1:A:741:TYR:CD2	1:A:1004:LEU:HD22	2.49	0.46
1:B:358:ILE:HD12	1:B:395:VAL:HG12	1.97	0.46
1:B:420:ASP:O	1:B:461:LEU:N	2.48	0.46
1:C:25:THR:HG23	1:C:66:HIS:HB2	1.98	0.46
1:C:204:TYR:CE2	1:C:225:PRO:HG3	2.50	0.46
1:C:330:PRO:HG2	1:C:525:CYS:SG	2.55	0.46
1:C:743:CYS:HB3	1:C:749:CYS:HB3	1.82	0.46
1:A:368:LEU:HD11	1:A:434:ILE:HD13	1.97	0.46
1:A:699:LEU:HD12	1:A:699:LEU:H	1.80	0.46
1:A:699:LEU:HB3	1:C:873:TYR:CZ	2.51	0.46
1:B:25:THR:HG23	1:B:66:HIS:HB2	1.96	0.46
1:B:395:VAL:HG22	1:B:515:PHE:HD1	1.81	0.46
1:B:988:GLU:O	1:B:991:VAL:N	2.41	0.46
1:B:1072:GLU:N	1:B:1072:GLU:OE1	2.48	0.46
1:C:57:PRO:HB2	1:C:60:SER:HB3	1.97	0.46
1:A:405:ASN:OD1	1:A:405:ASN:N	2.48	0.46
1:A:560:LEU:HD13	1:A:563:GLN:HE21	1.80	0.46
1:A:612:TYR:HE2	1:A:651:ILE:HD12	1.80	0.46
1:A:983:ARG:HD2	1:A:983:ARG:O	2.14	0.46
1:B:439:ASN:O	1:B:443:SER:OG	2.25	0.46
1:B:805:ILE:HD12	1:B:878:LEU:HD11	1.96	0.46
1:C:553:THR:O	1:C:585:LEU:HA	2.15	0.46
1:A:208:THR:O	1:A:209:PRO:C	2.53	0.46
1:B:497:PHE:CG	1:B:507:PRO:HG3	2.50	0.46
1:B:595:VAL:HG21	1:B:633:TRP:HZ2	1.80	0.46
1:B:675:GLN:HG2	1:B:693:ILE:HG12	1.96	0.46
1:C:577:ARG:HA	1:C:584:ILE:HA	1.98	0.46
1:A:741:TYR:CZ	1:A:966:LEU:HD21	2.51	0.46
1:A:1030:SER:HB3	1:B:1041:ASP:HB3	1.98	0.46
1:B:804:GLN:HB3	1:B:818:ILE:HD11	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:134:GLN:HG3	1:C:135:PHE:H	1.81	0.46
1:C:206:LYS:HB3	1:C:223:LEU:HD13	1.97	0.46
1:A:821:LEU:HD11	1:A:935:GLN:HG3	1.96	0.46
1:B:905:ARG:HD2	1:B:1049:LEU:O	2.16	0.46
1:C:423:TYR:OH	1:C:464:PHE:HE1	1.98	0.46
1:A:105:ILE:HG13	1:A:239:GLN:HB3	1.97	0.46
1:A:265:TYR:CG	1:A:265:TYR:O	2.69	0.46
1:A:401:VAL:HG12	1:A:509:ARG:HG3	1.97	0.46
1:A:989:ALA:C	1:A:991:VAL:N	2.67	0.46
1:B:417:ASN:HD22	1:B:455:LEU:HD23	1.80	0.46
1:B:788:ILE:HG23	1:B:876:ALA:HB2	1.97	0.46
1:B:980:ILE:HA	1:B:983:ARG:HG2	1.98	0.46
1:A:303:LEU:O	1:A:304:LYS:C	2.54	0.46
1:C:321:GLN:NE2	1:C:630:THR:OG1	2.49	0.46
1:C:575:ALA:HA	1:C:585:LEU:O	2.16	0.46
1:C:323:THR:OG1	1:C:324:GLU:N	2.49	0.45
1:A:393:THR:HA	1:A:522:ALA:HA	1.98	0.45
1:A:897:PRO:HG2	1:A:900:MET:HE1	1.98	0.45
1:B:441:LEU:HD22	1:B:509:ARG:HH12	1.80	0.45
1:B:731:MET:HE3	1:B:955:ASN:HD21	1.81	0.45
1:B:873:TYR:CZ	1:C:699:LEU:HB3	2.51	0.45
1:C:543:PHE:O	1:C:544:ASN:C	2.53	0.45
1:A:119:ILE:O	1:A:119:ILE:HG22	2.16	0.45
1:A:844:ILE:O	1:B:557:LYS:HG2	2.17	0.45
1:A:858:LEU:HD21	1:A:959:LEU:CD1	2.46	0.45
1:A:886:TRP:HH2	1:A:904:TYR:HB3	1.81	0.45
1:C:106:PHE:CE2	1:C:238:PHE:HD1	2.34	0.45
1:C:278:LYS:HB2	1:C:306:PHE:CE1	2.51	0.45
1:C:528:LYS:HG2	1:C:529:LYS:N	2.32	0.45
1:C:557:LYS:HB2	1:C:584:ILE:HD13	1.97	0.45
1:B:225:PRO:HG2	1:C:562:PHE:CE2	2.52	0.45
1:B:295:PRO:HG3	1:B:633:TRP:CD1	2.52	0.45
1:C:718:PHE:HE1	1:C:919:ASN:ND2	2.14	0.45
1:A:42:VAL:CG1	1:B:567:ARG:HB2	2.46	0.45
1:A:83:VAL:HG11	1:A:237:ARG:CZ	2.47	0.45
1:A:497:PHE:CD1	1:A:507:PRO:HG3	2.51	0.45
1:B:214:ARG:O	1:B:215:ASP:CB	2.65	0.45
1:C:763:LEU:HD13	1:C:1004:LEU:HG	1.98	0.45
1:A:420:ASP:HB3	1:A:460:LYS:HD2	1.97	0.45
1:A:1123:SER:OG	1:C:914:ASN:ND2	2.50	0.45
1:B:337:PRO:O	1:B:341:VAL:HG23	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:422:ASN:ND2	1:A:454:ARG:O	2.29	0.45
1:A:718:PHE:HE1	1:A:919:ASN:HD21	1.63	0.45
1:A:989:ALA:O	1:A:991:VAL:N	2.50	0.45
1:B:106:PHE:HB3	1:B:235:ILE:CG2	2.47	0.45
1:B:181:GLY:H	1:B:186:PHE:HD2	1.65	0.45
1:B:190:ARG:HD3	1:B:207:HIS:ND1	2.30	0.45
1:B:983:ARG:HG3	1:B:984:LEU:HD13	1.99	0.45
1:C:97:LYS:HE2	1:C:184:GLY:HA3	1.99	0.45
1:C:501:TYR:HB3	1:C:505:HIS:HB2	1.98	0.45
1:A:624:ILE:HG23	1:A:634:ARG:HD2	1.98	0.45
1:B:229:LEU:HG	1:B:231:ILE:HD11	1.99	0.45
1:B:776:LYS:HZ3	1:B:1019:ARG:HH22	1.63	0.45
1:B:973:ILE:HD13	1:B:973:ILE:HA	1.87	0.45
1:B:1029:MET:SD	1:B:1033:VAL:HG21	2.56	0.45
1:C:1098:ASN:OD1	1:C:1099:GLY:N	2.50	0.45
1:A:365:TYR:HD2	1:A:368:LEU:HD23	1.82	0.45
1:A:403:LYS:HB3	1:A:406:GLU:OE1	2.17	0.45
1:A:886:TRP:HZ3	1:A:901:GLN:HG3	1.81	0.45
1:B:366:SER:HA	1:B:369:TYR:HB3	1.99	0.45
1:B:858:LEU:HD22	1:B:963:VAL:HG22	1.98	0.45
1:C:48:LEU:CD1	1:C:305:SER:HA	2.46	0.45
1:C:199:GLY:O	1:C:200:TYR:C	2.55	0.45
1:C:347:PHE:CE1	1:C:509:ARG:HD3	2.52	0.45
1:C:439:ASN:OD1	1:C:507:PRO:HD2	2.16	0.45
1:C:1092:GLU:OE2	1:C:1092:GLU:N	2.49	0.45
1:A:450:ASP:OD1	1:A:450:ASP:N	2.50	0.45
1:B:215:ASP:OD2	1:B:216:PHE:N	2.50	0.45
1:B:878:LEU:O	1:B:882:ILE:HG23	2.17	0.45
1:C:624:ILE:HA	1:C:634:ARG:HH21	1.80	0.45
1:B:409:GLN:NE2	1:B:418:ILE:H	2.14	0.44
1:B:543:PHE:CG	1:B:576:VAL:HG11	2.52	0.44
1:B:903:ALA:HB1	1:B:913:GLN:HB3	1.99	0.44
1:B:905:ARG:CZ	1:B:1050:MET:HG2	2.47	0.44
1:C:124:THR:O	1:C:174:PRO:HD3	2.17	0.44
1:C:562:PHE:CE1	1:C:563:GLN:HG2	2.52	0.44
1:C:878:LEU:O	1:C:882:ILE:HG12	2.17	0.44
1:A:836:GLN:O	1:A:837:TYR:C	2.56	0.44
1:A:858:LEU:HD21	1:A:959:LEU:HD11	1.98	0.44
1:A:1002:GLN:HG2	1:C:759:PHE:CZ	2.52	0.44
1:B:333:THR:OG1	1:B:334:ASN:N	2.49	0.44
1:C:188:ASN:OD1	1:C:188:ASN:N	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:365:TYR:CD2	1:C:387:LEU:HG	2.52	0.44
1:C:947:LYS:HE3	1:C:947:LYS:HB2	1.83	0.44
1:B:210:ILE:O	1:B:212:ILE:C	2.54	0.44
1:B:214:ARG:O	1:B:215:ASP:HB3	2.17	0.44
1:B:763:LEU:HD23	1:B:1004:LEU:HG	1.98	0.44
1:B:1013:ILE:HD13	1:B:1013:ILE:HA	1.74	0.44
1:A:308:VAL:H	1:A:602:THR:CG2	2.30	0.44
1:A:546:LEU:HD13	1:A:546:LEU:HA	1.87	0.44
1:A:1072:GLU:OE1	1:A:1072:GLU:N	2.50	0.44
1:A:1098:ASN:CG	1:A:1101:HIS:H	2.20	0.44
1:C:189:LEU:HD23	1:C:210:ILE:HG12	2.00	0.44
1:B:299:THR:O	1:B:300:LYS:C	2.56	0.44
1:B:360:ASN:O	1:B:360:ASN:ND2	2.50	0.44
1:B:383:SER:HB3	1:B:386:LYS:HB2	1.99	0.44
1:B:461:LEU:HD23	1:B:461:LEU:HA	1.82	0.44
1:B:743:CYS:HB3	1:B:749:CYS:HB3	1.80	0.44
1:C:159:VAL:HG12	1:C:159:VAL:O	2.17	0.44
1:C:411:ALA:HB3	1:C:414:GLN:HG3	1.99	0.44
1:C:1098:ASN:CG	1:C:1101:HIS:H	2.19	0.44
1:A:402:ILE:HG12	1:A:406:GLU:HB2	1.99	0.44
1:A:988:GLU:HG3	1:A:992:GLN:HE21	1.83	0.44
1:B:363:ALA:O	1:B:527:PRO:HD3	2.18	0.44
1:C:33:THR:HG23	1:C:58:PHE:CZ	2.52	0.44
1:C:129:LYS:HE2	1:C:169:GLU:HG3	1.99	0.44
1:C:337:PRO:O	1:C:340:GLU:N	2.50	0.44
1:A:386:LYS:HB2	1:A:386:LYS:HE3	1.93	0.44
1:B:557:LYS:HB2	1:B:584:ILE:HG21	1.99	0.44
1:B:844:ILE:HG23	1:C:556:ASN:HB2	1.99	0.44
1:A:103:GLY:HA3	1:A:120:VAL:HA	2.00	0.44
1:A:338:PHE:HB3	1:A:342:PHE:CE2	2.53	0.44
1:A:456:PHE:HB2	1:A:491:PRO:HA	2.00	0.44
1:A:707:TYR:HB2	1:C:883:THR:HB	1.98	0.44
1:A:897:PRO:HA	1:B:707:TYR:CE1	2.53	0.44
1:B:210:ILE:C	1:B:213:GLY:N	2.70	0.44
1:B:471:GLU:N	1:B:491:PRO:HG3	2.33	0.44
1:B:966:LEU:HG	1:B:1000:ARG:NH2	2.33	0.44
1:A:295:PRO:HG3	1:A:633:TRP:CD1	2.52	0.44
1:A:350:VAL:HG22	1:A:422:ASN:HB3	2.00	0.44
1:A:559:PHE:HB3	1:A:577:ARG:NH2	2.33	0.44
1:A:647:ALA:HA	1:C:862:PRO:HG3	1.99	0.44
1:B:57:PRO:HB2	1:B:60:SER:HB3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:62:VAL:HG11	1:B:216:PHE:HE2	1.83	0.44
1:C:164:ASN:O	1:C:166:CYS:N	2.46	0.44
1:C:176:LEU:HD22	1:C:190:ARG:HD2	1.98	0.44
1:C:724:THR:HB	1:C:934:ILE:HD11	1.99	0.44
1:A:133:PHE:HB2	1:A:160:TYR:HB2	1.99	0.43
1:A:553:THR:HG21	1:C:841:LEU:HB2	2.00	0.43
1:B:746:SER:HB3	1:B:748:GLU:OE1	2.17	0.43
1:B:775:ASP:OD1	1:B:864:LEU:HB3	2.18	0.43
1:C:627:ASP:HA	1:C:634:ARG:HH22	1.83	0.43
1:A:1094:VAL:HG23	1:A:1107:ARG:HD2	1.99	0.43
1:B:131:CYS:HB3	1:B:133:PHE:CE2	2.53	0.43
1:B:529:LYS:HB2	1:B:529:LYS:HE2	1.75	0.43
1:B:776:LYS:NZ	1:B:1019:ARG:HH22	2.16	0.43
1:C:106:PHE:HD1	1:C:235:ILE:HD13	1.83	0.43
1:C:404:GLY:HA2	1:C:508:TYR:CD2	2.53	0.43
1:A:204:TYR:CE2	1:A:225:PRO:HG3	2.53	0.43
1:A:560:LEU:HB2	1:A:563:GLN:HG2	2.00	0.43
1:A:941:THR:HG21	1:A:944:ALA:HB2	1.99	0.43
3:A:1304:NAG:HO3	3:A:1304:NAG:HO6	1.59	0.43
1:B:471:GLU:H	1:B:491:PRO:HG3	1.83	0.43
1:C:48:LEU:HD23	1:C:48:LEU:HA	1.73	0.43
1:A:1039:ARG:H	1:A:1039:ARG:HG2	1.57	0.43
1:C:780:GLU:O	1:C:784:GLN:NE2	2.49	0.43
1:A:1090:PRO:HG3	1:A:1095:PHE:CD1	2.53	0.43
1:B:360:ASN:H	1:B:523:THR:CG2	2.32	0.43
1:C:560:LEU:H	1:C:563:GLN:HG3	1.83	0.43
1:A:347:PHE:HB2	1:A:401:VAL:HG13	2.01	0.43
1:A:749:CYS:SG	1:A:997:ILE:HD11	2.58	0.43
1:B:877:LEU:HA	1:B:877:LEU:HD23	1.77	0.43
1:C:188:ASN:HB3	1:C:209:PRO:HG3	2.00	0.43
1:A:115:GLN:OE1	1:A:130:VAL:HG12	2.18	0.43
1:A:436:TRP:HZ3	1:A:511:VAL:HG12	1.83	0.43
1:A:703:ASN:OD1	1:A:704:SER:N	2.50	0.43
1:C:401:VAL:HG21	1:C:451:TYR:CE2	2.54	0.43
1:A:357:ARG:HB2	1:A:357:ARG:CZ	2.47	0.43
1:A:364:ASP:O	1:A:367:VAL:HG22	2.18	0.43
1:A:454:ARG:HG2	1:A:492:LEU:HB3	2.01	0.43
1:A:840:CYS:HB2	1:B:588:THR:CG2	2.47	0.43
1:A:845:ALA:C	1:B:557:LYS:HE2	2.39	0.43
1:A:988:GLU:O	1:A:990:GLU:N	2.52	0.43
1:C:323:THR:OG1	1:C:324:GLU:OE1	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:328:ARG:HD2	1:C:579:PRO:CG	2.46	0.43
1:C:450:ASP:OD1	1:C:450:ASP:N	2.50	0.43
1:C:908:GLY:HA3	1:C:1036:GLN:HE22	1.84	0.43
1:A:555:SER:HB2	1:A:586:ASP:OD1	2.19	0.43
1:B:993:ILE:O	1:B:997:ILE:HG12	2.19	0.43
1:C:574:ASP:O	1:C:587:ILE:N	2.52	0.43
1:C:858:LEU:HD13	1:C:962:LEU:HD13	2.00	0.43
1:A:459:SER:OG	1:A:460:LYS:N	2.51	0.43
1:A:983:ARG:HH21	1:A:984:LEU:HD11	1.84	0.43
1:A:1129:VAL:HG13	1:C:917:TYR:HB3	2.01	0.43
1:B:986:PRO:HB2	1:B:987:PRO:HD3	2.01	0.43
1:C:328:ARG:HD3	1:C:579:PRO:HB2	2.01	0.43
1:C:391:CYS:HB3	1:C:522:ALA:CB	2.49	0.43
1:C:1029:MET:O	1:C:1033:VAL:HB	2.19	0.43
1:A:180:GLU:HA	1:A:186:PHE:HD2	1.84	0.42
1:A:775:ASP:OD1	1:A:864:LEU:HB3	2.19	0.42
1:A:822:LEU:HD22	1:A:945:LEU:HD21	2.01	0.42
1:B:34:ARG:CZ	1:B:217:PRO:HD2	2.48	0.42
1:B:377:PHE:CG	1:B:377:PHE:O	2.73	0.42
1:B:904:TYR:OH	1:C:1094:VAL:HG23	2.19	0.42
1:B:1098:ASN:OD1	1:B:1099:GLY:N	2.52	0.42
1:C:131:CYS:HB2	1:C:166:CYS:HB3	1.92	0.42
1:C:214:ARG:O	1:C:217:PRO:HG3	2.19	0.42
1:C:802:PHE:O	1:C:804:GLN:N	2.52	0.42
1:A:318:PHE:HZ	1:A:615:VAL:HG21	1.84	0.42
1:A:641:ASN:O	1:A:642:VAL:HG23	2.19	0.42
1:A:669:GLY:N	1:C:864:LEU:O	2.41	0.42
1:B:105:ILE:HG13	1:B:117:LEU:O	2.19	0.42
1:B:976:VAL:O	1:B:980:ILE:HG23	2.19	0.42
1:A:125:ASN:HD22	1:A:171:VAL:HG13	1.84	0.42
1:A:730:SER:O	1:A:1058:HIS:HB3	2.19	0.42
1:A:804:GLN:NE2	1:A:935:GLN:OE1	2.53	0.42
1:A:1086:LYS:HE3	1:A:1086:LYS:HB2	1.89	0.42
1:A:1139:ASP:OD1	1:A:1142:GLN:N	2.35	0.42
1:B:189:LEU:HG	1:B:190:ARG:H	1.85	0.42
1:C:62:VAL:HG11	1:C:216:PHE:CZ	2.53	0.42
1:C:378:LYS:O	1:C:433:VAL:HG12	2.19	0.42
1:A:163:ALA:HA	1:A:166:CYS:SG	2.60	0.42
1:A:265:TYR:O	1:A:266:TYR:C	2.58	0.42
1:A:369:TYR:HA	1:A:374:PHE:CE2	2.54	0.42
1:B:350:VAL:HG22	1:B:422:ASN:HB3	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:624:ILE:HD13	1:B:624:ILE:HA	1.87	0.42
1:C:364:ASP:O	1:C:367:VAL:HG12	2.20	0.42
1:C:714:ILE:HD12	1:C:1096:VAL:HG21	2.02	0.42
1:A:762:GLN:HA	1:A:765:ARG:NH1	2.35	0.42
1:B:165:ASN:O	1:B:166:CYS:SG	2.78	0.42
1:B:426:PRO:HG3	1:B:464:PHE:CE2	2.54	0.42
1:B:731:MET:HG2	1:B:774:GLN:OE1	2.18	0.42
1:C:320:VAL:HG22	1:C:629:LEU:HD12	2.02	0.42
1:A:328:ARG:NH2	1:A:578:ASP:OD2	2.53	0.42
1:A:409:GLN:HG2	1:A:419:ALA:HB2	2.00	0.42
1:A:866:THR:O	1:A:869:MET:HG2	2.20	0.42
1:A:959:LEU:HD12	1:A:959:LEU:HA	1.74	0.42
1:C:34:ARG:NH2	1:C:219:GLY:O	2.52	0.42
1:A:904:TYR:HE2	1:B:1107:ARG:HG2	1.85	0.42
1:A:1073:LYS:HE2	1:A:1075:PHE:CZ	2.54	0.42
1:B:189:LEU:C	1:B:190:ARG:CG	2.88	0.42
1:B:210:ILE:CG2	1:B:212:ILE:HG12	2.50	0.42
1:C:189:LEU:HD12	1:C:189:LEU:O	2.20	0.42
1:B:41:LYS:HG2	1:C:562:PHE:CD2	2.55	0.42
1:B:176:LEU:HA	1:B:207:HIS:HE1	1.83	0.42
1:C:378:LYS:HA	1:C:378:LYS:HE2	2.02	0.42
1:A:1076:THR:HB	1:A:1097:SER:HB3	2.02	0.42
1:B:62:VAL:HG11	1:B:216:PHE:CE2	2.55	0.42
1:B:401:VAL:HG21	1:B:451:TYR:CZ	2.54	0.42
1:B:748:GLU:OE1	1:B:749:CYS:N	2.51	0.42
1:C:580:GLN:HG2	3:C:1310:NAG:H4	2.02	0.42
1:A:403:LYS:H	1:A:495:TYR:HE2	1.68	0.42
1:A:461:LEU:HD23	1:A:461:LEU:HA	1.81	0.42
1:A:461:LEU:HD21	1:A:467:ASP:HB2	2.01	0.42
1:B:160:TYR:CE1	1:B:163:ALA:HB2	2.54	0.42
1:B:218:GLN:OE1	1:B:218:GLN:HA	2.20	0.42
1:B:376:ALA:HB3	1:B:435:ALA:HB3	2.02	0.42
1:C:215:ASP:O	1:C:216:PHE:C	2.56	0.42
1:C:502:GLY:O	1:C:506:GLN:HG2	2.20	0.42
1:A:43:PHE:N	1:B:563:GLN:OE1	2.53	0.41
1:B:588:THR:O	1:B:589:PRO:C	2.59	0.41
1:B:930:ALA:HA	1:B:933:LYS:HG2	2.01	0.41
1:C:403:LYS:N	1:C:495:TYR:OH	2.51	0.41
1:A:42:VAL:HG11	1:B:567:ARG:HD2	2.02	0.41
1:A:562:PHE:HD1	1:A:562:PHE:H	1.66	0.41
1:A:598:ILE:N	1:A:609:ALA:O	2.45	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:208:THR:HB	1:B:210:ILE:HG12	1.98	0.41
1:B:338:PHE:CE2	1:B:358:ILE:HD13	2.53	0.41
1:B:736:VAL:HG21	1:B:1004:LEU:HD11	2.02	0.41
1:B:886:TRP:CH2	1:B:904:TYR:HB3	2.55	0.41
1:C:194:PHE:HB3	1:C:201:PHE:CZ	2.55	0.41
1:C:1075:PHE:HB3	1:C:1097:SER:O	2.21	0.41
1:C:1098:ASN:OD1	1:C:1101:HIS:N	2.35	0.41
1:A:775:ASP:OD2	1:A:864:LEU:HD23	2.20	0.41
1:A:906:PHE:CD2	1:A:916:LEU:HB2	2.55	0.41
1:B:108:THR:HG21	3:B:1304:NAG:H62	2.01	0.41
1:B:325:SER:CB	1:B:540:ASN:HB2	2.51	0.41
1:B:630:THR:HB	1:B:631:PRO:HD3	2.02	0.41
1:B:806:LEU:HD23	1:B:806:LEU:HA	1.83	0.41
1:B:831:ALA:HB3	1:B:834:ILE:HG23	2.01	0.41
1:C:40:ASP:CG	1:C:41:LYS:H	2.24	0.41
1:C:878:LEU:HA	1:C:878:LEU:HD12	1.75	0.41
1:A:1115:ILE:HG23	1:A:1137:VAL:HA	2.03	0.41
1:B:722:VAL:HG12	1:B:934:ILE:HD12	2.03	0.41
1:B:773:GLU:OE1	1:B:1019:ARG:HB2	2.19	0.41
1:A:93:ALA:HA	1:A:190:ARG:O	2.20	0.41
1:A:836:GLN:NE2	1:A:851:CYS:SG	2.94	0.41
1:A:106:PHE:HB2	1:A:117:LEU:HB3	2.03	0.41
1:B:566:GLY:N	1:B:575:ALA:O	2.54	0.41
1:B:731:MET:CE	1:B:955:ASN:HD21	2.33	0.41
1:C:588:THR:HG23	1:C:589:PRO:HD2	2.03	0.41
1:B:26:GLN:HA	1:B:65:PHE:HD1	1.86	0.41
1:B:37:TYR:OH	1:B:53:ASP:OD1	2.39	0.41
1:C:99:ASN:HD21	1:C:102:ARG:HH11	1.68	0.41
1:C:564:GLN:OE1	1:C:577:ARG:NH1	2.51	0.41
1:C:578:ASP:HB2	1:C:583:GLU:HG2	2.03	0.41
1:C:629:LEU:HD23	1:C:631:PRO:HG2	2.03	0.41
1:C:974:SER:OG	1:C:975:SER:N	2.53	0.41
1:A:37:TYR:HA	1:A:223:LEU:HB3	2.01	0.41
1:A:131:CYS:HB2	1:A:166:CYS:HB3	1.90	0.41
1:A:348:ALA:O	1:A:400:PHE:HA	2.21	0.41
1:A:355:ARG:H	2:D:1:NAG:H82	1.86	0.41
1:B:992:GLN:H	1:B:992:GLN:HG2	1.73	0.41
1:C:409:GLN:NE2	1:C:416:GLY:HA3	2.36	0.41
1:A:46:SER:O	1:A:46:SER:OG	2.35	0.41
1:A:84:LEU:HD13	1:A:84:LEU:HA	1.91	0.41
1:A:403:LYS:HE3	1:A:495:TYR:CE2	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:557:LYS:HG3	1:C:844:ILE:O	2.21	0.41
1:B:417:ASN:ND2	1:B:455:LEU:HD23	2.36	0.41
1:B:425:LEU:HD23	1:B:425:LEU:HA	1.93	0.41
1:B:528:LYS:HE3	1:B:528:LYS:HB3	1.97	0.41
1:B:725:GLU:HG3	1:B:1064:HIS:HD2	1.85	0.41
1:B:833:PHE:O	1:C:646:ARG:NE	2.52	0.41
1:C:231:ILE:HG22	1:C:233:ILE:HG23	2.03	0.41
1:C:534:VAL:HG23	1:C:539:VAL:HG21	2.02	0.41
1:C:581:THR:C	1:C:583:GLU:N	2.69	0.41
1:C:725:GLU:OE1	1:C:1064:HIS:NE2	2.54	0.41
1:C:961:THR:O	1:C:965:GLN:HG2	2.21	0.41
1:C:984:LEU:HB3	1:C:989:ALA:HB2	2.02	0.41
1:C:1083:HIS:CG	1:C:1137:VAL:HG22	2.56	0.41
1:A:424:LYS:HE3	1:A:424:LYS:HB2	1.94	0.41
1:B:188:ASN:HA	1:B:209:PRO:HA	2.02	0.41
1:B:855:PHE:HA	1:C:589:PRO:HG3	2.02	0.41
1:B:1098:ASN:OD1	1:B:1098:ASN:N	2.54	0.41
1:C:120:VAL:HG13	1:C:127:PHE:HB3	2.02	0.41
1:C:631:PRO:HB3	1:C:633:TRP:CZ3	2.56	0.41
1:C:878:LEU:HD11	1:C:1052:PHE:HB3	2.02	0.41
1:A:106:PHE:CD1	1:A:117:LEU:HD23	2.56	0.40
1:A:334:ASN:O	1:A:362:VAL:N	2.42	0.40
1:A:543:PHE:HB3	1:A:576:VAL:HG11	2.03	0.40
1:A:1096:VAL:O	1:A:1103:PHE:N	2.47	0.40
1:B:48:LEU:HD23	1:B:48:LEU:HA	1.95	0.40
1:C:164:ASN:C	1:C:166:CYS:H	2.24	0.40
1:C:197:ILE:O	1:C:198:ASP:C	2.60	0.40
1:C:437:ASN:OD1	1:C:439:ASN:ND2	2.54	0.40
1:C:906:PHE:HE1	1:C:1049:LEU:HD11	1.86	0.40
1:A:187:LYS:H	1:A:210:ILE:HB	1.85	0.40
1:A:404:GLY:HA2	1:A:508:TYR:HD2	1.86	0.40
1:A:922:LEU:HD21	2:H:1:NAG:H5	2.03	0.40
1:B:43:PHE:O	1:B:44:ARG:HD2	2.21	0.40
1:B:90:VAL:N	1:B:270:LEU:HD12	2.36	0.40
1:B:546:LEU:HD11	1:B:573:THR:HG21	2.03	0.40
1:B:631:PRO:HB3	1:B:633:TRP:CZ3	2.56	0.40
1:C:25:THR:O	1:C:65:PHE:HA	2.21	0.40
1:C:657:ASN:HB3	3:C:1305:NAG:O5	2.21	0.40
1:A:403:LYS:HG2	1:A:504:GLY:O	2.21	0.40
1:A:453:TYR:CG	1:A:495:TYR:CE1	3.09	0.40
1:A:947:LYS:HB2	1:A:947:LYS:HE2	1.75	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:543:PHE:HB3	1:B:576:VAL:HG11	2.04	0.40
1:B:765:ARG:HH22	1:C:961:THR:HG21	1.86	0.40
1:B:1086:LYS:HB2	1:B:1086:LYS:HE3	1.85	0.40
1:B:1098:ASN:ND2	1:B:1101:HIS:H	2.19	0.40
1:C:324:GLU:HG2	1:C:539:VAL:HG22	2.04	0.40
1:C:346:ARG:HE	1:C:346:ARG:HA	1.86	0.40
1:C:365:TYR:CE2	1:C:387:LEU:HG	2.57	0.40
1:A:168:PHE:CZ	1:A:229:LEU:HD13	2.56	0.40
1:A:631:PRO:HB3	1:A:633:TRP:CH2	2.57	0.40
1:B:189:LEU:HG	1:B:190:ARG:N	2.36	0.40
1:B:490:PHE:CG	1:B:491:PRO:HD2	2.56	0.40
1:B:748:GLU:OE1	1:B:748:GLU:N	2.54	0.40
1:C:599:THR:HB	1:C:608:VAL:HG12	2.04	0.40
1:A:351:TYR:CE1	1:A:452:TRP:HB2	2.56	0.40
1:B:117:LEU:HD11	1:B:119:ILE:HG12	2.02	0.40
1:B:208:THR:C	1:B:210:ILE:N	2.75	0.40
1:B:1114:ILE:HD13	1:B:1114:ILE:HA	1.94	0.40
1:C:134:GLN:HG2	1:C:162:SER:HB2	2.03	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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 EM 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	1053/1206 (87%)	953 (90%)	95 (9%)	5 (0%)	25	60
1	B	1053/1206 (87%)	955 (91%)	93 (9%)	5 (0%)	25	60
1	C	1053/1206 (87%)	955 (91%)	90 (8%)	8 (1%)	16	51
All	All	3159/3618 (87%)	2863 (91%)	278 (9%)	18 (1%)	24	57

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	987	PRO
1	A	989	ALA
1	B	215	ASP
1	B	304	LYS
1	C	164	ASN
1	C	582	LEU
1	A	217	PRO
1	B	164	ASN
1	B	210	ILE
1	C	304	LYS
1	C	544	ASN
1	C	580	GLN
1	A	304	LYS
1	C	165	ASN
1	C	579	PRO
1	A	218	GLN
1	B	534	VAL
1	C	210	ILE

### 5.3.2 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 EM 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	925/1054 (88%)	885 (96%)	40 (4%)	25	49
1	B	925/1054 (88%)	884 (96%)	41 (4%)	24	49
1	C	925/1054 (88%)	882 (95%)	43 (5%)	23	48
All	All	2775/3162 (88%)	2651 (96%)	124 (4%)	26	48

All (124) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	34	ARG
1	A	46	SER
1	A	62	VAL
1	A	118	LEU
1	A	127	PHE

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	133	PHE
1	A	135	PHE
1	A	210	ILE
1	A	216	PHE
1	A	220	PHE
1	A	246	ARG
1	A	300	LYS
1	A	303	LEU
1	A	304	LYS
1	A	305	SER
1	A	343	ASN
1	A	351	TYR
1	A	375	PHE
1	A	377	PHE
1	A	412	PRO
1	A	453	TYR
1	A	457	ARG
1	A	462	LYS
1	A	473	TYR
1	A	498	ARG
1	A	508	TYR
1	A	518	LEU
1	A	562	PHE
1	A	571	ASP
1	A	592	PHE
1	A	625	HIS
1	A	636	TYR
1	A	731	MET
1	A	762	GLN
1	A	849	LEU
1	A	873	TYR
1	A	939	PHE
1	A	987	PRO
1	A	994	ASP
1	A	1037	SER
1	B	40	ASP
1	B	53	ASP
1	B	133	PHE
1	B	134	GLN
1	B	164	ASN
1	B	165	ASN
1	B	168	PHE

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	B	188	ASN
1	B	189	LEU
1	B	200	TYR
1	B	208	THR
1	B	212	ILE
1	B	216	PHE
1	B	238	PHE
1	B	265	TYR
1	B	270	LEU
1	B	303	LEU
1	B	305	SER
1	B	453	TYR
1	B	456	PHE
1	B	462	LYS
1	B	528	LYS
1	B	536	ASN
1	B	560	LEU
1	B	617	CYS
1	B	643	PHE
1	B	649	CYS
1	B	655	TYR
1	B	698	SER
1	B	759	PHE
1	B	775	ASP
1	B	837	TYR
1	B	873	TYR
1	B	966	LEU
1	B	979	ASP
1	B	987	PRO
1	B	988	GLU
1	B	1000	ARG
1	B	1036	GLN
1	B	1097	SER
1	B	1106	GLN
1	C	61	ASN
1	C	127	PHE
1	C	133	PHE
1	C	168	PHE
1	C	198	ASP
1	C	200	TYR
1	C	216	PHE
1	C	220	PHE

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Mol	Chain	Res	Type
1	C	265	TYR
1	C	299	THR
1	C	300	LYS
1	C	301	CYS
1	C	302	THR
1	C	303	LEU
1	C	305	SER
1	C	308	VAL
1	C	319	ARG
1	C	326	ILE
1	C	327	VAL
1	C	329	PHE
1	C	343	ASN
1	C	360	ASN
1	C	374	PHE
1	C	377	PHE
1	C	386	LYS
1	C	392	PHE
1	C	487	ASN
1	C	529	LYS
1	C	530	SER
1	C	531	THR
1	C	538	CYS
1	C	562	PHE
1	C	592	PHE
1	C	636	TYR
1	C	740	MET
1	C	760	CYS
1	C	786	LYS
1	C	873	TYR
1	C	975	SER
1	C	994	ASP
1	C	1037	SER
1	C	1097	SER
1	C	1136	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	207	HIS
1	A	239	GLN
1	A	321	GLN

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Mol	Chain	Res	Type
1	A	965	GLN
1	A	992	GLN
1	B	207	HIS
1	B	360	ASN
1	B	409	GLN
1	B	1005	GLN
1	C	196	ASN
1	C	207	HIS

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

34 monosaccharides are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
2	NAG	D	1	2,1	14,14,15	0.64	1 (7%)	17,19,21	0.61	0
2	BMA	D	2	2	11,11,12	0.66	0	15,15,17	0.71	0
2	NAG	E	1	2	14,14,15	0.28	0	17,19,21	0.41	0
2	BMA	E	2	2	11,11,12	0.58	0	15,15,17	0.78	0
2	NAG	F	1	2,1	14,14,15	0.20	0	17,19,21	0.42	0
2	BMA	F	2	2	11,11,12	0.59	0	15,15,17	0.73	0
2	NAG	G	1	2,1	14,14,15	0.22	0	17,19,21	0.51	0
2	BMA	G	2	2	11,11,12	0.63	0	15,15,17	0.67	0
2	NAG	H	1	2,1	14,14,15	0.26	0	17,19,21	0.44	0
2	BMA	H	2	2	11,11,12	0.57	0	15,15,17	0.70	0



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	NAG	I	1	2,1	14,14,15	1.22	1 (7%)	17,19,21	1.11	1 (5%)
2	BMA	I	2	2	11,11,12	0.56	0	15,15,17	1.23	1 (6%)
2	NAG	J	1	2,1	14,14,15	0.21	0	17,19,21	0.37	0
2	BMA	J	2	2	11,11,12	0.65	0	15,15,17	0.70	0
2	NAG	K	1	2,1	14,14,15	0.19	0	17,19,21	0.41	0
2	BMA	K	2	2	11,11,12	0.57	0	15,15,17	0.70	0
2	NAG	L	1	2,1	14,14,15	0.20	0	17,19,21	0.48	0
2	BMA	L	2	2	11,11,12	0.58	0	15,15,17	0.72	0
2	NAG	M	1	2,1	14,14,15	0.26	0	17,19,21	0.42	0
2	BMA	M	2	2	11,11,12	0.57	0	15,15,17	0.70	0
2	NAG	N	1	2,1	14,14,15	1.24	1 (7%)	17,19,21	1.08	1 (5%)
2	BMA	N	2	2	11,11,12	0.57	0	15,15,17	1.19	1 (6%)
2	NAG	O	1	2,1	14,14,15	0.21	0	17,19,21	0.40	0
2	BMA	O	2	2	11,11,12	0.65	0	15,15,17	0.80	0
2	NAG	P	1	2,1	14,14,15	0.26	0	17,19,21	0.38	0
2	BMA	P	2	2	11,11,12	0.57	0	15,15,17	0.69	0
2	NAG	Q	1	2,1	14,14,15	0.17	0	17,19,21	0.42	0
2	BMA	Q	2	2	11,11,12	0.60	0	15,15,17	0.69	0
2	NAG	R	1	2,1	14,14,15	0.22	0	17,19,21	0.51	0
2	BMA	R	2	2	11,11,12	0.64	0	15,15,17	0.73	0
2	NAG	S	1	2,1	14,14,15	0.23	0	17,19,21	0.42	0
2	BMA	S	2	2	11,11,12	0.55	0	15,15,17	0.70	0
2	NAG	T	1	2,1	14,14,15	1.28	1 (7%)	17,19,21	1.16	1 (5%)
2	BMA	T	2	2	11,11,12	0.56	0	15,15,17	1.22	1 (6%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	D	1	2,1	-	0/6/23/26	0/1/1/1
2	BMA	D	2	2	-	1/2/19/22	0/1/1/1
2	NAG	E	1	2	-	2/6/23/26	0/1/1/1
2	BMA	E	2	2	-	0/2/19/22	0/1/1/1
2	NAG	F	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	F	2	2	-	0/2/19/22	0/1/1/1
2	NAG	G	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	G	2	2	-	0/2/19/22	0/1/1/1
2	NAG	H	1	2,1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	BMA	H	2	2	-	0/2/19/22	0/1/1/1
2	NAG	I	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	I	2	2	-	0/2/19/22	0/1/1/1
2	NAG	J	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	J	2	2	-	0/2/19/22	0/1/1/1
2	NAG	K	1	2,1	-	1/6/23/26	0/1/1/1
2	BMA	K	2	2	-	0/2/19/22	0/1/1/1
2	NAG	L	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	L	2	2	-	0/2/19/22	0/1/1/1
2	NAG	M	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	M	2	2	-	0/2/19/22	0/1/1/1
2	NAG	N	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	N	2	2	-	0/2/19/22	0/1/1/1
2	NAG	O	1	2,1	-	1/6/23/26	0/1/1/1
2	BMA	O	2	2	-	0/2/19/22	0/1/1/1
2	NAG	P	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	P	2	2	-	0/2/19/22	0/1/1/1
2	NAG	Q	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	Q	2	2	-	0/2/19/22	0/1/1/1
2	NAG	R	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	R	2	2	-	0/2/19/22	0/1/1/1
2	NAG	S	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	S	2	2	-	0/2/19/22	0/1/1/1
2	NAG	T	1	2,1	-	2/6/23/26	0/1/1/1
2	BMA	T	2	2	-	0/2/19/22	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	T	1	NAG	O5-C1	-4.48	1.36	1.43
2	N	1	NAG	O5-C1	-4.32	1.36	1.43
2	I	1	NAG	O5-C1	-4.23	1.37	1.43
2	D	1	NAG	O5-C1	-2.23	1.40	1.43

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	T	1	NAG	C3-C4-C5	3.25	116.03	110.24
2	I	1	NAG	C3-C4-C5	3.08	115.73	110.24
2	N	1	NAG	C3-C4-C5	2.87	115.35	110.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	I	2	BMA	C1-O5-C5	2.86	116.06	112.19
2	T	2	BMA	C1-O5-C5	2.84	116.04	112.19
2	N	2	BMA	C1-O5-C5	2.66	115.79	112.19

There are no chirality outliers.

All (31) torsion outliers are listed below:

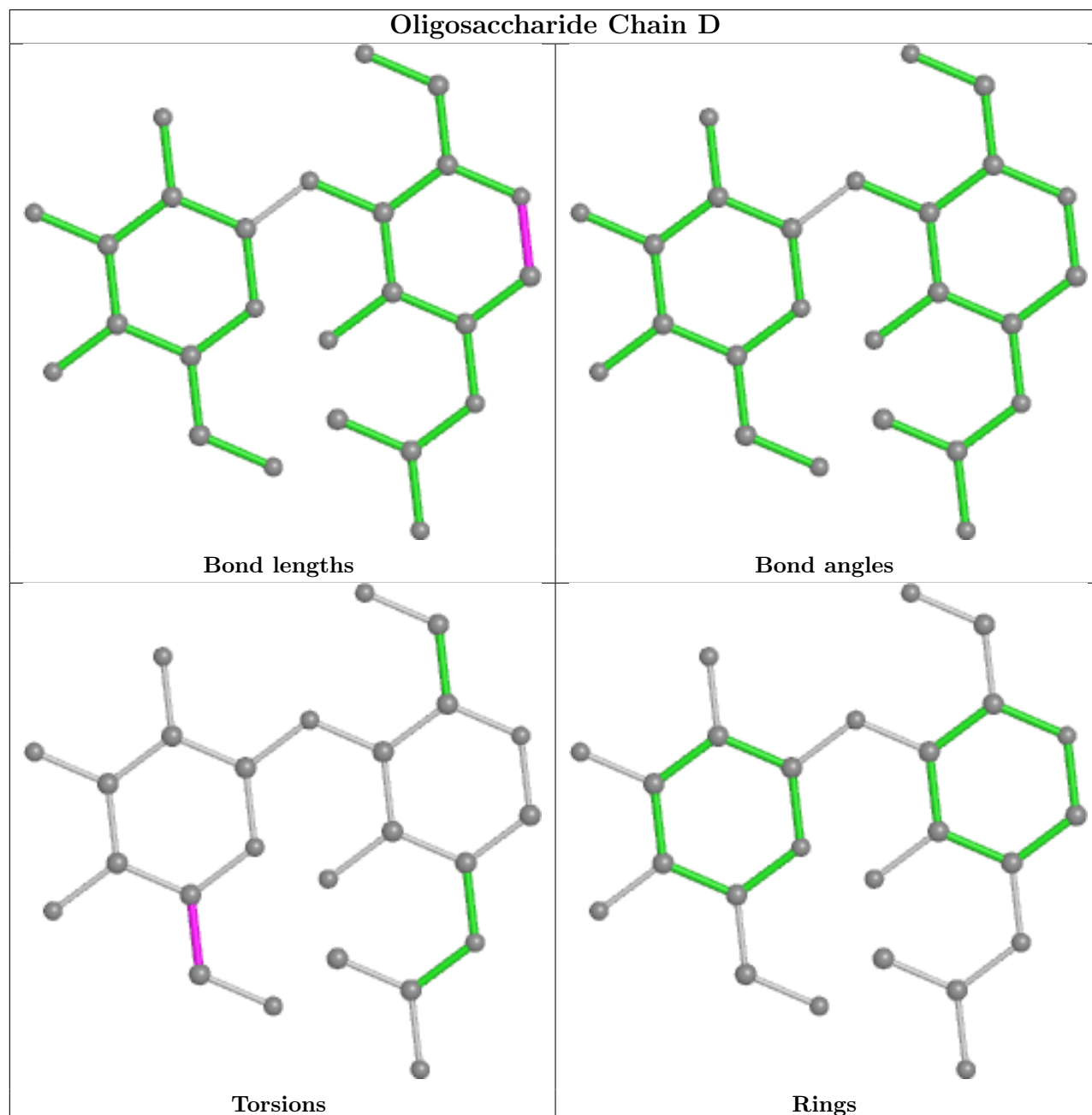
Mol	Chain	Res	Type	Atoms
2	T	1	NAG	O5-C5-C6-O6
2	H	1	NAG	O5-C5-C6-O6
2	L	1	NAG	O5-C5-C6-O6
2	N	1	NAG	O5-C5-C6-O6
2	I	1	NAG	O5-C5-C6-O6
2	G	1	NAG	O5-C5-C6-O6
2	H	1	NAG	C4-C5-C6-O6
2	G	1	NAG	C4-C5-C6-O6
2	R	1	NAG	O5-C5-C6-O6
2	N	1	NAG	C4-C5-C6-O6
2	T	1	NAG	C4-C5-C6-O6
2	E	1	NAG	C8-C7-N2-C2
2	E	1	NAG	O7-C7-N2-C2
2	J	1	NAG	C8-C7-N2-C2
2	J	1	NAG	O7-C7-N2-C2
2	P	1	NAG	C8-C7-N2-C2
2	P	1	NAG	O7-C7-N2-C2
2	F	1	NAG	O5-C5-C6-O6
2	Q	1	NAG	O5-C5-C6-O6
2	I	1	NAG	C4-C5-C6-O6
2	M	1	NAG	O5-C5-C6-O6
2	S	1	NAG	O5-C5-C6-O6
2	L	1	NAG	C4-C5-C6-O6
2	O	1	NAG	O5-C5-C6-O6
2	F	1	NAG	C4-C5-C6-O6
2	Q	1	NAG	C4-C5-C6-O6
2	D	2	BMA	O5-C5-C6-O6
2	M	1	NAG	C4-C5-C6-O6
2	R	1	NAG	C4-C5-C6-O6
2	K	1	NAG	O5-C5-C6-O6
2	S	1	NAG	C4-C5-C6-O6

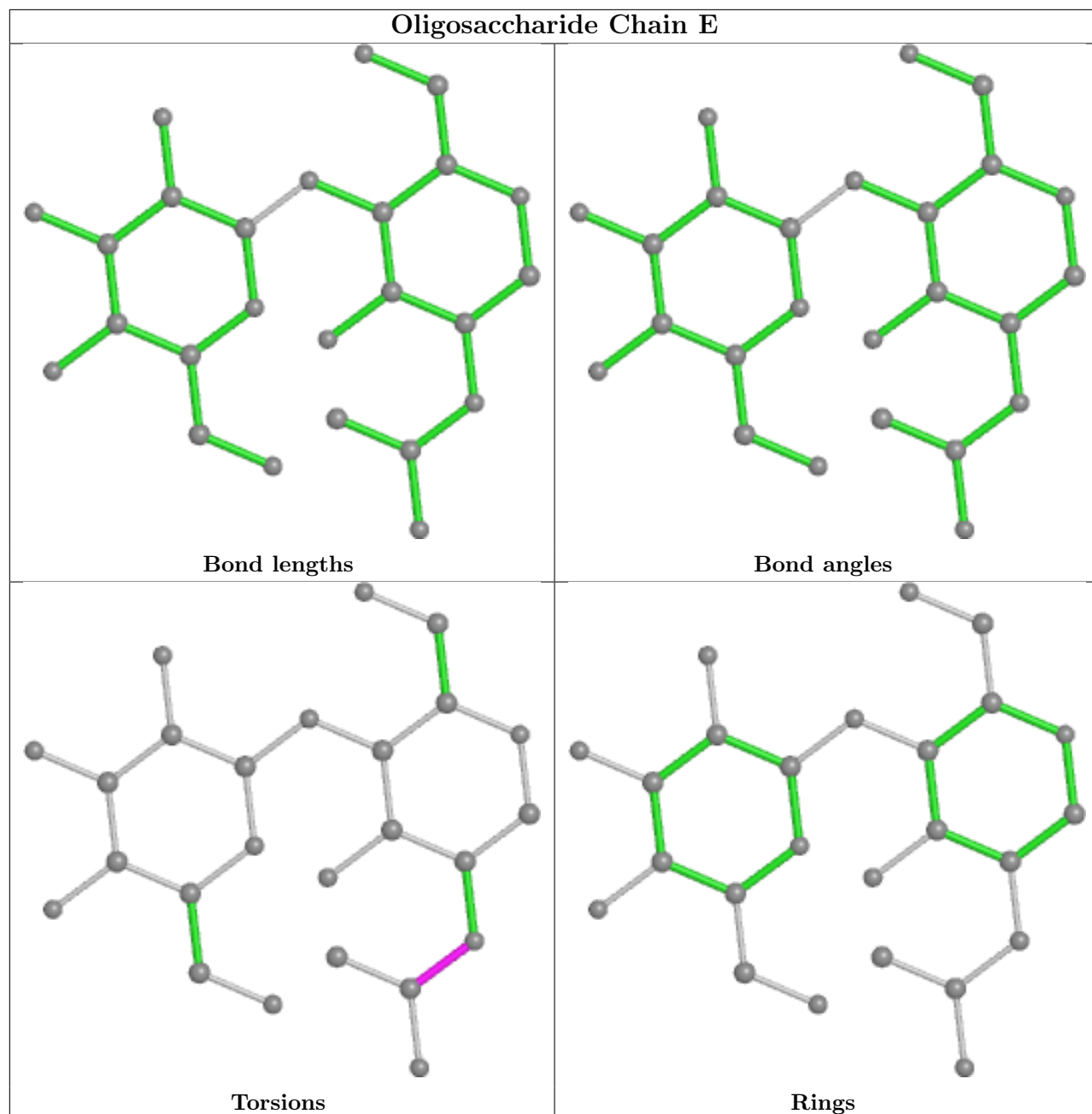
There are no ring outliers.

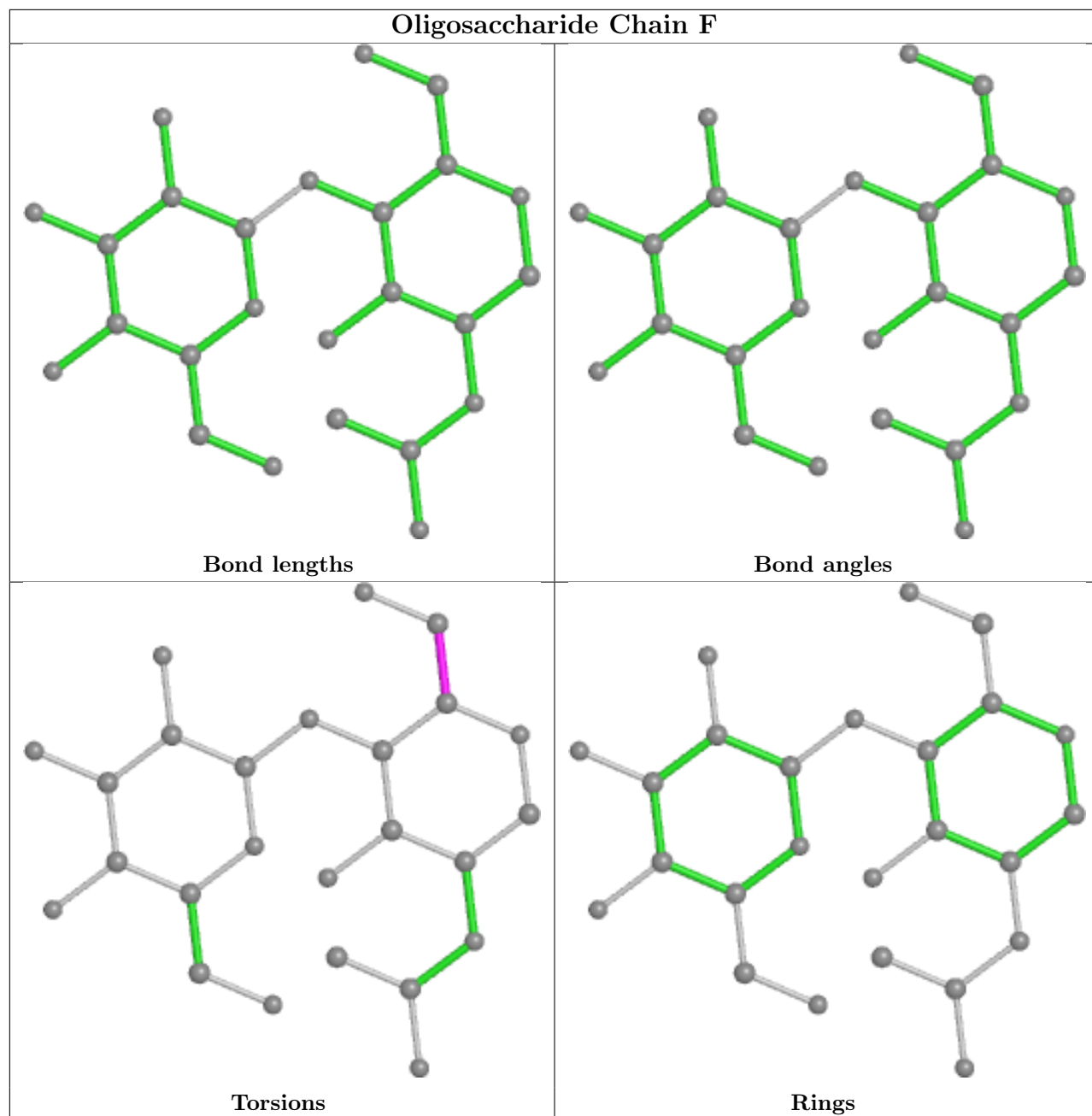
2 monomers are involved in 3 short contacts:

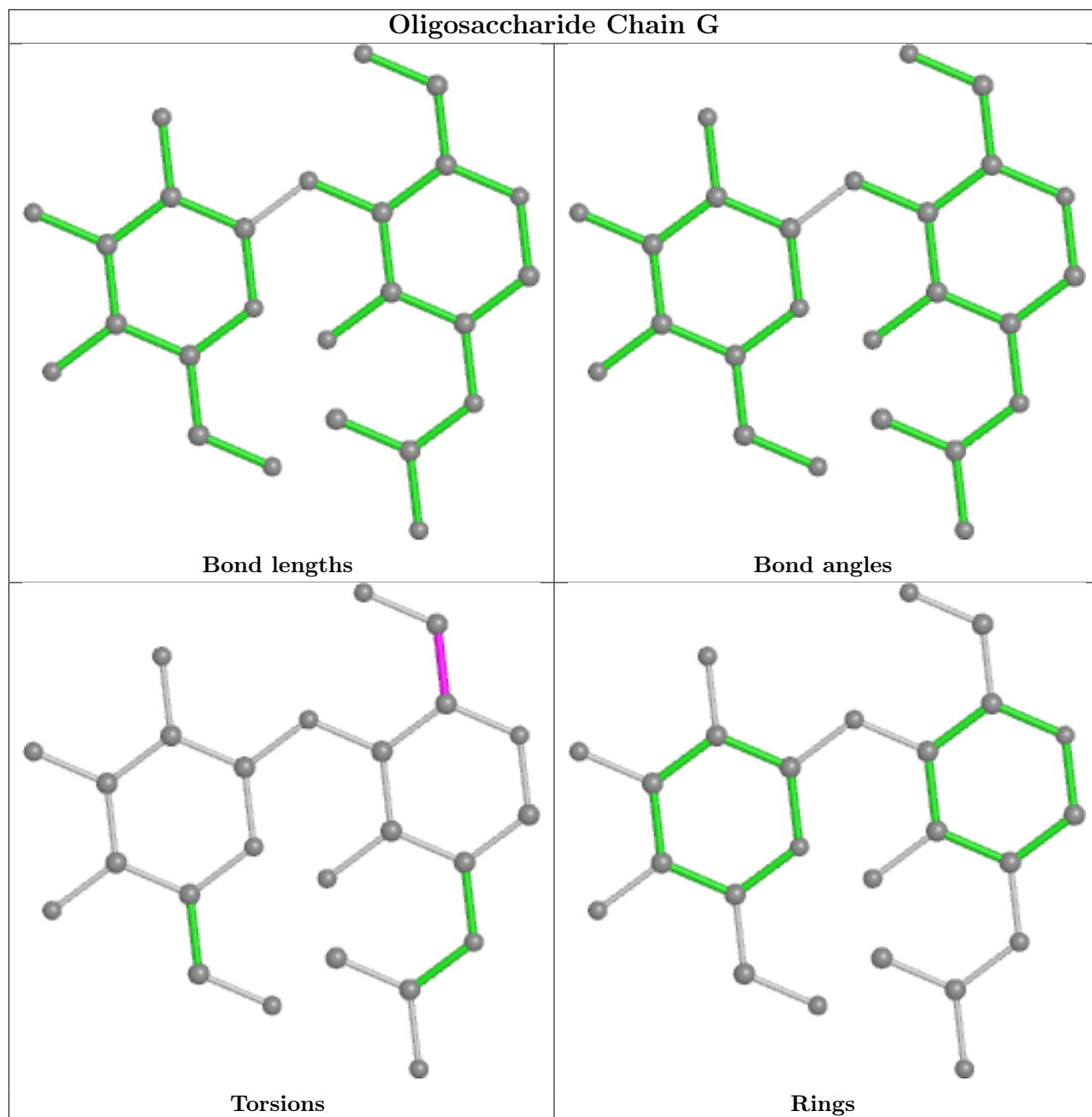
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	H	1	NAG	2	0
2	D	1	NAG	1	0

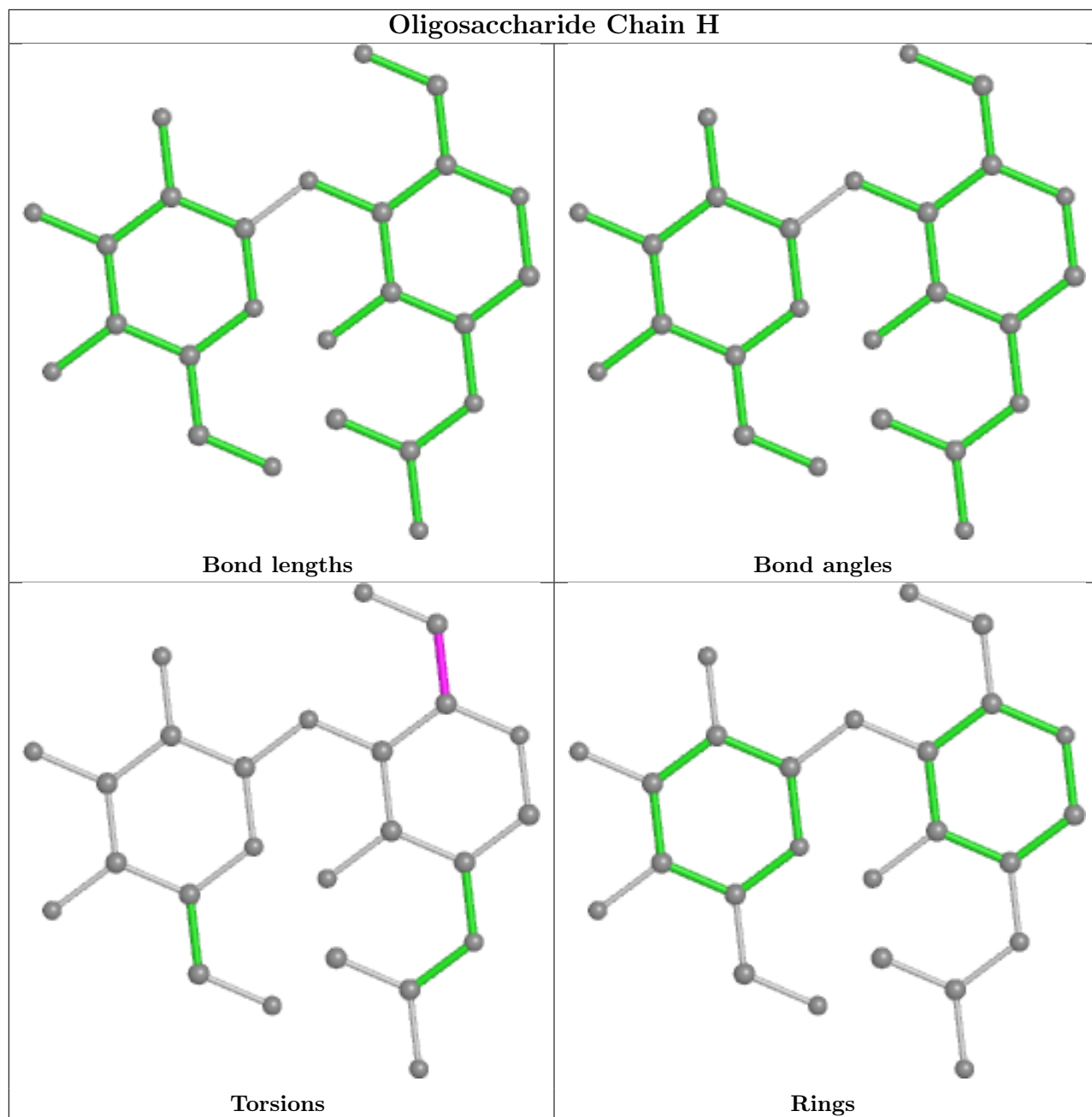
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.



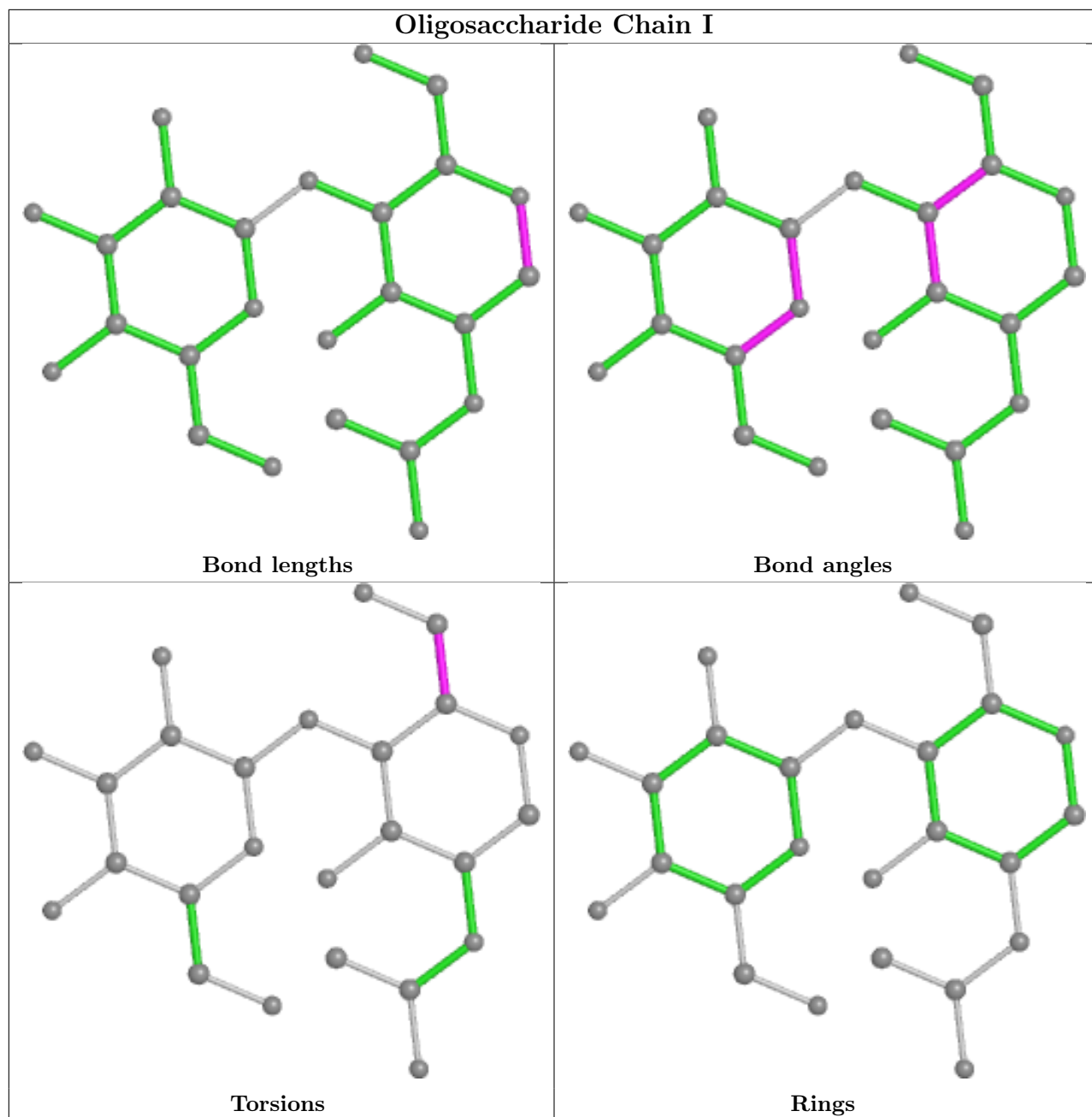


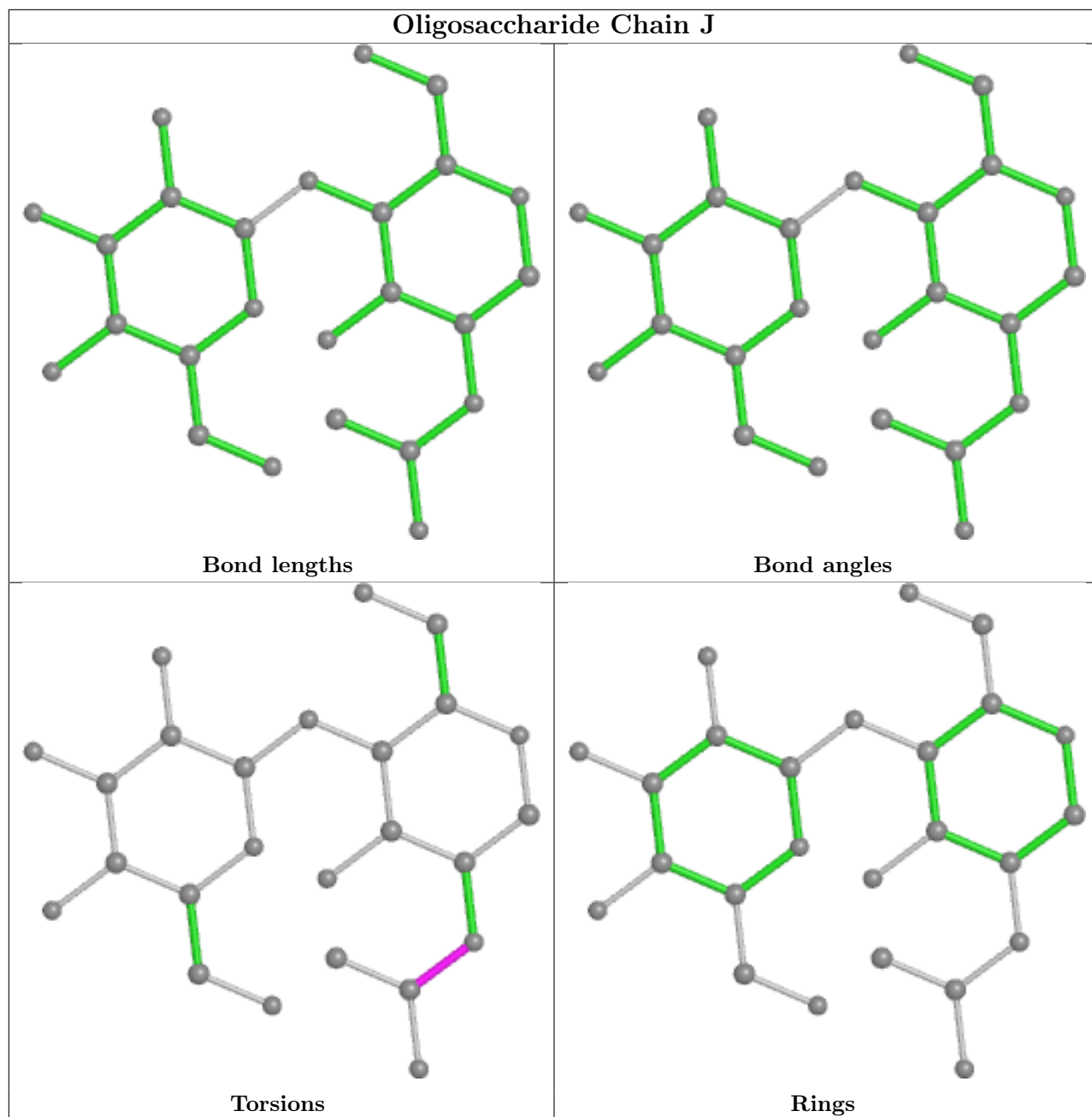


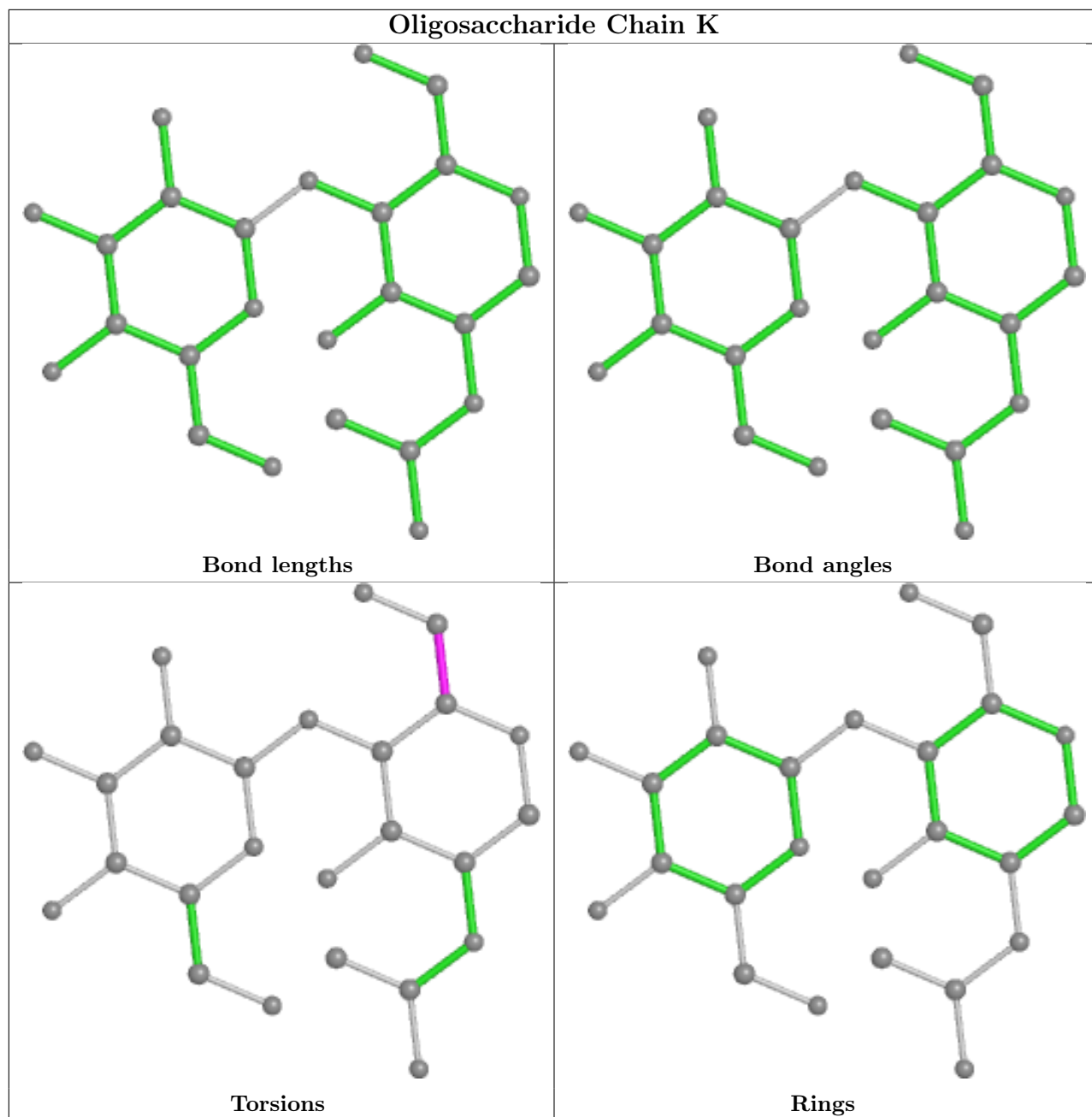


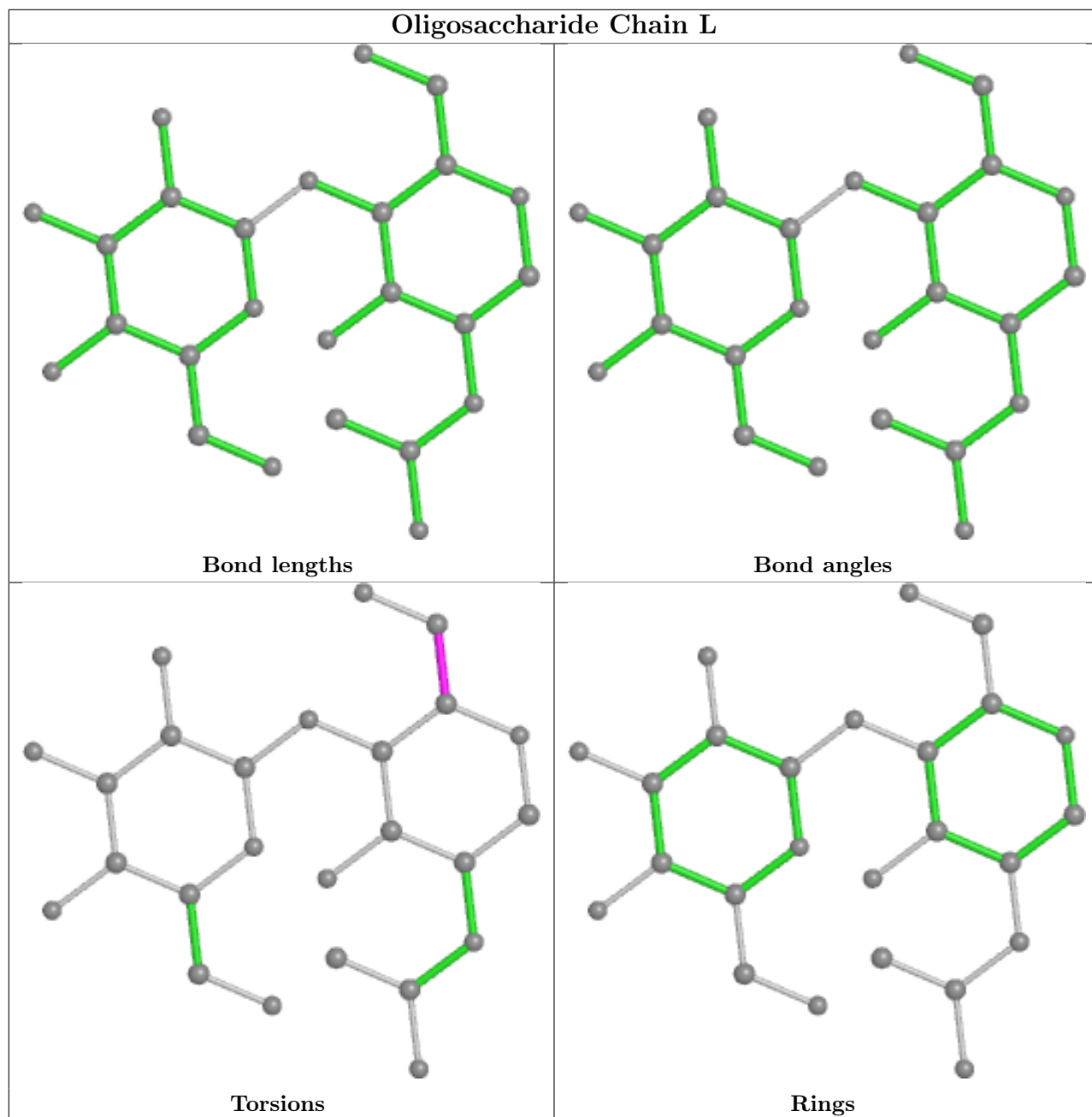


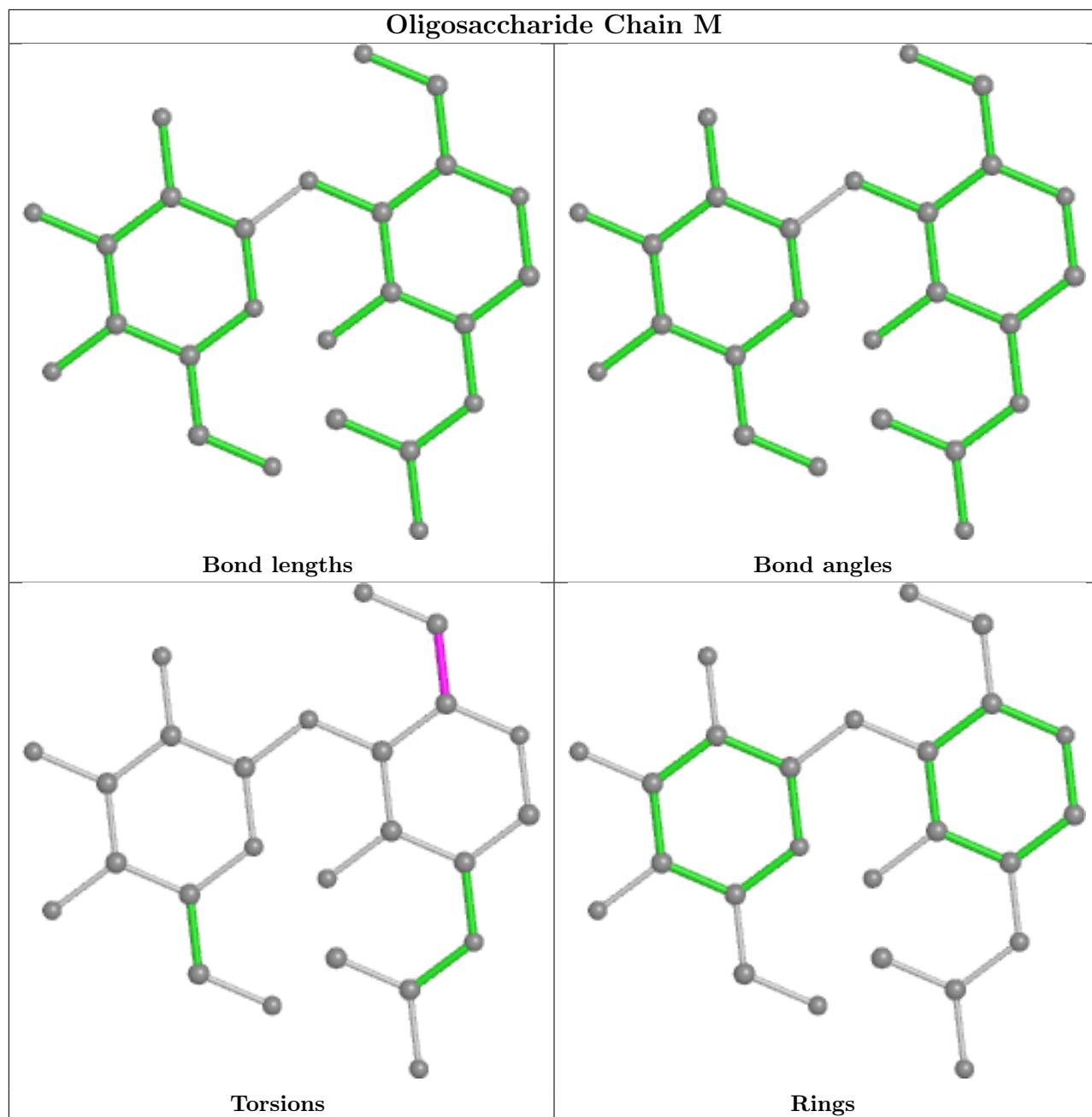


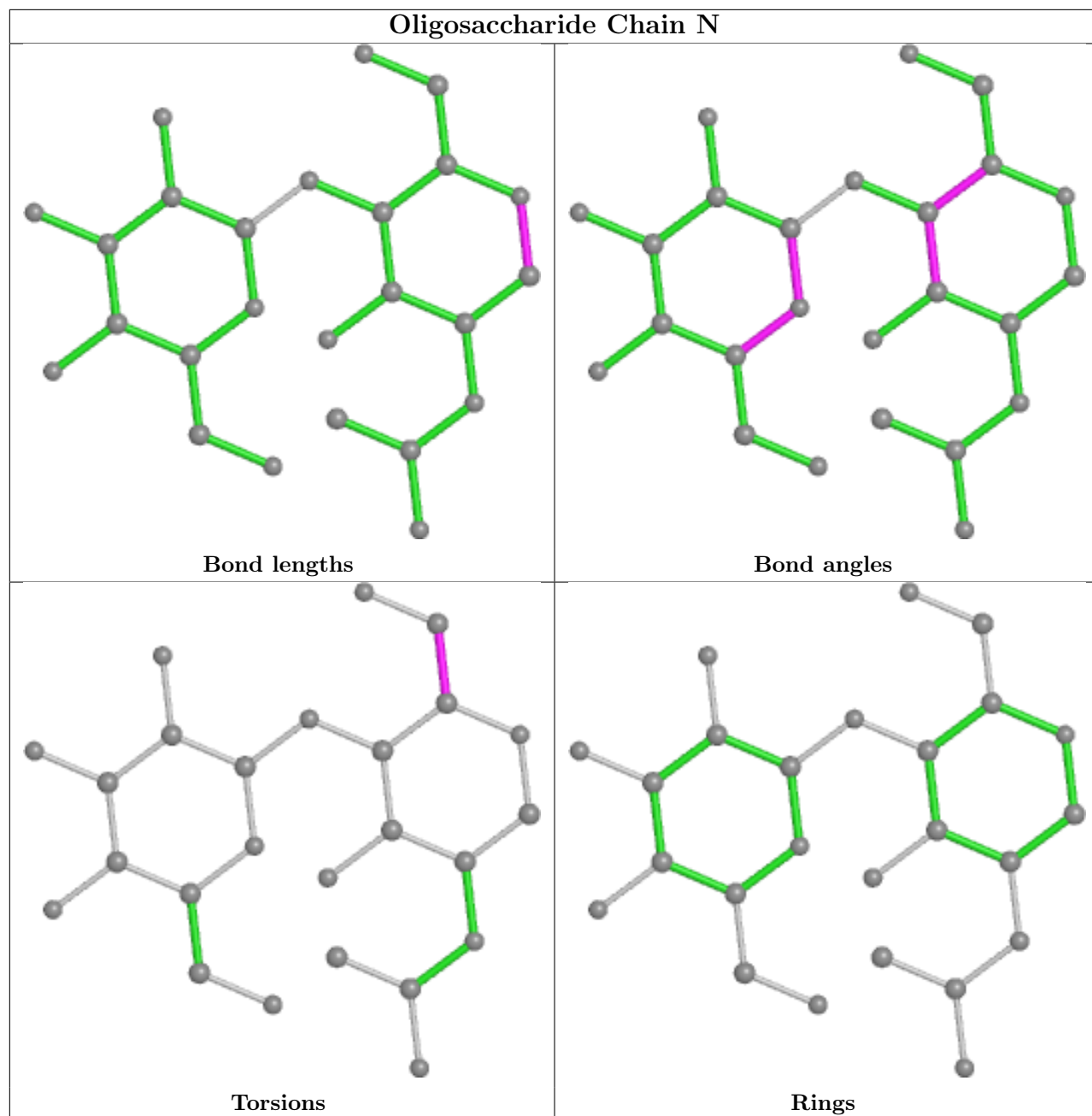


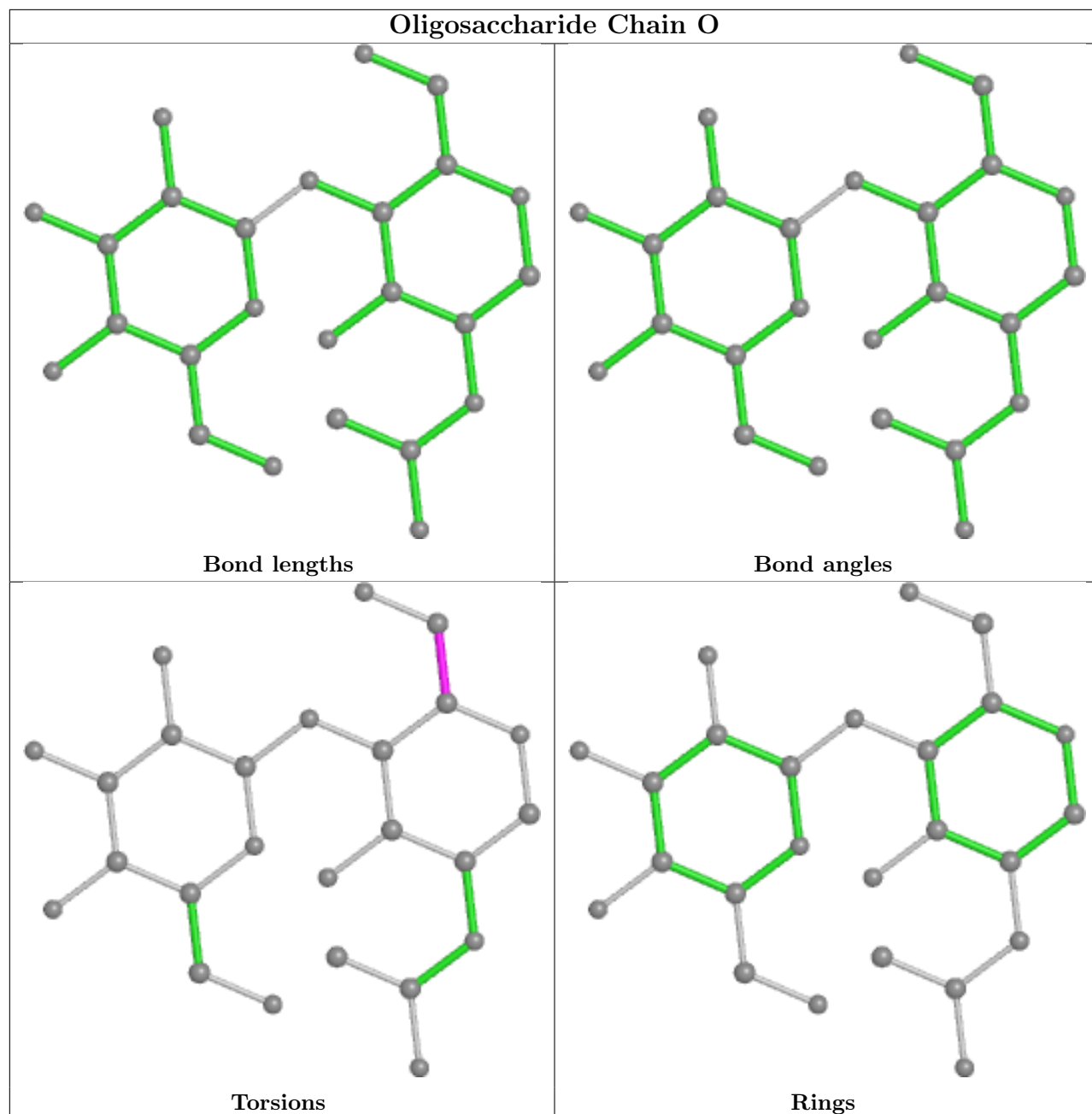


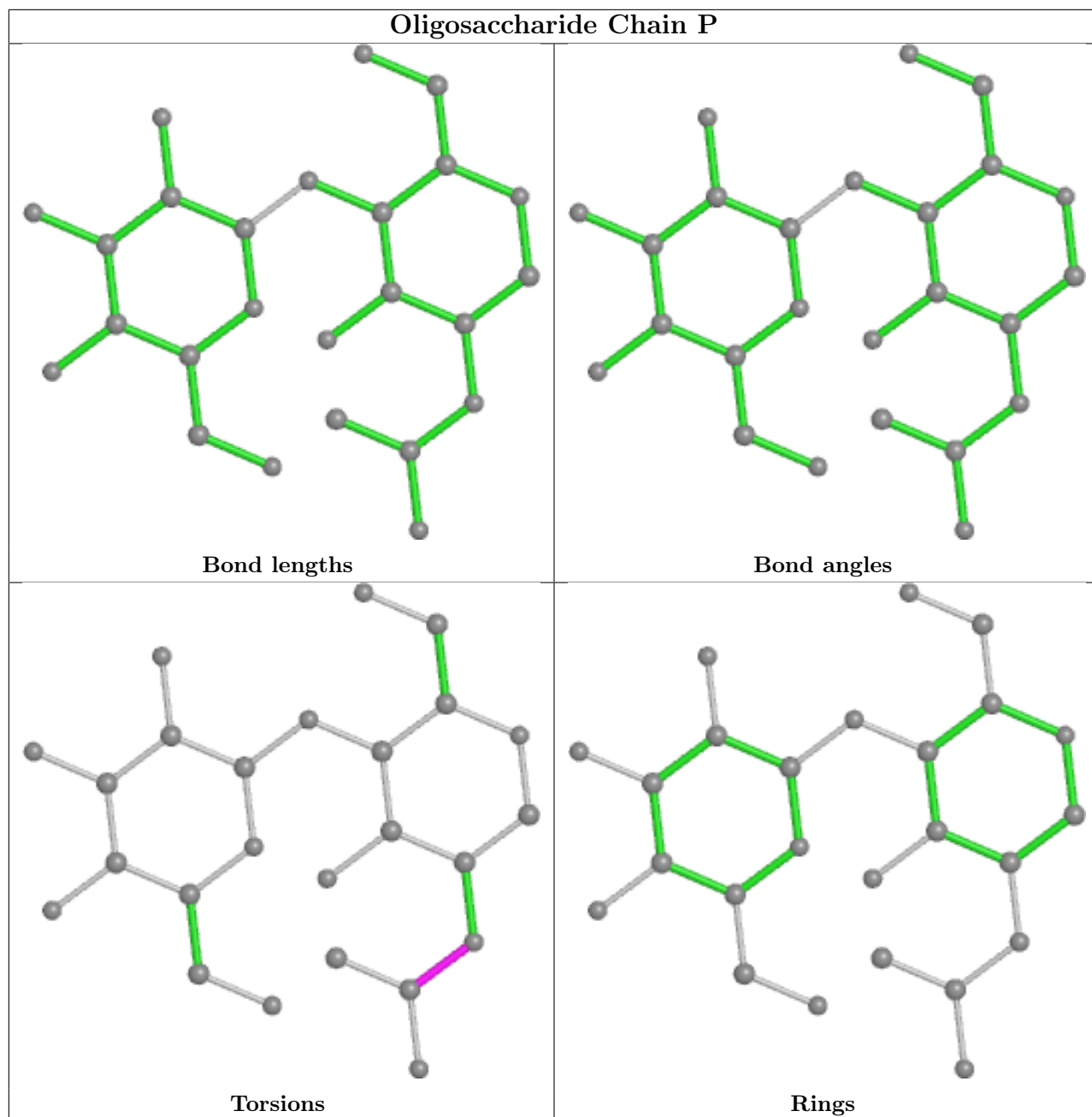




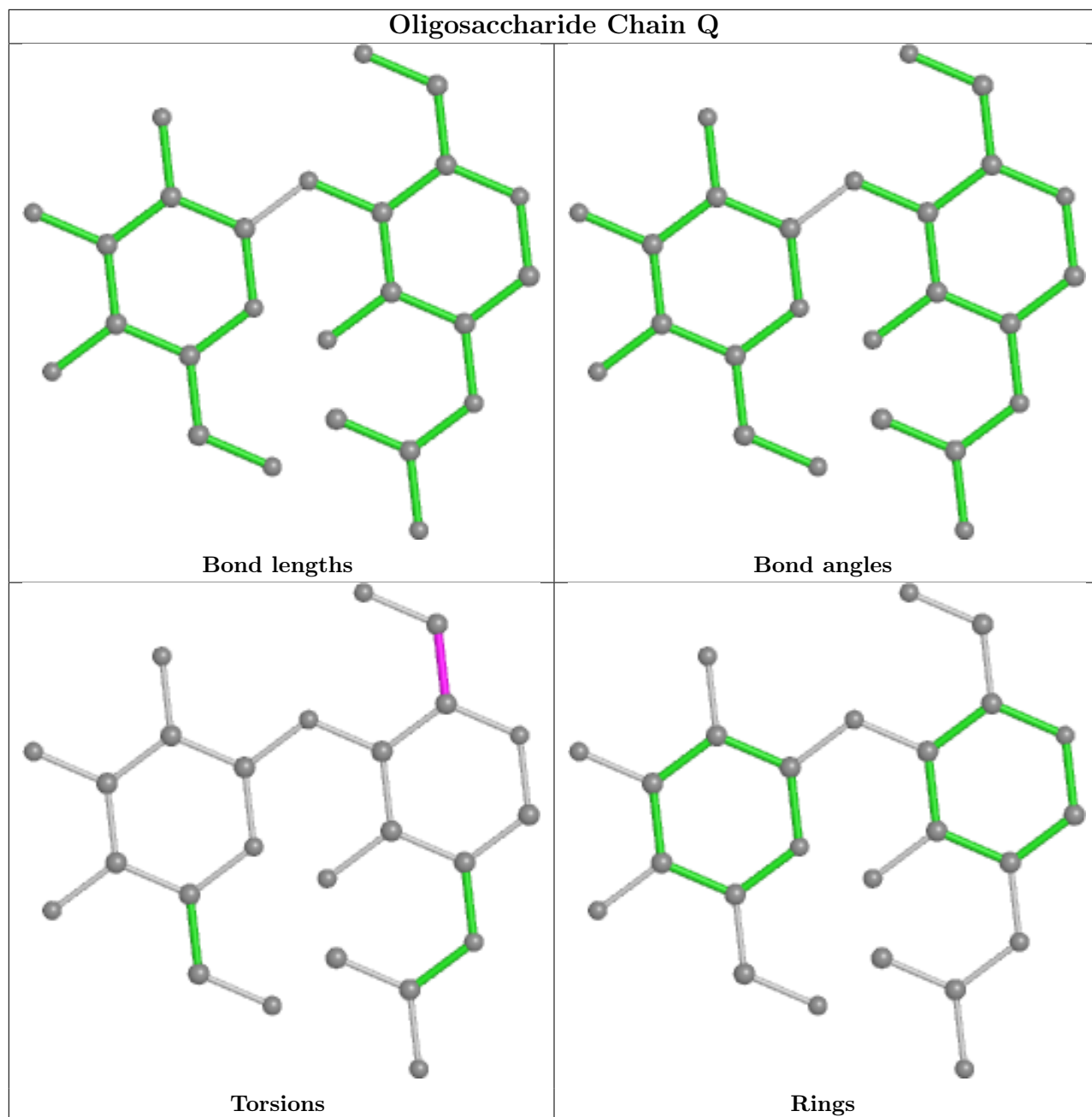


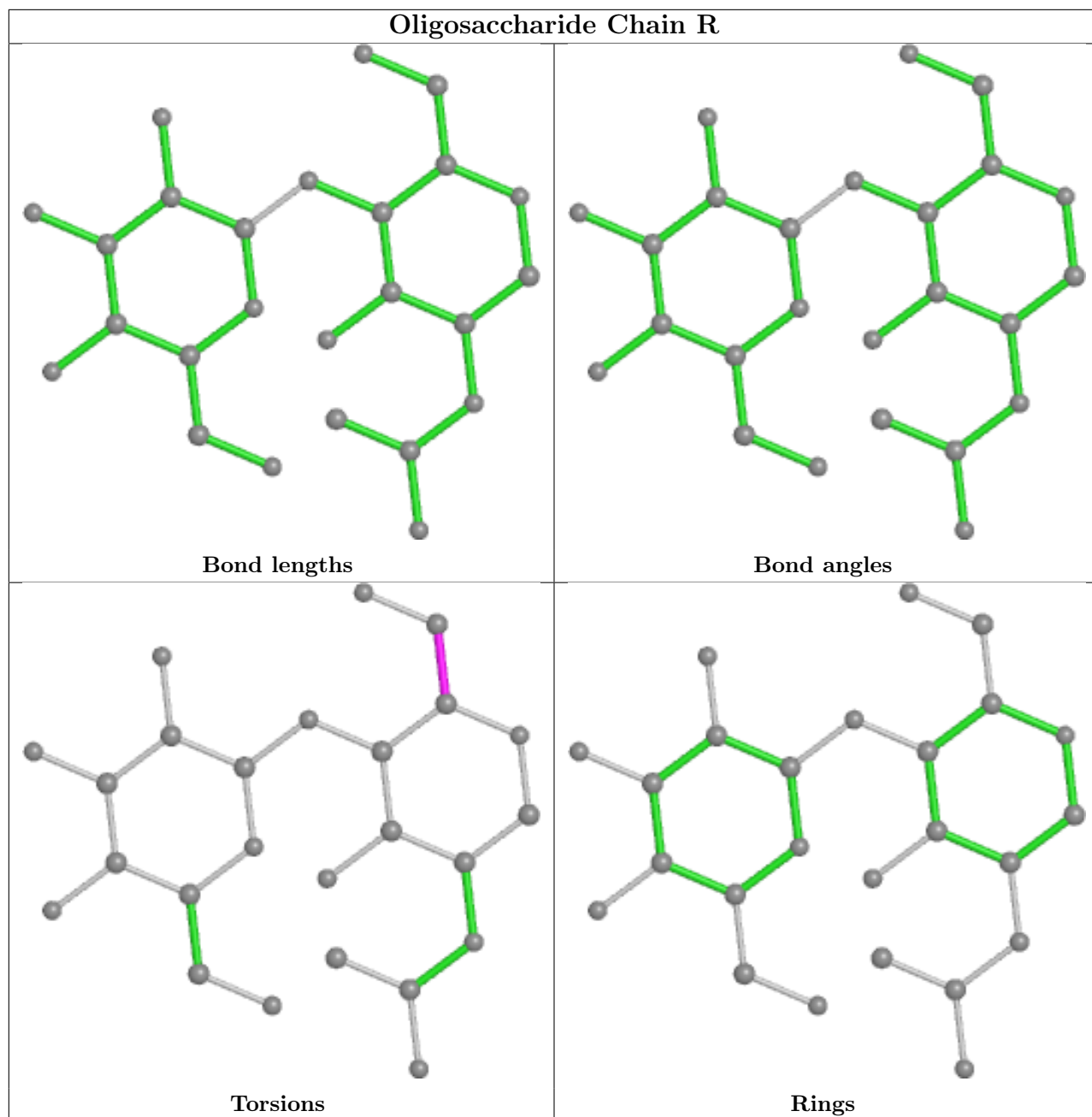


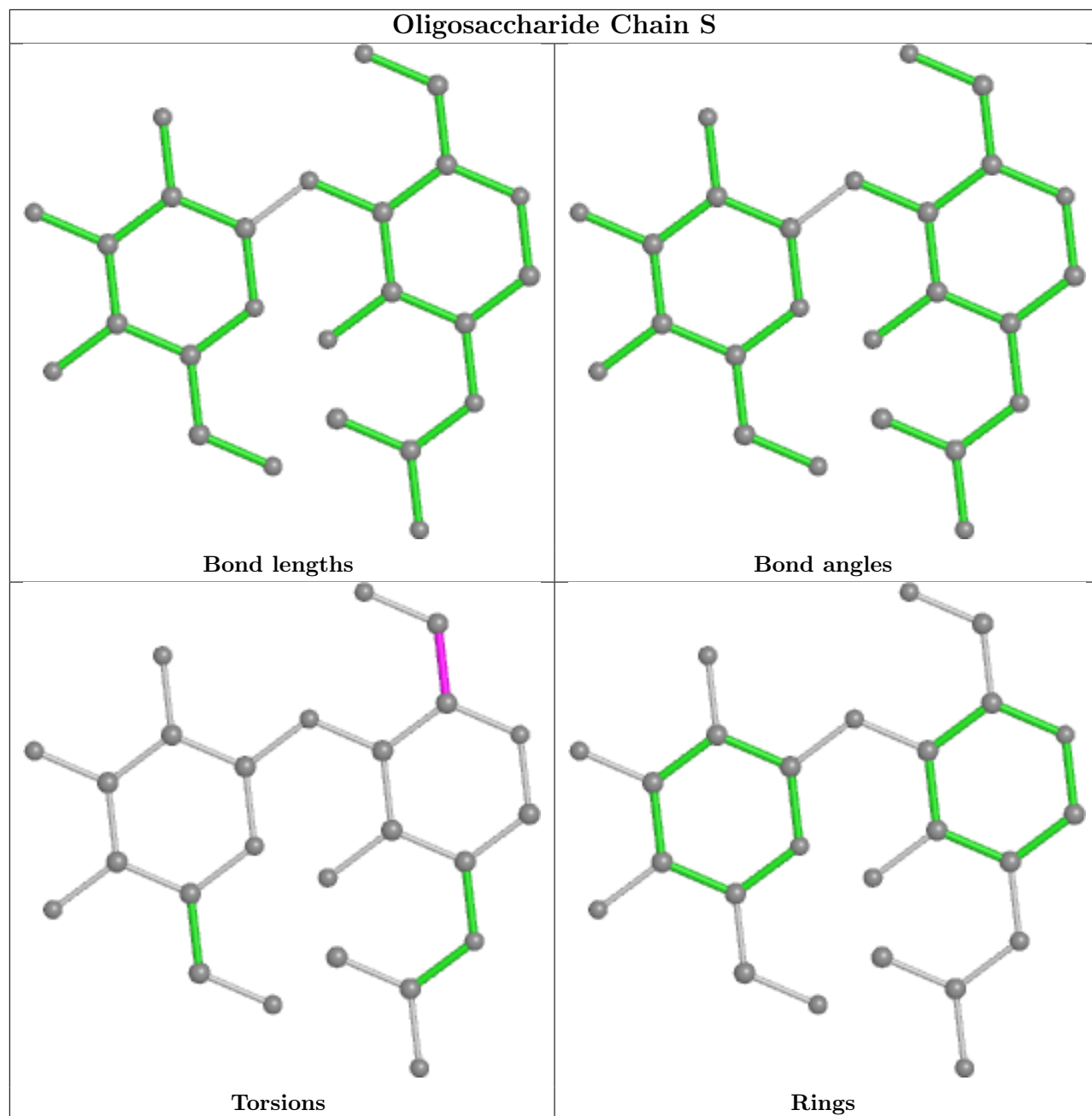


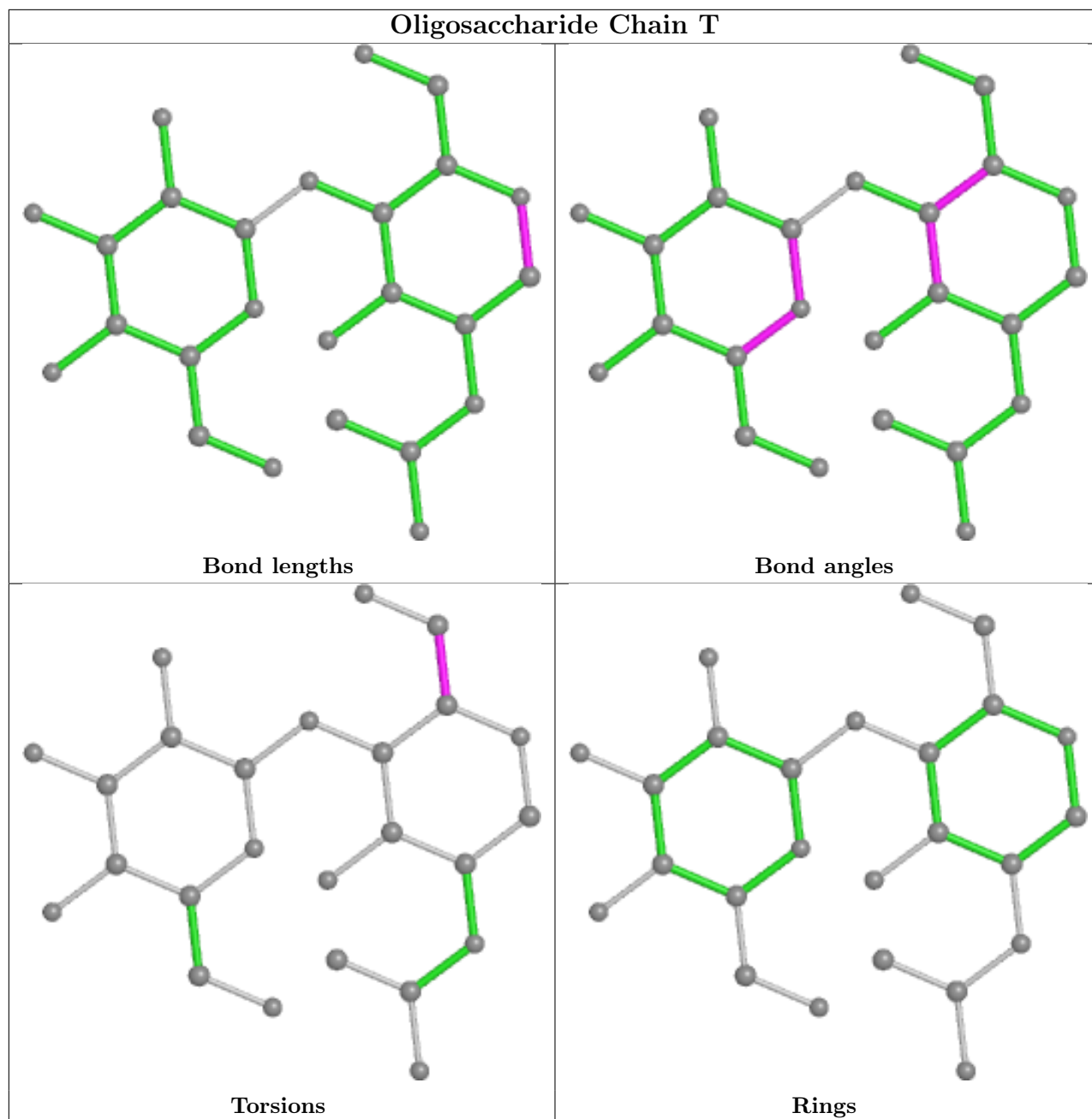












## 5.6 Ligand geometry [i](#)

31 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	NAG	A	1302	1	14,14,15	0.25	0	17,19,21	0.35	0
3	NAG	C	1308	1	14,14,15	0.25	0	17,19,21	0.40	0
3	NAG	B	1310	1	14,14,15	0.22	0	17,19,21	0.45	0
3	NAG	B	1304	1	14,14,15	0.39	0	17,19,21	0.93	2 (11%)
3	NAG	A	1305	1	14,14,15	0.38	0	17,19,21	0.47	0
3	NAG	B	1305	1	14,14,15	0.20	0	17,19,21	0.44	0
3	NAG	C	1307	1	14,14,15	0.21	0	17,19,21	0.49	0
3	NAG	A	1301	1	14,14,15	0.19	0	17,19,21	0.47	0
3	NAG	A	1303	1	14,14,15	0.19	0	17,19,21	0.43	0
3	NAG	C	1306	1	14,14,15	0.20	0	17,19,21	0.43	0
3	NAG	C	1302	1	14,14,15	0.34	0	17,19,21	0.40	0
3	NAG	B	1309	1	14,14,15	0.26	0	17,19,21	0.53	0
3	NAG	A	1308	1	14,14,15	0.60	0	17,19,21	0.90	2 (11%)
3	NAG	B	1301	1	14,14,15	0.38	0	17,19,21	0.74	1 (5%)
3	NAG	B	1306	1	14,14,15	0.30	0	17,19,21	1.37	1 (5%)
3	NAG	B	1307	1	14,14,15	0.32	0	17,19,21	0.37	0
3	NAG	C	1305	1	14,14,15	0.36	0	17,19,21	0.43	0
3	NAG	A	1310	1	14,14,15	0.32	0	17,19,21	0.67	0
3	NAG	B	1303	1	14,14,15	0.42	0	17,19,21	0.55	0
3	NAG	B	1302	1	14,14,15	0.25	0	17,19,21	0.40	0
3	NAG	C	1310	1	14,14,15	0.38	0	17,19,21	0.53	0
3	NAG	A	1309	1	14,14,15	0.20	0	17,19,21	0.42	0
3	NAG	C	1309	1	14,14,15	0.39	0	17,19,21	0.43	0
3	NAG	C	1301	1	14,14,15	0.37	0	17,19,21	0.79	0
3	NAG	A	1304	1	14,14,15	0.29	0	17,19,21	1.36	1 (5%)
3	NAG	C	1303	1	14,14,15	0.40	0	17,19,21	0.83	1 (5%)
3	NAG	B	1308	1	14,14,15	0.19	0	17,19,21	0.44	0
3	NAG	C	1304	1	14,14,15	0.31	0	17,19,21	1.40	1 (5%)
3	NAG	B	1311	1	14,14,15	0.27	0	17,19,21	0.44	0
3	NAG	A	1306	1	14,14,15	0.16	0	17,19,21	0.44	0
3	NAG	A	1307	1	14,14,15	0.19	0	17,19,21	0.50	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	A	1302	1	-	2/6/23/26	0/1/1/1
3	NAG	C	1308	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	B	1310	1	-	3/6/23/26	0/1/1/1
3	NAG	B	1304	1	-	4/6/23/26	0/1/1/1
3	NAG	A	1305	1	-	1/6/23/26	0/1/1/1
3	NAG	B	1305	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1307	1	-	4/6/23/26	0/1/1/1
3	NAG	A	1301	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1303	1	-	1/6/23/26	0/1/1/1
3	NAG	C	1306	1	-	2/6/23/26	0/1/1/1
3	NAG	C	1302	1	-	0/6/23/26	0/1/1/1
3	NAG	B	1309	1	-	4/6/23/26	0/1/1/1
3	NAG	A	1308	1	-	4/6/23/26	0/1/1/1
3	NAG	B	1301	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1306	1	-	0/6/23/26	0/1/1/1
3	NAG	B	1307	1	-	1/6/23/26	0/1/1/1
3	NAG	C	1305	1	-	0/6/23/26	0/1/1/1
3	NAG	A	1310	1	-	3/6/23/26	0/1/1/1
3	NAG	B	1303	1	-	5/6/23/26	0/1/1/1
3	NAG	B	1302	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1310	1	-	0/6/23/26	0/1/1/1
3	NAG	A	1309	1	-	3/6/23/26	0/1/1/1
3	NAG	C	1309	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1301	1	-	4/6/23/26	0/1/1/1
3	NAG	A	1304	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1303	1	-	4/6/23/26	0/1/1/1
3	NAG	B	1308	1	-	2/6/23/26	0/1/1/1
3	NAG	C	1304	1	-	1/6/23/26	0/1/1/1
3	NAG	B	1311	1	-	0/6/23/26	0/1/1/1
3	NAG	A	1306	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1307	1	-	3/6/23/26	0/1/1/1

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	1304	NAG	C1-O5-C5	5.15	119.17	112.19
3	B	1306	NAG	C1-O5-C5	5.03	119.00	112.19
3	A	1304	NAG	C1-O5-C5	4.99	118.95	112.19
3	B	1304	NAG	C1-C2-N2	2.69	115.08	110.49

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1308	NAG	C1-O5-C5	2.32	115.34	112.19
3	B	1301	NAG	C2-N2-C7	2.30	126.18	122.90
3	A	1308	NAG	C3-C4-C5	2.23	114.21	110.24
3	B	1304	NAG	C2-N2-C7	2.15	125.97	122.90
3	C	1303	NAG	O5-C1-C2	-2.02	108.10	111.29

There are no chirality outliers.

All (59) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	1303	NAG	C8-C7-N2-C2
3	B	1303	NAG	O7-C7-N2-C2
3	B	1304	NAG	C3-C2-N2-C7
3	C	1303	NAG	C4-C5-C6-O6
3	C	1307	NAG	C4-C5-C6-O6
3	A	1302	NAG	C4-C5-C6-O6
3	C	1303	NAG	O5-C5-C6-O6
3	C	1307	NAG	O5-C5-C6-O6
3	B	1309	NAG	C4-C5-C6-O6
3	A	1310	NAG	C4-C5-C6-O6
3	C	1301	NAG	C8-C7-N2-C2
3	C	1303	NAG	C8-C7-N2-C2
3	C	1303	NAG	O7-C7-N2-C2
3	B	1308	NAG	O5-C5-C6-O6
3	A	1310	NAG	O5-C5-C6-O6
3	B	1309	NAG	O5-C5-C6-O6
3	A	1302	NAG	O5-C5-C6-O6
3	C	1301	NAG	O7-C7-N2-C2
3	B	1303	NAG	C1-C2-N2-C7
3	B	1308	NAG	C4-C5-C6-O6
3	A	1301	NAG	C8-C7-N2-C2
3	A	1301	NAG	O7-C7-N2-C2
3	A	1307	NAG	C8-C7-N2-C2
3	A	1307	NAG	O7-C7-N2-C2
3	A	1308	NAG	C8-C7-N2-C2
3	A	1308	NAG	O7-C7-N2-C2
3	A	1309	NAG	C8-C7-N2-C2
3	A	1309	NAG	O7-C7-N2-C2
3	B	1309	NAG	C8-C7-N2-C2
3	B	1309	NAG	O7-C7-N2-C2
3	B	1310	NAG	C8-C7-N2-C2
3	B	1310	NAG	O7-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
3	C	1307	NAG	C8-C7-N2-C2
3	C	1307	NAG	O7-C7-N2-C2
3	C	1306	NAG	O5-C5-C6-O6
3	A	1308	NAG	O5-C5-C6-O6
3	C	1306	NAG	C4-C5-C6-O6
3	B	1301	NAG	O5-C5-C6-O6
3	B	1310	NAG	O5-C5-C6-O6
3	C	1301	NAG	O5-C5-C6-O6
3	C	1301	NAG	C3-C2-N2-C7
3	B	1304	NAG	C8-C7-N2-C2
3	A	1305	NAG	O5-C5-C6-O6
3	B	1304	NAG	O7-C7-N2-C2
3	C	1308	NAG	C4-C5-C6-O6
3	A	1307	NAG	C4-C5-C6-O6
3	B	1304	NAG	C1-C2-N2-C7
3	A	1306	NAG	C4-C5-C6-O6
3	B	1301	NAG	C3-C2-N2-C7
3	C	1308	NAG	O5-C5-C6-O6
3	A	1309	NAG	C4-C5-C6-O6
3	B	1307	NAG	O5-C5-C6-O6
3	A	1308	NAG	C4-C5-C6-O6
3	A	1306	NAG	O5-C5-C6-O6
3	C	1304	NAG	O5-C5-C6-O6
3	A	1303	NAG	C4-C5-C6-O6
3	B	1303	NAG	C4-C5-C6-O6
3	B	1303	NAG	C3-C2-N2-C7
3	A	1310	NAG	C1-C2-N2-C7

There are no ring outliers.

6 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	1304	NAG	1	0
3	B	1301	NAG	1	0
3	C	1305	NAG	1	0
3	A	1310	NAG	1	0
3	C	1310	NAG	2	0
3	A	1304	NAG	1	0



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.