Full wwPDB EM Validation Report ⓘ

Feb 4, 2024 – 11:19 AM EST

PDB ID	:	7UTA
EMDB ID	:	EMD-26764
Title	:	CryoEM structure of Azotobacter vinelandii nitrogenase complex (2:1 FeP:MoFeP) inhibited by BeFx during catalytic N2 reduction
Authors	:	Rutledge, H.L.; Cook, B.D.; Nguyen, H.P.M.; Tezcan, F.A.; Herzik, M.A.
Deposited on	:	2022-04-26
Resolution	:	2.40 Å(reported)
Based on initial model	:	4WZA

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

We welcome your comments at *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.

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

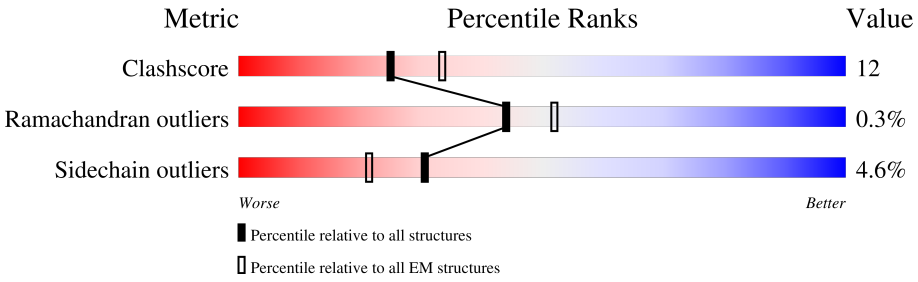
EMDB validation analysis	:	0.0.1.dev70
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.40 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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 >=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 <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	492	14% 76% 19%
1	C	492	11% 75% 20%
2	B	523	84% 16%
2	D	523	80% 19%
3	E	290	6% 63% 27% 7%
3	F	290	5% 55% 34% 7%
3	G	290	9% 63% 28% 7%
3	H	290	7% 57% 32% 7%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
10	ADP	F	302	-	-	X	-
10	ADP	H	302	-	-	X	-

2 Entry composition (i)

There are 12 unique types of molecules in this entry. The entry contains 24323 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 Nitrogenase molybdenum-iron protein alpha chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	470	Total	C	N	O	S	0	0
			3739	2379	637	699	24		
1	C	472	Total	C	N	O	S	0	0
			3751	2387	638	702	24		

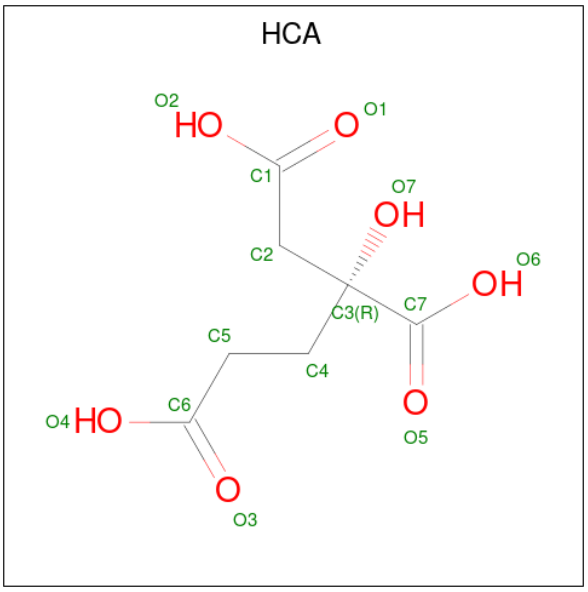
- Molecule 2 is a protein called Nitrogenase molybdenum-iron protein beta chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	522	Total	C	N	O	S	0	0
			4174	2666	705	775	28		
2	D	522	Total	C	N	O	S	0	0
			4174	2666	705	775	28		

- Molecule 3 is a protein called Nitrogenase iron protein gamma chain.

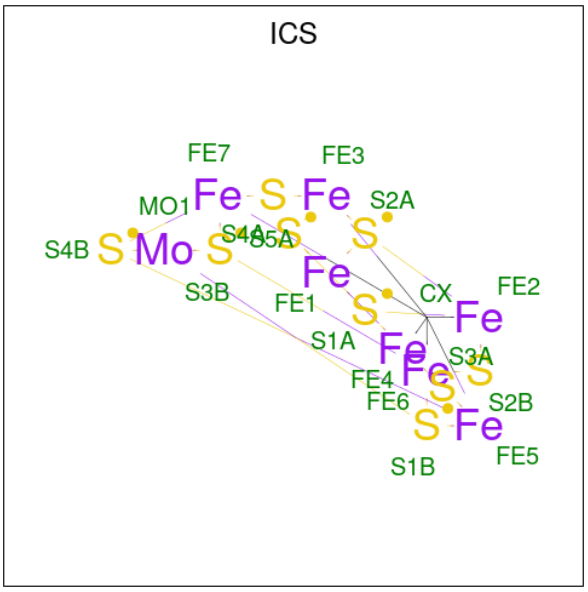
Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	270	Total	C	N	O	S	0	0
			2048	1280	349	399	20		
3	F	271	Total	C	N	O	S	0	0
			2053	1283	350	400	20		
3	G	271	Total	C	N	O	S	0	0
			2053	1283	350	400	20		
3	H	270	Total	C	N	O	S	0	0
			2048	1280	349	399	20		

- Molecule 4 is 3-HYDROXY-3-CARBOXY-ADIPIC ACID (three-letter code: HCA) (formula: $C_7H_{10}O_7$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
4	A	1	Total	C	O	0
			14	7	7	
4	C	1	Total	C	O	0
			14	7	7	

- Molecule 5 is iron-sulfur-molybdenum cluster with interstitial carbon (three-letter code: ICS) (formula: CFe_7MoS_9) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
5	A	1	Total	C	Fe	Mo	S	0
			18	1	7	1	9	

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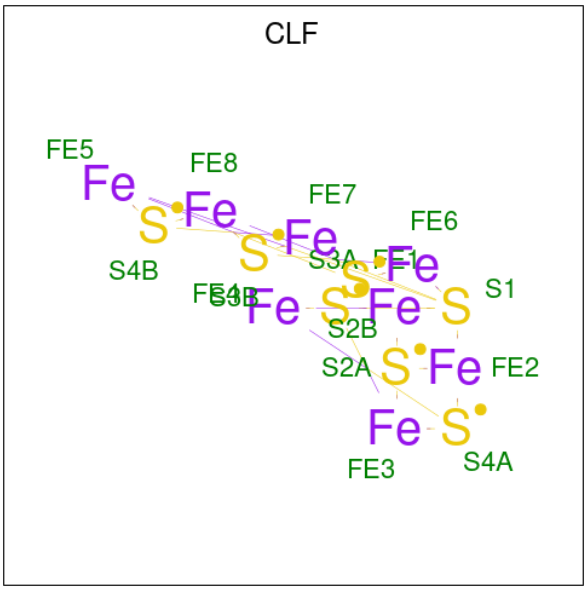
Mol	Chain	Residues	Atoms					AltConf
5	C	1	Total	C	Fe	Mo	S	0
			18	1	7	1	9	

- Molecule 6 is FE(8)-S(7) CLUSTER (three-letter code: CLF) (formula: Fe_8S_7) (labeled as "Ligand of Interest" by depositor).

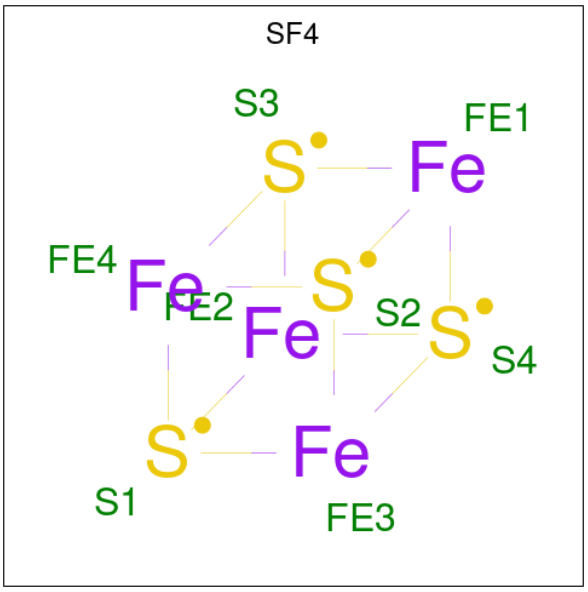


Mol	Chain	Residues	Atoms			AltConf
6	B	1	Total	Fe	S	0
			15	8	7	
6	D	1	Total	Fe	S	0
			15	8	7	

- Molecule 7 is FE (III) ION (three-letter code: FE) (formula: Fe).

Mol	Chain	Residues	Atoms		AltConf
7	B	2	Total	Fe	0
			2	2	

- Molecule 8 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4) (labeled as "Ligand of Interest" by depositor).

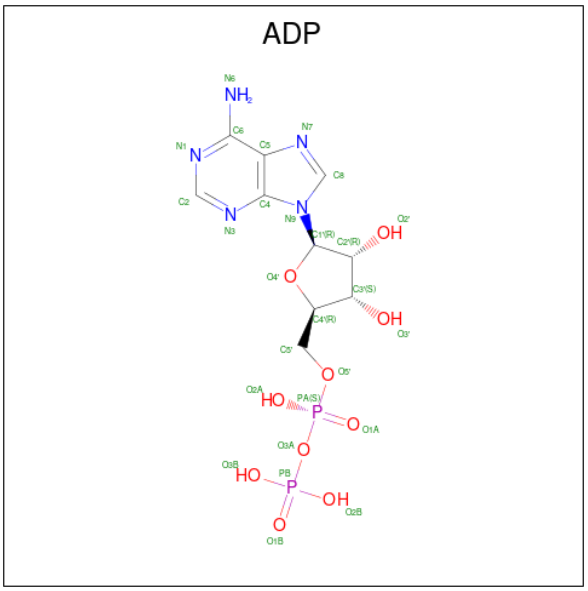


Mol	Chain	Residues	Atoms	AltConf
8	E	1	Total Fe S 8 4 4	0
8	G	1	Total Fe S 8 4 4	0

- Molecule 9 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
9	E	1	Total Mg 1 1	0
9	F	1	Total Mg 1 1	0
9	G	1	Total Mg 1 1	0
9	H	1	Total Mg 1 1	0

- Molecule 10 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
10	E	1	Total	C	N	O	P	0
			27	10	5	10	2	
10	F	1	Total	C	N	O	P	0
			27	10	5	10	2	
10	G	1	Total	C	N	O	P	0
			27	10	5	10	2	
10	H	1	Total	C	N	O	P	0
			27	10	5	10	2	

- Molecule 11 is BERYLLIUM (three-letter code: 0BE) (formula: Be) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
11	E	1	Total	Be	0
			1	1	
11	F	1	Total	Be	0
			1	1	
11	G	1	Total	Be	0
			1	1	
11	H	1	Total	Be	0
			1	1	

- Molecule 12 is water.

Mol	Chain	Residues	Atoms		AltConf
12	A	10	Total	O	0
			10	10	

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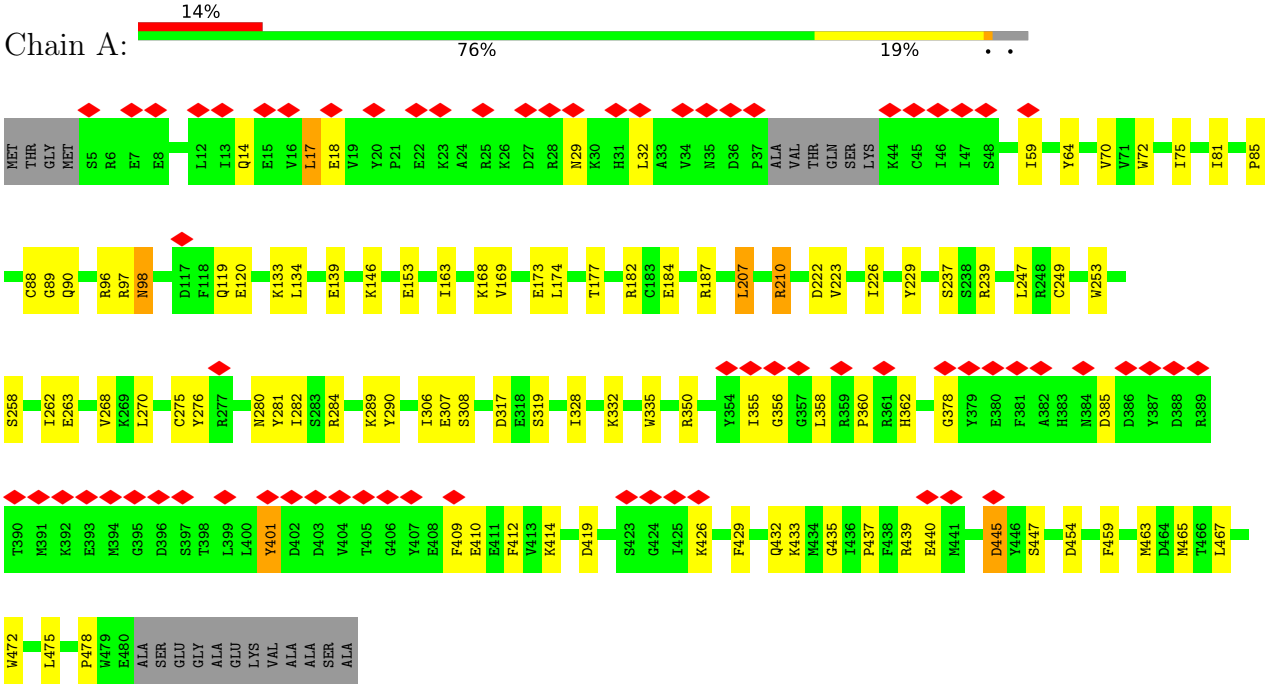
Mol	Chain	Residues	Atoms	AltConf
12	B	26	Total O 26 26	0
12	C	3	Total O 3 3	0
12	D	16	Total O 16 16	0

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 and atom inclusion in map density. 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. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

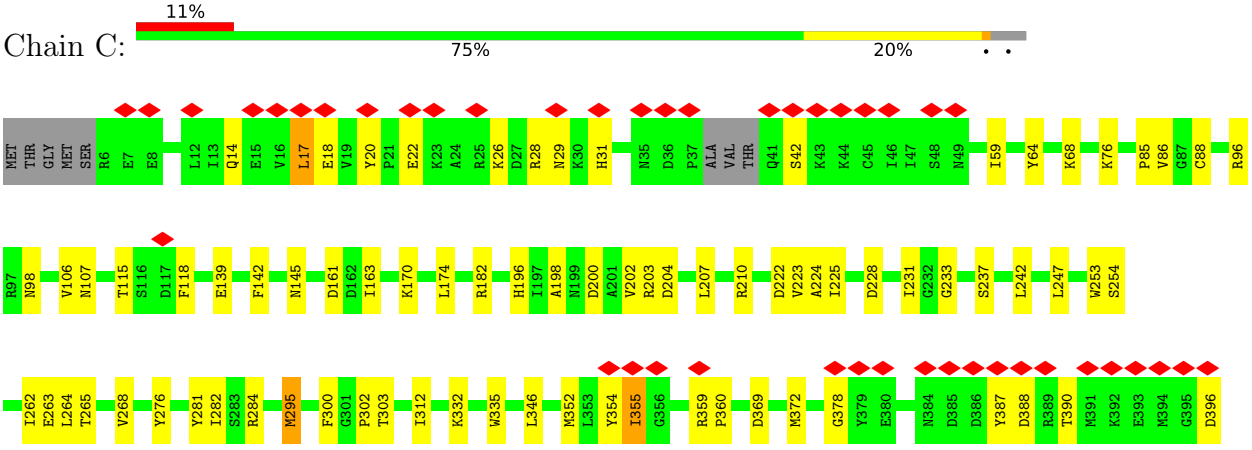
• Molecule 1: Nitrogenase molybdenum-iron protein alpha chain

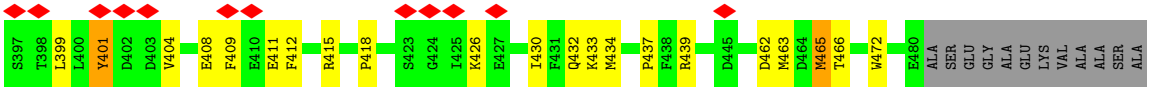
Chain A:



• Molecule 1: Nitrogenase molybdenum-iron protein alpha chain

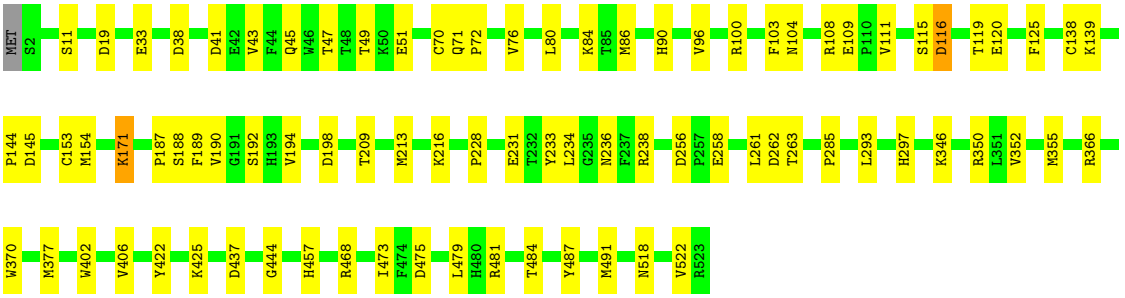
Chain C:





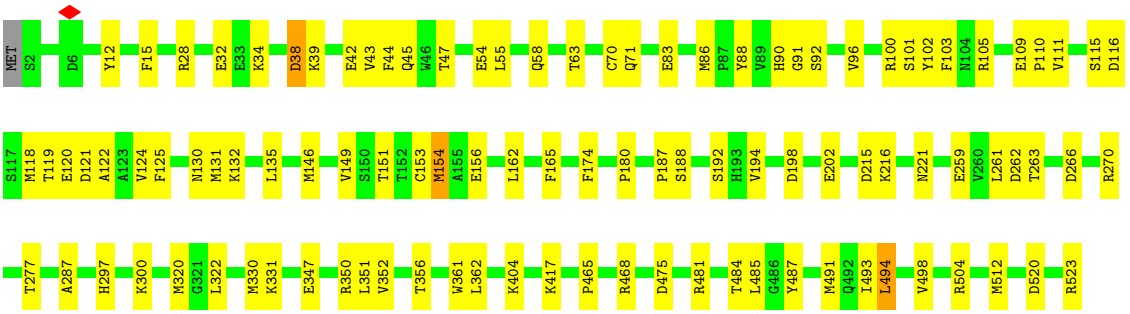
• Molecule 2: Nitrogenase molybdenum-iron protein beta chain

Chain B:



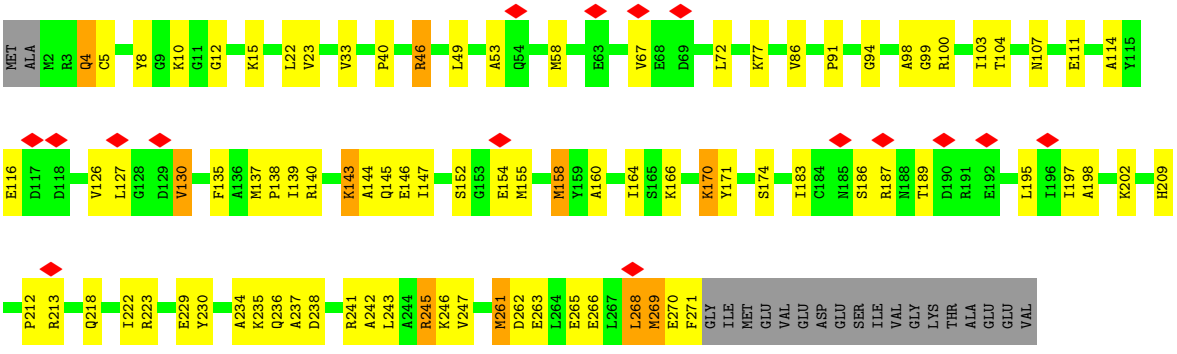
• Molecule 2: Nitrogenase molybdenum-iron protein beta chain

Chain D:



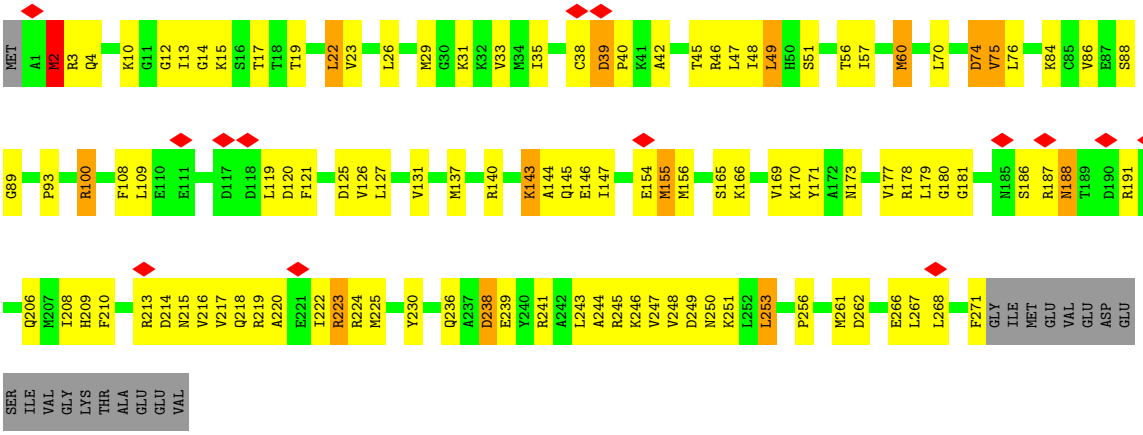
• Molecule 3: Nitrogenase iron protein gamma chain

Chain E:



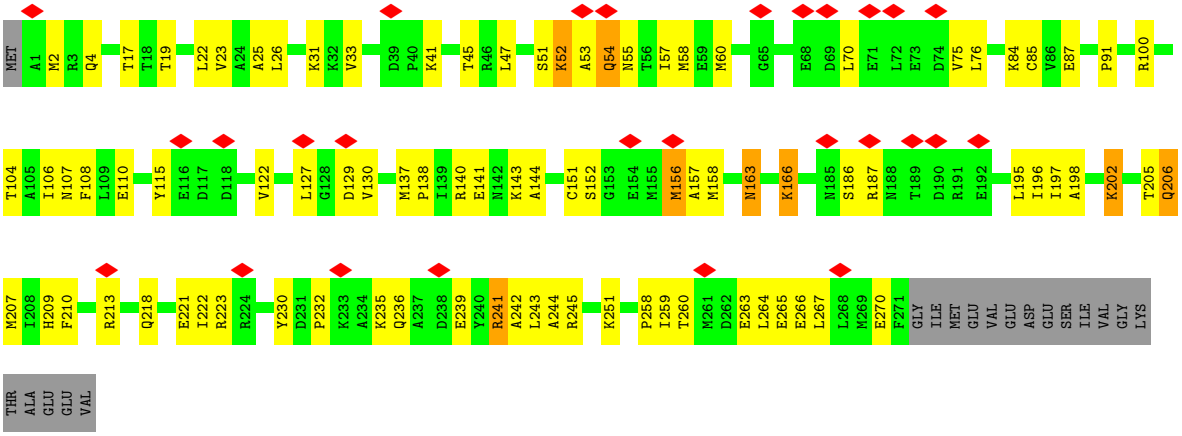
• Molecule 3: Nitrogenase iron protein gamma chain

Chain F:



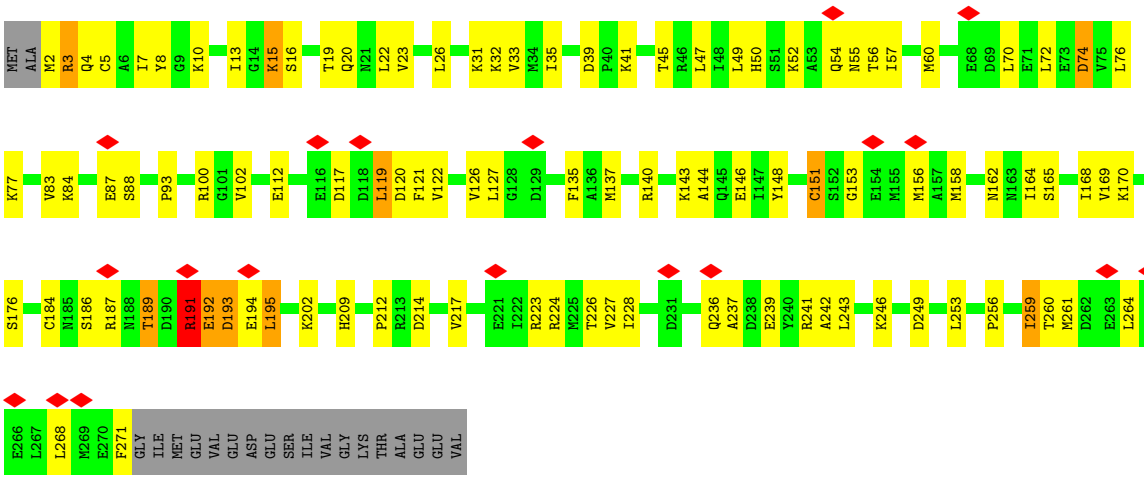
• Molecule 3: Nitrogenase iron protein gamma chain

Chain G:



• Molecule 3: Nitrogenase iron protein gamma chain

Chain H:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	72125	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	65	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	165000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.887	Depositor
Minimum map value	-0.110	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.021	Depositor
Recommended contour level	0.065	Depositor
Map size (Å)	312.96, 312.96, 312.96	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.815, 0.815, 0.815	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CLF, MG, SF4, 0BE, ADP, HCA, FE, ICS

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	0.28	0/3826	0.49	0/5158
1	C	0.28	0/3838	0.49	0/5174
2	B	0.29	0/4280	0.48	0/5786
2	D	0.29	0/4280	0.49	0/5786
3	E	0.29	0/2072	0.57	0/2791
3	F	0.30	0/2077	0.58	0/2798
3	G	0.28	0/2077	0.58	0/2798
3	H	0.28	0/2072	0.55	0/2791
All	All	0.29	0/24522	0.52	0/33082

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	3739	0	3672	56	0
1	C	3751	0	3682	61	0
2	B	4174	0	4088	54	0
2	D	4174	0	4088	67	0
3	E	2048	0	2061	67	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	F	2053	0	2069	101	0
3	G	2053	0	2068	83	0
3	H	2048	0	2061	108	0
4	A	14	0	7	0	0
4	C	14	0	7	0	0
5	A	18	0	0	2	0
5	C	18	0	0	1	0
6	B	15	0	0	1	0
6	D	15	0	0	1	0
7	B	2	0	0	0	0
8	E	8	0	0	0	0
8	G	8	0	0	0	0
9	E	1	0	0	0	0
9	F	1	0	0	0	0
9	G	1	0	0	0	0
9	H	1	0	0	0	0
10	E	27	0	12	2	0
10	F	27	0	12	11	0
10	G	27	0	12	3	0
10	H	27	0	12	22	0
11	E	1	0	0	0	0
11	F	1	0	0	0	0
11	G	1	0	0	0	0
11	H	1	0	0	0	0
12	A	10	0	0	0	0
12	B	26	0	0	0	0
12	C	3	0	0	0	0
12	D	16	0	0	0	0
All	All	24323	0	23851	560	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 12.

All (560) 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)
3:F:217:VAL:HG21	10:F:302:ADP:C2	1.64	1.30
3:H:186:SER:HA	3:H:191:ARG:NH2	1.59	1.15
3:H:217:VAL:CG1	10:H:302:ADP:C2	2.31	1.12
3:H:217:VAL:HG12	10:H:302:ADP:C2	1.84	1.10
3:F:17:THR:HG23	10:F:302:ADP:O1A	1.51	1.08

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:217:VAL:HG21	10:F:302:ADP:N3	1.70	1.06
3:F:217:VAL:CG2	10:F:302:ADP:C2	2.40	1.04
3:H:186:SER:CA	3:H:191:ARG:HH22	1.72	1.02
3:H:153:GLY:HA3	3:H:191:ARG:HG2	1.47	0.96
3:H:186:SER:HA	3:H:191:ARG:HH22	0.80	0.96
3:H:217:VAL:HG11	10:H:302:ADP:C6	2.04	0.91
3:G:156:MET:SD	10:H:302:ADP:O3'	2.31	0.89
1:A:88:CYS:SG	1:A:153:GLU:HG2	2.16	0.86
3:F:46:ARG:HD2	3:F:224:ARG:HB2	1.57	0.85
3:H:39:ASP:HB2	3:H:127:LEU:HB3	1.61	0.82
3:H:217:VAL:HG11	10:H:302:ADP:C2	2.15	0.81
3:F:209:HIS:HD2	3:F:243:LEU:HB3	1.47	0.80
3:H:217:VAL:HG11	10:H:302:ADP:C5	2.17	0.79
3:H:23:VAL:HG21	3:H:35:ILE:HD11	1.65	0.77
3:E:238:ASP:HA	3:E:241:ARG:HD2	1.67	0.77
3:G:52:LYS:HE3	3:G:54:GLN:H	1.49	0.76
1:A:139:GLU:HG3	1:A:174:LEU:HD13	1.67	0.75
3:E:187:ARG:HG2	3:E:213:ARG:HH22	1.49	0.75
3:E:4:GLN:HB2	3:E:144:ALA:HA	1.69	0.74
3:F:4:GLN:HB3	3:F:144:ALA:HA	1.68	0.74
3:H:217:VAL:CG1	10:H:302:ADP:N3	2.50	0.74
3:H:259:ILE:HD11	3:H:264:LEU:HG	1.69	0.72
3:H:217:VAL:HG11	10:H:302:ADP:N1	2.03	0.72
3:H:23:VAL:HB	3:H:33:VAL:HG21	1.72	0.72
3:E:72:LEU:HD11	3:E:114:ALA:HB2	1.72	0.72
3:G:4:GLN:HB3	3:G:144:ALA:HA	1.72	0.72
3:H:153:GLY:CA	3:H:191:ARG:HG2	2.21	0.71
3:H:189:THR:H	3:H:191:ARG:HH11	1.39	0.71
3:E:187:ARG:HG2	3:E:213:ARG:NH2	2.05	0.71
3:H:217:VAL:CG1	10:H:302:ADP:N1	2.53	0.70
3:G:55:ASN:ND2	3:G:60:MET:SD	2.61	0.69
3:G:223:ARG:HD2	3:G:230:TYR:HE2	1.56	0.69
1:A:280:ASN:O	1:A:284:ARG:HG3	1.91	0.69
2:B:262:ASP:OD2	2:D:350:ARG:NE	2.27	0.68
3:G:156:MET:CE	10:H:302:ADP:O3'	2.41	0.68
3:F:146:GLU:HG3	3:F:253:LEU:HD11	1.76	0.68
2:B:90:HIS:ND1	2:B:116:ASP:OD2	2.26	0.68
3:E:197:ILE:HD12	3:E:198:ALA:N	2.09	0.68
2:B:350:ARG:NE	2:D:262:ASP:OD1	2.27	0.67
3:E:103:ILE:HG12	3:E:137:MET:HE3	1.76	0.67
3:H:74:ASP:OD1	3:H:74:ASP:N	2.26	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:38:ASP:O	2:D:42:GLU:HG3	1.95	0.67
2:D:90:HIS:ND1	2:D:116:ASP:OD2	2.28	0.67
3:E:209:HIS:HB3	3:E:243:LEU:HD12	1.77	0.67
1:A:433:LYS:NZ	2:B:263:THR:O	2.28	0.66
3:H:217:VAL:HG11	10:H:302:ADP:C4	2.29	0.66
3:G:70:LEU:HD22	3:G:108:PHE:HE2	1.60	0.66
3:F:38:CYS:HB2	3:F:126:VAL:HA	1.78	0.66
3:F:22:LEU:HD12	3:F:243:LEU:HD12	1.77	0.65
3:H:4:GLN:HG2	3:H:122:VAL:HB	1.76	0.65
3:F:217:VAL:CG2	10:F:302:ADP:N3	2.53	0.65
3:G:156:MET:SD	3:G:156:MET:N	2.70	0.65
3:F:57:ILE:HD13	3:F:75:VAL:HG11	1.79	0.64
3:F:39:ASP:HB2	3:F:127:LEU:HB3	1.77	0.64
3:H:194:GLU:HB3	3:H:271:PHE:HB3	1.79	0.64
3:F:178:ARG:HB2	3:F:253:LEU:HD12	1.79	0.64
2:D:116:ASP:O	2:D:130:ASN:ND2	2.31	0.64
3:E:107:ASN:O	3:E:111:GLU:HG3	1.98	0.64
3:F:219:ARG:O	3:F:223:ARG:NH1	2.31	0.64
3:G:70:LEU:HD22	3:G:108:PHE:CE2	2.33	0.64
3:H:189:THR:HB	3:H:191:ARG:HG3	1.80	0.64
10:G:303:ADP:O1A	3:H:156:MET:HG2	1.98	0.63
3:H:242:ALA:O	3:H:246:LYS:HG2	1.98	0.63
1:A:146:LYS:NZ	2:B:33:GLU:O	2.31	0.63
1:C:210:ARG:HD2	1:C:263:GLU:HB3	1.81	0.63
1:C:433:LYS:NZ	2:D:263:THR:O	2.30	0.63
1:C:387:TYR:HA	1:C:390:THR:HG22	1.78	0.63
3:G:209:HIS:CD2	3:G:243:LEU:HB3	2.34	0.63
3:G:236:GLN:HA	3:G:239:GLU:OE2	2.00	0.62
3:H:117:ASP:HB2	3:H:119:LEU:HD23	1.81	0.62
3:H:164:ILE:O	3:H:168:ILE:HG23	1.99	0.62
1:A:97:ARG:NH2	1:A:447:SER:O	2.32	0.62
3:G:156:MET:HE2	10:H:302:ADP:H3'	1.80	0.62
3:F:209:HIS:CD2	3:F:243:LEU:HB3	2.33	0.62
1:C:432:GLN:HG2	1:C:472:TRP:HH2	1.65	0.61
1:C:22:GLU:HB3	1:C:26:LYS:HZ1	1.64	0.61
3:E:22:LEU:HD11	3:E:247:VAL:HG21	1.82	0.61
3:E:154:GLU:OE1	10:F:302:ADP:H4'	2.01	0.61
3:H:32:LYS:HB2	3:H:119:LEU:HA	1.83	0.61
2:D:101:SER:O	2:D:105:ARG:HG3	2.00	0.61
3:F:23:VAL:HG13	3:F:33:VAL:HG21	1.81	0.61
3:G:156:MET:CE	10:H:302:ADP:H3'	2.31	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:131:MET:HG2	2:D:165:PHE:HB3	1.82	0.60
2:B:103:PHE:HB3	2:B:111:VAL:HG21	1.83	0.60
2:B:171:LYS:NZ	3:F:173:ASN:O	2.30	0.60
3:H:15:LYS:HD3	10:H:302:ADP:O3B	2.02	0.60
3:G:110:GLU:OE2	3:G:143:LYS:NZ	2.22	0.60
2:B:43:VAL:O	2:B:47:THR:HG23	2.02	0.59
2:B:366:ARG:NH2	2:B:437:ASP:OD1	2.30	0.59
2:D:352:VAL:O	2:D:356:THR:HG23	2.02	0.59
3:F:17:THR:HG23	10:F:302:ADP:PA	2.41	0.59
3:E:223:ARG:HE	3:E:230:TYR:HE2	1.50	0.59
3:G:198:ALA:HB1	3:G:267:LEU:HD11	1.85	0.59
3:H:56:THR:HG22	3:H:87:GLU:HB3	1.83	0.59
1:C:96:ARG:NH2	5:C:502:ICS:S5A	2.75	0.59
2:D:347:GLU:OE2	2:D:487:TYR:HB2	2.02	0.59
2:D:494:LEU:O	2:D:498:VAL:HG12	2.01	0.59
3:F:46:ARG:HD2	3:F:224:ARG:CB	2.30	0.58
2:D:202:GLU:HG3	2:D:300:LYS:HG2	1.83	0.58
3:F:177:VAL:O	3:F:178:ARG:NH1	2.35	0.58
3:E:8:TYR:OH	3:E:135:PHE:O	2.20	0.58
3:F:214:ASP:O	3:F:217:VAL:HG22	2.04	0.58
1:C:161:ASP:O	1:C:182:ARG:NH2	2.29	0.58
1:C:203:ARG:NH1	1:C:204:ASP:OD1	2.31	0.58
3:H:16:SER:O	3:H:20:GLN:NE2	2.36	0.58
3:F:13:ILE:HA	3:F:187:ARG:HH22	1.69	0.58
2:D:103:PHE:HB3	2:D:111:VAL:HG21	1.85	0.57
2:B:187:PRO:HG2	2:B:190:VAL:HG12	1.86	0.57
2:B:70:CYS:HB2	2:B:188:SER:HB2	1.87	0.57
3:G:156:MET:CE	10:H:302:ADP:C3'	2.83	0.57
3:H:237:ALA:HB1	3:H:241:ARG:HH12	1.70	0.57
3:H:191:ARG:HA	3:H:194:GLU:HB2	1.87	0.57
3:H:72:LEU:HD11	3:H:76:LEU:HD12	1.85	0.56
3:E:58:MET:HA	3:E:58:MET:HE2	1.86	0.56
3:F:12:GLY:HA2	10:F:302:ADP:O3B	2.04	0.56
2:B:120:GLU:OE2	3:E:104:THR:OG1	2.21	0.56
1:C:198:ALA:O	1:C:202:VAL:HG23	2.04	0.56
3:F:217:VAL:HG21	10:F:302:ADP:C4	2.37	0.56
3:G:259:ILE:HD12	3:G:263:GLU:HB2	1.87	0.56
3:H:189:THR:HB	3:H:191:ARG:HD2	1.86	0.56
3:H:217:VAL:CG1	10:H:302:ADP:C4	2.87	0.56
3:F:57:ILE:H	3:F:88:SER:HA	1.70	0.56
3:G:107:ASN:HA	3:G:110:GLU:OE1	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:276:TYR:O	1:A:280:ASN:HB3	2.05	0.56
2:D:151:THR:HG23	2:D:162:LEU:HD11	1.87	0.56
3:G:4:GLN:HG2	3:G:122:VAL:HB	1.88	0.56
3:G:45:THR:HG21	3:G:85:CYS:HB3	1.87	0.56
2:B:228:PRO:HA	2:B:293:LEU:HD12	1.86	0.56
3:E:12:GLY:O	3:E:187:ARG:NH2	2.38	0.56
2:D:43:VAL:O	2:D:47:THR:HG23	2.06	0.55
3:H:153:GLY:HA3	3:H:191:ARG:CG	2.27	0.55
3:H:191:ARG:HD3	3:H:192:GLU:N	2.21	0.55
1:A:163:ILE:HD11	1:A:182:ARG:HD3	1.89	0.55
3:E:237:ALA:O	3:E:241:ARG:HG3	2.05	0.55
1:A:317:ASP:OD1	1:A:319:SER:OG	2.25	0.55
1:C:224:ALA:HB2	1:C:268:VAL:HG11	1.89	0.55
1:A:355:ILE:HG22	1:A:356:GLY:H	1.72	0.55
2:B:216:LYS:HD2	2:B:285:PRO:HB2	1.89	0.55
3:G:51:SER:OG	3:G:54:GLN:OE1	2.23	0.55
3:G:266:GLU:O	3:G:270:GLU:HG3	2.07	0.55
3:H:153:GLY:HA3	3:H:191:ARG:NE	2.21	0.55
1:A:32:LEU:HD13	1:A:412:PHE:HZ	1.72	0.55
1:C:139:GLU:HG3	1:C:174:LEU:HD22	1.88	0.55
3:H:214:ASP:HB2	3:H:236:GLN:OE1	2.06	0.55
1:C:439:ARG:HG3	1:C:463:MET:HE2	1.89	0.55
1:A:239:ARG:NH2	1:A:249:CYS:O	2.40	0.54
2:B:422:TYR:HB3	2:B:425:LYS:HG3	1.89	0.54
3:H:212:PRO:HD2	3:H:239:GLU:OE1	2.07	0.54
1:C:142:PHE:O	1:C:145:ASN:ND2	2.29	0.54
1:C:223:VAL:HG11	1:C:247:LEU:HD13	1.89	0.54
2:D:131:MET:HE2	2:D:135:LEU:HG	1.90	0.54
3:E:243:LEU:O	3:E:247:VAL:HG23	2.07	0.54
1:C:28:ARG:HH12	1:C:31:HIS:HB2	1.73	0.54
3:F:19:THR:OG1	3:F:125:ASP:OD2	2.21	0.54
3:G:265:GLU:OE1	3:H:224:ARG:NH1	2.41	0.54
2:D:266:ASP:OD2	2:D:270:ARG:NH2	2.39	0.53
3:G:235:LYS:HG2	3:G:236:GLN:N	2.23	0.53
1:C:107:ASN:HD21	2:D:34:LYS:HE2	1.73	0.53
2:D:120:GLU:OE2	3:G:104:THR:OG1	2.25	0.53
2:D:83:GLU:HG2	2:D:277:THR:HA	1.90	0.53
3:G:26:LEU:HD12	3:G:244:ALA:HB1	1.91	0.53
3:H:228:ILE:HG22	3:H:237:ALA:HB1	1.90	0.53
2:B:518:ASN:HD22	2:D:12:TYR:HB3	1.74	0.53
3:E:23:VAL:HG22	3:E:33:VAL:HG11	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:146:GLU:OE2	3:F:253:LEU:HD21	2.08	0.53
3:E:186:SER:HB3	3:E:212:PRO:HA	1.90	0.53
3:G:202:LYS:HG3	3:G:259:ILE:HG21	1.89	0.53
3:H:10:LYS:HE2	3:H:156:MET:HG3	1.90	0.53
2:B:231:GLU:CD	2:B:236:ASN:HD22	2.12	0.53
1:C:22:GLU:HB3	1:C:26:LYS:NZ	2.24	0.53
3:F:17:THR:OG1	10:F:302:ADP:C8	2.62	0.53
3:G:209:HIS:NE2	3:G:239:GLU:HB2	2.23	0.52
3:F:145:GLN:HA	3:F:177:VAL:HG23	1.90	0.52
3:H:19:THR:O	3:H:23:VAL:HG13	2.09	0.52
3:F:60:MET:HB2	3:F:70:LEU:HD21	1.91	0.52
3:G:158:MET:HE1	3:G:195:LEU:HD23	1.92	0.52
3:E:241:ARG:HB3	3:E:245:ARG:HH12	1.75	0.52
3:F:244:ALA:O	3:F:247:VAL:HG12	2.09	0.52
2:D:88:TYR:OH	2:D:116:ASP:HB3	2.10	0.51
1:C:17:LEU:HD21	1:C:29:ASN:HA	1.90	0.51
3:G:106:ILE:O	3:G:110:GLU:HG3	2.10	0.51
1:A:72:TRP:HA	1:A:75:ILE:HD12	1.92	0.51
3:H:7:ILE:HD13	3:H:148:TYR:HB2	1.93	0.51
3:H:57:ILE:H	3:H:88:SER:HA	1.76	0.51
3:G:19:THR:O	3:G:23:VAL:HG23	2.08	0.51
2:B:86:MET:HG2	2:B:138:CYS:SG	2.51	0.51
2:D:468:ARG:NH2	2:D:475:ASP:OD2	2.42	0.51
3:G:60:MET:HB2	3:G:70:LEU:CD1	2.41	0.51
3:G:205:THR:OG1	3:G:206:GLN:N	2.44	0.51
3:F:33:VAL:HG12	3:F:121:PHE:HB2	1.93	0.51
3:H:137:MET:HA	3:H:140:ARG:HG3	1.93	0.51
3:E:263:GLU:HA	3:E:266:GLU:CD	2.31	0.51
3:F:147:ILE:O	3:F:180:GLY:N	2.44	0.51
2:B:262:ASP:OD1	2:B:481:ARG:NH1	2.44	0.51
3:F:23:VAL:HG21	3:F:35:ILE:HD11	1.92	0.51
2:B:198:ASP:HB2	2:B:297:HIS:O	2.11	0.50
3:F:40:PRO:HA	3:F:89:GLY:O	2.10	0.50
1:A:97:ARG:HD2	2:D:520:ASP:OD2	2.11	0.50
3:F:26:LEU:HA	3:F:29:MET:HG3	1.92	0.50
3:F:214:ASP:HB3	3:F:236:GLN:NE2	2.26	0.50
3:H:3:ARG:HB2	3:H:121:PHE:HD1	1.74	0.50
1:C:14:GLN:O	1:C:18:GLU:HG3	2.12	0.50
2:D:322:LEU:HD13	2:D:351:LEU:HD23	1.93	0.50
3:F:244:ALA:O	3:F:248:VAL:HG23	2.12	0.50
1:A:226:ILE:HA	1:A:253:TRP:HB2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:2:MET:HA	3:F:120:ASP:O	2.12	0.50
3:H:31:LYS:HD3	3:H:121:PHE:CZ	2.47	0.50
2:B:236:ASN:HD21	2:B:484:THR:HB	1.77	0.49
3:E:5:CYS:HA	3:E:146:GLU:O	2.12	0.49
3:G:239:GLU:HA	3:G:242:ALA:HB3	1.93	0.49
1:A:223:VAL:HG11	1:A:247:LEU:HD13	1.93	0.49
2:B:96:VAL:HG21	2:B:115:SER:HB2	1.93	0.49
3:E:130:VAL:HG13	3:E:130:VAL:O	2.12	0.49
3:H:47:LEU:HB3	3:H:226:THR:HG22	1.95	0.49
3:H:209:HIS:HB2	3:H:246:LYS:HE2	1.94	0.49
1:A:385:ASP:N	1:A:385:ASP:OD1	2.45	0.49
1:C:64:TYR:CE1	1:C:88:CYS:HB3	2.47	0.49
3:E:218:GLN:O	3:E:222:ILE:HG12	2.12	0.49
3:H:13:ILE:HD12	3:H:187:ARG:HH21	1.77	0.49
3:E:130:VAL:HG13	3:F:93:PRO:HB3	1.93	0.49
3:F:267:LEU:HD22	3:F:271:PHE:HD2	1.77	0.49
2:B:139:LYS:HA	2:B:144:PRO:HD2	1.95	0.49
1:C:355:ILE:HB	1:C:360:PRO:HD3	1.94	0.49
3:F:180:GLY:O	3:F:206:GLN:NE2	2.45	0.49
3:H:45:THR:HG23	3:H:87:GLU:OE2	2.11	0.49
3:E:155:MET:SD	3:E:268:LEU:HD11	2.53	0.49
3:F:14:GLY:HA2	10:F:302:ADP:H5'1	1.95	0.49
3:H:187:ARG:H	3:H:191:ARG:HH12	1.61	0.49
3:F:217:VAL:HG13	3:F:236:GLN:OE1	2.13	0.49
1:A:85:PRO:HB2	6:B:601:CLF:S2B	2.52	0.49
1:C:302:PRO:HD2	1:C:369:ASP:OD2	2.12	0.49
1:A:14:GLN:O	1:A:18:GLU:HG3	2.13	0.49
2:D:156:GLU:HG3	2:D:187:PRO:HA	1.95	0.49
3:E:166:LYS:HB2	3:E:166:LYS:NZ	2.28	0.49
3:E:265:GLU:HA	3:E:268:LEU:HG	1.94	0.49
3:F:165:SER:O	3:F:169:VAL:HG13	2.13	0.49
3:F:218:GLN:O	3:F:222:ILE:HG12	2.13	0.49
3:G:236:GLN:O	3:G:236:GLN:HG3	2.13	0.49
1:C:399:LEU:HD21	1:C:412:PHE:CD2	2.48	0.49
3:E:183:ILE:HD13	3:E:243:LEU:HD11	1.94	0.48
3:F:26:LEU:HD23	3:F:244:ALA:HB1	1.94	0.48
3:G:23:VAL:HG13	3:G:33:VAL:HB	1.95	0.48
1:A:98:ASN:ND2	1:A:98:ASN:O	2.46	0.48
1:A:350:ARG:N	1:A:419:ASP:OD2	2.34	0.48
2:D:121:ASP:OD1	2:D:122:ALA:N	2.46	0.48
3:G:163:ASN:HA	3:G:166:LYS:HD2	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:168:ILE:HD11	3:H:256:PRO:HG3	1.96	0.48
2:D:109:GLU:HG3	2:D:261:LEU:O	2.13	0.48
3:E:160:ALA:O	3:E:164:ILE:HG13	2.12	0.48
3:G:52:LYS:HG3	3:G:54:GLN:OE1	2.13	0.48
1:C:139:GLU:HA	1:C:139:GLU:OE1	2.13	0.48
10:E:303:ADP:O3'	3:F:154:GLU:HB3	2.14	0.48
2:B:125:PHE:HA	3:E:91:PRO:HB3	1.96	0.48
1:C:170:LYS:HE3	1:C:174:LEU:HD11	1.95	0.48
1:C:439:ARG:HG2	1:C:466:THR:HG21	1.95	0.48
3:H:23:VAL:HA	3:H:26:LEU:HD12	1.96	0.48
3:H:191:ARG:HB3	3:H:195:LEU:CD1	2.43	0.48
3:E:209:HIS:HD1	3:E:246:LYS:HE2	1.79	0.48
2:B:84:LYS:HB2	2:B:145:ASP:HB2	1.96	0.47
2:B:377:MET:HB3	2:B:377:MET:HE2	1.56	0.47
3:E:186:SER:O	3:E:213:ARG:NH2	2.46	0.47
3:F:209:HIS:NE2	3:F:239:GLU:OE1	2.47	0.47
3:G:17:THR:OG1	3:G:221:GLU:OE2	2.21	0.47
3:G:166:LYS:HG3	3:G:258:PRO:HB3	1.96	0.47
1:A:378:GLY:HA3	1:A:401:TYR:CD1	2.50	0.47
1:C:439:ARG:HD3	1:C:466:THR:OG1	2.15	0.47
3:F:216:VAL:HG22	3:F:219:ARG:HH12	1.78	0.47
3:F:22:LEU:HD12	3:F:243:LEU:CD1	2.44	0.47
3:G:259:ILE:O	3:G:259:ILE:HG13	2.15	0.47
3:H:56:THR:HB	3:H:88:SER:C	2.34	0.47
3:H:126:VAL:HG13	3:H:127:LEU:HD23	1.95	0.47
1:A:463:MET:O	1:A:467:LEU:HB2	2.14	0.47
2:B:473:ILE:HG21	2:B:479:LEU:HD12	1.96	0.47
2:D:91:GLY:HA2	2:D:118:MET:HE3	1.95	0.47
3:E:197:ILE:HD12	3:E:198:ALA:H	1.80	0.47
3:E:261:MET:SD	3:E:261:MET:N	2.69	0.47
3:G:129:ASP:OD2	3:H:127:LEU:HD12	2.15	0.47
3:H:33:VAL:HG22	3:H:83:VAL:HG22	1.97	0.47
3:H:146:GLU:OE1	3:H:148:TYR:OH	2.21	0.47
1:A:59:ILE:HG23	1:A:426:LYS:HE2	1.96	0.47
1:C:411:GLU:O	1:C:415:ARG:HG2	2.15	0.47
3:E:242:ALA:C	3:E:246:LYS:HZ2	2.18	0.47
3:F:4:GLN:HB2	3:F:145:GLN:NE2	2.29	0.47
1:C:115:THR:HG23	2:D:63:THR:HB	1.97	0.47
1:A:478:PRO:HB2	2:D:330:MET:SD	2.55	0.47
3:F:247:VAL:HA	3:F:250:ASN:OD1	2.15	0.47
3:G:22:LEU:O	3:G:23:VAL:C	2.52	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:235:LYS:O	3:G:236:GLN:HB3	2.15	0.47
3:E:241:ARG:HB3	3:E:245:ARG:NH1	2.30	0.46
3:F:108:PHE:HD1	3:F:109:LEU:HD23	1.80	0.46
3:F:220:ALA:HB1	3:F:225:MET:O	2.15	0.46
1:A:332:LYS:HA	1:A:335:TRP:NE1	2.31	0.46
3:E:40:PRO:HD2	3:E:127:LEU:HD13	1.98	0.46
3:G:57:ILE:HG12	3:G:75:VAL:HG21	1.98	0.46
1:A:253:TRP:CZ2	1:A:262:ILE:HG23	2.50	0.46
2:D:215:ASP:OD1	2:D:216:LYS:NZ	2.39	0.46
3:G:4:GLN:CB	3:G:144:ALA:HA	2.44	0.46
3:H:2:MET:SD	3:H:122:VAL:HG23	2.56	0.46
1:A:410:GLU:HG2	1:A:414:LYS:HD2	1.98	0.46
2:B:402:TRP:O	2:B:406:VAL:HG23	2.15	0.46
2:B:104:ASN:ND2	2:B:109:GLU:O	2.44	0.46
1:A:459:PHE:O	1:A:463:MET:HG2	2.16	0.46
2:D:70:CYS:HB2	2:D:188:SER:HB2	1.98	0.46
3:H:50:HIS:O	3:H:224:ARG:HD3	2.16	0.46
3:H:189:THR:H	3:H:191:ARG:NH1	2.09	0.46
3:G:186:SER:HB2	3:G:210:PHE:CZ	2.51	0.46
3:G:241:ARG:O	3:G:245:ARG:HG3	2.16	0.46
3:H:126:VAL:HG12	3:H:127:LEU:O	2.15	0.46
3:H:162:ASN:OD1	3:H:259:ILE:HD13	2.16	0.46
1:A:437:PRO:HG3	1:A:472:TRP:CD1	2.50	0.46
3:E:138:PRO:O	3:E:143:LYS:HB3	2.15	0.46
3:F:15:LYS:HB2	3:F:15:LYS:HE2	1.74	0.46
3:H:214:ASP:O	10:H:302:ADP:C2	2.69	0.46
2:B:352:VAL:HA	2:B:355:MET:HE3	1.96	0.45
3:F:137:MET:HA	3:F:140:ARG:HG3	1.98	0.45
3:H:4:GLN:HB3	3:H:144:ALA:HA	1.98	0.45
3:F:46:ARG:HA	3:F:51:SER:O	2.16	0.45
3:F:56:THR:HB	3:F:88:SER:C	2.37	0.45
3:F:214:ASP:HB3	3:F:236:GLN:CD	2.36	0.45
3:G:152:SER:O	3:G:196:ILE:HD11	2.16	0.45
3:H:2:MET:HE1	3:H:119:LEU:HG	1.99	0.45
3:H:70:LEU:HD12	3:H:70:LEU:HA	1.83	0.45
2:B:45:GLN:O	2:B:49:THR:HG23	2.17	0.45
2:D:38:ASP:OD1	2:D:38:ASP:N	2.49	0.45
2:D:465:PRO:HG2	2:D:504:ARG:HD3	1.99	0.45
1:A:64:TYR:CE1	1:A:88:CYS:HB3	2.52	0.45
2:D:484:THR:HG22	2:D:493:ILE:HD11	1.99	0.45
2:D:320:MET:HG3	2:D:485:LEU:HD23	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:28:ARG:NH2	1:C:408:GLU:OE1	2.42	0.45
3:E:139:ILE:HG21	3:E:147:ILE:HD11	1.98	0.45
3:F:10:LYS:O	3:F:15:LYS:NZ	2.48	0.45
3:F:262:ASP:O	3:F:266:GLU:HG3	2.17	0.45
3:G:52:LYS:HE3	3:G:54:GLN:N	2.25	0.45
3:F:2:MET:HE3	3:F:119:LEU:O	2.17	0.45
3:F:179:LEU:HB2	3:F:256:PRO:HG3	1.99	0.45
3:F:246:LYS:HB3	3:F:246:LYS:HE2	1.68	0.45
3:H:41:LYS:HE2	3:H:93:PRO:HG3	1.99	0.45
2:B:19:ASP:OD1	2:B:19:ASP:N	2.48	0.45
3:F:178:ARG:HB2	3:F:253:LEU:CD1	2.45	0.45
1:C:295:MET:HE1	1:C:312:ILE:HA	1.99	0.45
2:D:165:PHE:HE1	3:H:170:LYS:HZ1	1.64	0.45
3:G:127:LEU:HD23	3:G:127:LEU:HA	1.84	0.45
3:H:8:TYR:CE1	3:H:126:VAL:HG11	2.52	0.45
3:H:217:VAL:HG12	10:H:302:ADP:N1	2.21	0.45
3:G:76:LEU:HD11	3:G:84:LYS:HB3	1.99	0.44
3:H:202:LYS:HB3	3:H:259:ILE:HG21	1.99	0.44
1:C:85:PRO:HB2	6:D:601:CLF:S2B	2.58	0.44
3:F:49:LEU:HD12	3:F:49:LEU:HA	1.82	0.44
3:G:235:LYS:HE2	3:G:235:LYS:HB3	1.81	0.44
3:H:143:LYS:HD2	3:H:143:LYS:HA	1.75	0.44
3:G:60:MET:HB2	3:G:70:LEU:HD12	1.99	0.44
3:E:100:ARG:HA	3:E:103:ILE:HD12	1.98	0.44
3:F:46:ARG:HD3	3:F:51:SER:O	2.17	0.44
3:G:197:ILE:HG13	3:G:207:MET:SD	2.58	0.44
3:H:189:THR:HB	3:H:191:ARG:CG	2.45	0.44
1:A:96:ARG:HD2	5:A:502:ICS:S3B	2.57	0.44
1:C:107:ASN:ND2	2:D:34:LYS:HE2	2.32	0.44
1:C:264:LEU:HD23	1:C:264:LEU:HA	1.89	0.44
3:F:180:GLY:HA2	3:F:253:LEU:HD22	2.00	0.44
1:C:354:TYR:CZ	1:C:404:VAL:HG12	2.52	0.44
3:E:100:ARG:HA	3:E:100:ARG:HD2	1.78	0.44
3:H:55:ASN:HB3	3:H:77:LYS:NZ	2.33	0.44
2:B:72:PRO:O	2:B:76:VAL:HG23	2.18	0.44
1:C:233:GLY:HA3	2:D:15:PHE:CE2	2.53	0.44
3:G:156:MET:HE1	10:H:302:ADP:O3'	2.18	0.44
3:G:241:ARG:H	3:G:241:ARG:HG3	1.58	0.44
3:H:237:ALA:CB	3:H:241:ARG:HH12	2.31	0.44
1:A:355:ILE:HB	1:A:360:PRO:HD3	2.00	0.44
2:D:55:LEU:HA	2:D:58:GLN:NE2	2.33	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:74:ASP:OD1	3:F:74:ASP:N	2.49	0.44
3:G:52:LYS:O	3:G:53:ALA:HB3	2.18	0.44
3:H:3:ARG:N	3:H:120:ASP:O	2.40	0.44
1:C:225:ILE:HD11	1:C:242:LEU:HD12	2.00	0.43
2:D:96:VAL:O	2:D:100:ARG:HG3	2.18	0.43
3:E:15:LYS:HB2	3:E:15:LYS:HE2	1.76	0.43
3:H:146:GLU:HG2	3:H:253:LEU:HD21	1.98	0.43
3:H:209:HIS:ND1	3:H:243:LEU:HD13	2.33	0.43
1:A:222:ASP:HB3	1:A:268:VAL:HA	2.00	0.43
2:B:209:THR:O	2:B:213:MET:HG2	2.17	0.43
2:D:361:TRP:NE1	2:D:523:ARG:O	2.48	0.43
3:G:47:LEU:HD11	3:G:221:GLU:HG2	2.00	0.43
1:A:210:ARG:NH2	1:A:263:GLU:OE1	2.51	0.43
3:E:94:GLY:O	3:F:171:TYR:OH	2.28	0.43
3:E:170:LYS:HG3	3:E:171:TYR:N	2.33	0.43
1:A:173:GLU:HG2	1:A:174:LEU:HG	1.99	0.43
1:A:223:VAL:HG12	1:A:270:LEU:HB3	2.01	0.43
2:D:71:GLN:HG2	2:D:192:SER:O	2.19	0.43
3:F:225:MET:SD	3:F:230:TYR:HB2	2.58	0.43
3:G:222:ILE:HG23	3:H:268:LEU:HB3	1.99	0.43
3:H:15:LYS:H	10:H:302:ADP:PB	2.41	0.43
2:D:404:LYS:HB2	2:D:404:LYS:HE2	1.78	0.43
3:F:42:ALA:HB2	3:F:89:GLY:HA2	1.99	0.43
3:F:187:ARG:HA	3:F:213:ARG:HD2	2.00	0.43
1:C:430:ILE:HG13	2:D:110:PRO:HB3	2.01	0.43
2:D:221:ASN:OD1	2:D:287:ALA:HA	2.19	0.43
3:E:8:TYR:CZ	3:E:126:VAL:HG11	2.54	0.43
3:E:140:ARG:O	3:E:143:LYS:HB2	2.18	0.43
3:F:76:LEU:HD12	3:F:86:VAL:HB	2.00	0.43
3:F:126:VAL:HG12	3:F:127:LEU:HD23	2.01	0.43
3:F:187:ARG:HG2	3:F:213:ARG:CZ	2.48	0.43
3:G:31:LYS:HB3	3:G:31:LYS:HE2	1.72	0.43
3:H:260:THR:OG1	3:H:261:MET:N	2.51	0.43
3:F:45:THR:O	3:F:48:ILE:N	2.49	0.43
2:B:457:HIS:HB2	2:D:512:MET:HG3	2.01	0.43
1:C:163:ILE:HG12	1:C:182:ARG:NH2	2.34	0.43
1:C:355:ILE:HD12	1:C:359:ARG:HB3	2.01	0.43
3:H:52:LYS:HE3	3:H:54:GLN:NE2	2.33	0.43
3:H:189:THR:CB	3:H:191:ARG:HD2	2.49	0.43
1:A:275:CYS:HA	1:A:358:LEU:HD22	2.01	0.43
2:B:80:LEU:HD11	2:B:111:VAL:HG13	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:106:VAL:HG21	2:D:44:PHE:HB2	2.00	0.43
3:F:188:ASN:OD1	3:F:188:ASN:N	2.50	0.43
3:G:22:LEU:O	3:G:25:ALA:N	2.51	0.43
1:C:253:TRP:HA	1:C:254:SER:HA	1.67	0.43
2:B:119:THR:HG22	2:B:120:GLU:N	2.34	0.42
2:B:468:ARG:NH2	2:B:475:ASP:OD2	2.44	0.42
1:C:303:THR:HG22	1:C:369:ASP:OD2	2.19	0.42
2:D:487:TYR:O	2:D:491:MET:HG3	2.19	0.42
3:F:186:SER:HB2	3:F:210:PHE:CE2	2.54	0.42
3:G:76:LEU:HD11	3:G:84:LYS:HD3	2.01	0.42
3:G:232:PRO:HB3	3:G:241:ARG:HH22	1.84	0.42
3:E:10:LYS:HB2	3:E:160:ALA:HB3	2.01	0.42
3:F:181:GLY:HA3	3:F:208:ILE:HG12	2.01	0.42
3:G:151:CYS:SG	3:G:196:ILE:HD12	2.59	0.42
3:G:221:GLU:OE1	10:G:303:ADP:O2'	2.33	0.42
3:H:49:LEU:HD23	3:H:49:LEU:HA	1.88	0.42
1:A:207:LEU:HD12	1:A:282:ILE:HD11	2.01	0.42
2:B:256:ASP:OD1	2:B:258:GLU:HG2	2.19	0.42
1:C:76:LYS:NZ	2:D:32:GLU:OE2	2.36	0.42
2:D:125:PHE:HA	3:G:91:PRO:HB3	2.01	0.42
3:F:3:ARG:O	3:F:145:GLN:NE2	2.52	0.42
2:B:487:TYR:O	2:B:491:MET:HG3	2.20	0.42
1:C:231:ILE:HG13	1:C:359:ARG:HH22	1.84	0.42
1:C:253:TRP:CZ2	1:C:262:ILE:HG23	2.53	0.42
3:E:99:GLY:O	3:E:103:ILE:HG13	2.19	0.42
3:H:191:ARG:HB3	3:H:195:LEU:HD12	1.99	0.42
1:A:440:GLU:HB2	1:A:445:ASP:H	1.84	0.42
3:F:23:VAL:CG1	3:F:33:VAL:HG21	2.46	0.42
3:F:155:MET:HG3	3:F:268:LEU:HD11	2.00	0.42
1:A:119:GLN:HA	2:B:189:PHE:O	2.19	0.42
1:A:429:PHE:CZ	2:B:108:ARG:HA	2.54	0.42
2:D:153:CYS:O	2:D:154:MET:C	2.57	0.42
3:E:46:ARG:NH1	3:E:46:ARG:HB2	2.34	0.42
3:G:141:GLU:CD	3:G:141:GLU:H	2.23	0.42
2:D:194:VAL:HB	2:D:297:HIS:CG	2.53	0.42
1:A:120:GLU:OE2	3:F:100:ARG:NH2	2.44	0.42
1:A:289:LYS:HD3	1:A:290:TYR:CZ	2.55	0.42
2:B:346:LYS:NZ	2:D:259:GLU:OE2	2.41	0.42
2:D:146:MET:HG3	2:D:180:PRO:HG2	2.00	0.42
3:F:166:LYS:O	3:F:169:VAL:HG22	2.20	0.42
3:F:238:ASP:HA	3:F:241:ARG:HH11	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:152:SER:H	3:G:157:ALA:HB1	1.85	0.42
3:G:156:MET:HE1	10:H:302:ADP:C3'	2.49	0.42
1:A:182:ARG:NH2	3:E:140:ARG:HH12	2.18	0.42
1:C:352:MET:SD	1:C:418:PRO:HG3	2.60	0.42
2:D:132:LYS:HD3	2:D:174:PHE:CE1	2.55	0.42
3:G:100:ARG:HA	3:G:100:ARG:HD2	1.77	0.42
3:H:137:MET:SD	3:H:140:ARG:HD2	2.59	0.42
3:H:158:MET:HE1	3:H:195:LEU:HD22	2.01	0.42
1:C:228:ASP:N	1:C:253:TRP:O	2.53	0.42
1:C:265:THR:O	1:C:268:VAL:HG22	2.20	0.42
3:E:98:ALA:HB3	3:F:131:VAL:HB	2.00	0.42
3:E:154:GLU:OE2	3:F:213:ARG:NH2	2.53	0.42
3:H:165:SER:O	3:H:169:VAL:HG23	2.19	0.42
2:B:51:GLU:H	2:B:51:GLU:HG3	1.55	0.41
1:C:59:ILE:HG13	1:C:426:LYS:HE2	2.02	0.41
3:H:2:MET:CE	3:H:119:LEU:HG	2.50	0.41
2:B:370:TRP:CZ2	2:B:444:GLY:HA3	2.55	0.41
1:C:332:LYS:HA	1:C:335:TRP:NE1	2.35	0.41
3:F:70:LEU:HD23	3:F:70:LEU:HA	1.81	0.41
3:H:60:MET:HE3	3:H:60:MET:HB3	1.96	0.41
2:B:71:GLN:HG2	2:B:192:SER:O	2.21	0.41
1:C:346:LEU:HB3	1:C:372:MET:SD	2.59	0.41
1:C:462:ASP:HA	1:C:465:MET:HG2	2.00	0.41
2:D:54:GLU:O	2:D:58:GLN:NE2	2.48	0.41
2:D:119:THR:OG1	2:D:121:ASP:OD1	2.37	0.41
3:E:4:GLN:CB	3:E:144:ALA:HA	2.46	0.41
10:E:303:ADP:H3'	3:F:156:MET:HG2	2.03	0.41
3:G:156:MET:HG2	10:H:302:ADP:O5'	2.19	0.41
3:H:189:THR:HB	3:H:191:ARG:CD	2.50	0.41
1:A:70:VAL:HA	1:A:96:ARG:NH1	2.35	0.41
3:E:152:SER:HB2	3:E:187:ARG:HG3	2.00	0.41
3:E:152:SER:CB	3:E:187:ARG:HG3	2.51	0.41
3:F:3:ARG:N	3:F:120:ASP:O	2.47	0.41
3:F:15:LYS:O	3:F:19:THR:OG1	2.39	0.41
3:G:218:GLN:OE1	10:G:303:ADP:C2	2.73	0.41
1:A:89:GLY:O	1:A:90:GLN:C	2.59	0.41
1:A:229:TYR:CE2	5:A:502:ICS:S2A	3.13	0.41
2:B:194:VAL:HB	2:B:297:HIS:CG	2.55	0.41
2:D:39:LYS:HA	2:D:39:LYS:HD3	1.81	0.41
2:D:55:LEU:HA	2:D:58:GLN:HE21	1.85	0.41
3:E:127:LEU:HD23	3:E:130:VAL:H	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:22:LEU:HD12	3:G:22:LEU:HA	1.92	0.41
3:H:246:LYS:HG2	3:H:246:LYS:H	1.72	0.41
3:G:138:PRO:O	3:G:143:LYS:HB3	2.20	0.41
3:H:60:MET:HB3	3:H:70:LEU:HD11	2.02	0.41
1:A:168:LYS:HG3	1:A:169:VAL:N	2.36	0.41
2:B:231:GLU:OE2	2:B:233:TYR:HB2	2.21	0.41
2:D:124:VAL:HG11	3:G:58:MET:HG3	2.01	0.41
2:D:198:ASP:HB2	2:D:297:HIS:O	2.21	0.41
3:G:54:GLN:HB3	3:G:55:ASN:H	1.65	0.41
3:G:259:ILE:HD11	3:G:264:LEU:HB2	2.03	0.41
3:H:187:ARG:H	3:H:191:ARG:NH1	2.18	0.41
3:H:227:VAL:HG21	3:H:236:GLN:HG2	2.03	0.41
2:B:522:VAL:HG11	2:D:105:ARG:HD3	2.02	0.41
1:C:207:LEU:HD22	1:C:282:ILE:HD11	2.02	0.41
1:C:276:TYR:OH	1:C:284:ARG:NH2	2.54	0.41
3:E:235:LYS:HG2	3:E:235:LYS:O	2.21	0.41
3:F:22:LEU:O	3:F:26:LEU:HG	2.19	0.41
1:A:184:GLU:HG2	1:A:187:ARG:HG3	2.02	0.41
1:A:306:ILE:HG23	1:A:328:ILE:HD13	2.02	0.41
1:A:435:GLY:CA	1:A:475:LEU:HD21	2.51	0.41
2:B:153:CYS:HB3	2:B:188:SER:OG	2.21	0.41
2:B:352:VAL:HA	2:B:355:MET:CE	2.51	0.41
2:D:262:ASP:OD2	2:D:481:ARG:NH1	2.54	0.41
3:E:4:GLN:O	3:E:145:GLN:N	2.53	0.41
3:E:234:ALA:C	3:E:236:GLN:H	2.24	0.41
3:E:270:GLU:C	3:E:271:PHE:HD1	2.24	0.41
3:F:4:GLN:HB2	3:F:145:GLN:HE22	1.85	0.41
3:F:143:LYS:HE3	3:F:143:LYS:HB2	1.96	0.41
3:H:102:VAL:HG21	3:H:135:PHE:CD1	2.56	0.41
1:A:81:ILE:HD12	1:A:134:LEU:HD21	2.03	0.41
1:C:378:GLY:HA3	1:C:401:TYR:CD1	2.56	0.41
1:C:430:ILE:O	1:C:434:MET:HG3	2.21	0.41
1:C:437:PRO:HA	1:C:472:TRP:CZ2	2.56	0.41
3:E:116:GLU:H	3:E:116:GLU:HG2	1.60	0.41
3:F:39:ASP:CB	3:F:127:LEU:HB3	2.47	0.41
3:G:106:ILE:HD13	3:G:106:ILE:HA	1.84	0.41
3:G:137:MET:HA	3:G:140:ARG:HD2	2.03	0.41
1:C:42:SER:N	1:C:388:ASP:OD1	2.49	0.40
3:G:187:ARG:CZ	3:H:187:ARG:HH12	2.34	0.40
2:B:234:LEU:HB2	2:B:238:ARG:NH1	2.36	0.40
1:A:17:LEU:HD21	1:A:29:ASN:HA	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:432:GLN:HG2	1:A:472:TRP:HH2	1.87	0.40
3:E:49:LEU:HD11	3:E:77:LYS:HG2	2.04	0.40
3:E:265:GLU:OE1	3:E:268:LEU:HD12	2.21	0.40
3:F:29:MET:HE1	3:F:248:VAL:HG21	2.04	0.40
3:F:84:LYS:HD3	3:F:84:LYS:HA	1.95	0.40
3:G:45:THR:N	3:G:87:GLU:OE2	2.52	0.40
3:H:52:LYS:HE3	3:H:54:GLN:HE21	1.86	0.40
2:B:109:GLU:HG3	2:B:261:LEU:O	2.21	0.40
1:C:20:TYR:OH	1:C:408:GLU:HG3	2.21	0.40
2:D:88:TYR:O	2:D:149:VAL:HA	2.21	0.40
2:D:362:LEU:HD23	2:D:362:LEU:HA	1.82	0.40
3:E:269:MET:SD	3:E:269:MET:N	2.93	0.40
3:G:129:ASP:N	3:G:129:ASP:OD1	2.55	0.40
1:A:439:ARG:HA	1:A:439:ARG:HD2	1.81	0.40
2:B:96:VAL:O	2:B:100:ARG:HG3	2.21	0.40
1:C:222:ASP:HB3	1:C:268:VAL:HA	2.03	0.40
3:E:158:MET:H	3:E:158:MET:HG2	1.64	0.40
3:F:46:ARG:HG3	3:F:47:LEU:N	2.36	0.40
3:H:140:ARG:O	3:H:143:LYS:HB2	2.21	0.40
3:H:151:CYS:O	3:H:184:CYS:HA	2.21	0.40
3:H:192:GLU:O	3:H:193:ASP:CB	2.69	0.40
3:H:264:LEU:O	3:H:268:LEU:HG	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 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 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	466/492 (95%)	450 (97%)	16 (3%)	0	100	100
1	C	468/492 (95%)	450 (96%)	18 (4%)	0	100	100
2	B	520/523 (99%)	510 (98%)	10 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	D	520/523 (99%)	510 (98%)	10 (2%)	0	100	100
3	E	268/290 (92%)	255 (95%)	10 (4%)	3 (1%)	14	20
3	F	269/290 (93%)	247 (92%)	21 (8%)	1 (0%)	34	48
3	G	269/290 (93%)	248 (92%)	19 (7%)	2 (1%)	22	32
3	H	268/290 (92%)	246 (92%)	20 (8%)	2 (1%)	22	32
All	All	3048/3190 (96%)	2916 (96%)	124 (4%)	8 (0%)	44	55

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	E	53	ALA
3	H	191	ARG
3	H	193	ASP
3	E	268	LEU
3	F	2	MET
3	G	54	GLN
3	E	130	VAL
3	G	130	VAL

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	401/415 (97%)	384 (96%)	17 (4%)	30	47
1	C	402/415 (97%)	386 (96%)	16 (4%)	31	49
2	B	454/455 (100%)	448 (99%)	6 (1%)	69	84
2	D	454/455 (100%)	443 (98%)	11 (2%)	49	68
3	E	218/234 (93%)	202 (93%)	16 (7%)	14	22
3	F	218/234 (93%)	196 (90%)	22 (10%)	7	11
3	G	218/234 (93%)	205 (94%)	13 (6%)	19	31
3	H	218/234 (93%)	200 (92%)	18 (8%)	11	17

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	2583/2676 (96%)	2464 (95%)	119 (5%)	31 43

All (119) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	17	LEU
1	A	98	ASN
1	A	133	LYS
1	A	177	THR
1	A	207	LEU
1	A	210	ARG
1	A	237	SER
1	A	258	SER
1	A	281	TYR
1	A	307	GLU
1	A	308	SER
1	A	362	HIS
1	A	401	TYR
1	A	409	PHE
1	A	445	ASP
1	A	454	ASP
1	A	465	MET
2	B	11	SER
2	B	38	ASP
2	B	41	ASP
2	B	116	ASP
2	B	154	MET
2	B	171	LYS
1	C	17	LEU
1	C	68	LYS
1	C	86	VAL
1	C	98	ASN
1	C	118	PHE
1	C	196	HIS
1	C	200	ASP
1	C	237	SER
1	C	281	TYR
1	C	295	MET
1	C	300	PHE
1	C	355	ILE
1	C	396	ASP
1	C	401	TYR

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Mol	Chain	Res	Type
1	C	409	PHE
1	C	465	MET
2	D	28	ARG
2	D	38	ASP
2	D	45	GLN
2	D	86	MET
2	D	92	SER
2	D	102	TYR
2	D	115	SER
2	D	154	MET
2	D	331	LYS
2	D	417	LYS
2	D	494	LEU
3	E	4	GLN
3	E	46	ARG
3	E	67	VAL
3	E	86	VAL
3	E	143	LYS
3	E	158	MET
3	E	170	LYS
3	E	174	SER
3	E	189	THR
3	E	195	LEU
3	E	202	LYS
3	E	229	GLU
3	E	245	ARG
3	E	261	MET
3	E	262	ASP
3	E	269	MET
3	F	2	MET
3	F	22	LEU
3	F	31	LYS
3	F	39	ASP
3	F	49	LEU
3	F	60	MET
3	F	74	ASP
3	F	75	VAL
3	F	100	ARG
3	F	143	LYS
3	F	155	MET
3	F	170	LYS
3	F	188	ASN

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Mol	Chain	Res	Type
3	F	191	ARG
3	F	215	ASN
3	F	223	ARG
3	F	238	ASP
3	F	245	ARG
3	F	249	ASP
3	F	251	LYS
3	F	253	LEU
3	F	261	MET
3	G	2	MET
3	G	41	LYS
3	G	52	LYS
3	G	115	TYR
3	G	156	MET
3	G	163	ASN
3	G	166	LYS
3	G	202	LYS
3	G	206	GLN
3	G	213	ARG
3	G	241	ARG
3	G	251	LYS
3	G	260	THR
3	H	3	ARG
3	H	5	CYS
3	H	15	LYS
3	H	22	LEU
3	H	74	ASP
3	H	84	LYS
3	H	100	ARG
3	H	112	GLU
3	H	119	LEU
3	H	151	CYS
3	H	176	SER
3	H	189	THR
3	H	191	ARG
3	H	192	GLU
3	H	195	LEU
3	H	223	ARG
3	H	249	ASP
3	H	259	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	274	HIS
3	F	145	GLN
3	F	206	GLN
3	F	215	ASN

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)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 22 ligands modelled in this entry, 10 are monoatomic - leaving 12 for Mogul analysis.

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	$\#\|Z\| > 2$
10	ADP	H	302	9	24,29,29	0.98	1 (4%)	29,45,45	1.55	4 (13%)
4	HCA	A	501	-	13,13,13	1.12	1 (7%)	14,18,18	1.43	2 (14%)
8	SF4	E	301	3	0,12,12	-	-	-		
5	ICS	C	502	1	18,30,30	2.62	11 (61%)	-		
8	SF4	G	301	3	0,12,12	-	-	-		
5	ICS	A	502	1	18,30,30	2.63	11 (61%)	-		
6	CLF	D	601	1,2	0,24,24	-	-	-		
10	ADP	G	303	9	24,29,29	0.91	1 (4%)	29,45,45	1.56	7 (24%)
10	ADP	E	303	9	24,29,29	0.72	0	29,45,45	0.68	1 (3%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
10	ADP	F	302	9	24,29,29	1.98	2 (8%)	29,45,45	1.72	4 (13%)
4	HCA	C	501	-	13,13,13	1.14	1 (7%)	14,18,18	1.41	2 (14%)
6	CLF	B	601	1,2	0,24,24	-	-	-		

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
10	ADP	H	302	9	-	1/12/32/32	0/3/3/3
4	HCA	A	501	-	-	6/17/17/17	-
8	SF4	E	301	3	-	-	0/6/5/5
8	SF4	G	301	3	-	-	0/6/5/5
6	CLF	D	601	1,2	-	-	0/12/10/10
10	ADP	G	303	9	-	2/12/32/32	0/3/3/3
10	ADP	E	303	9	-	4/12/32/32	0/3/3/3
10	ADP	F	302	9	-	5/12/32/32	0/3/3/3
4	HCA	C	501	-	-	7/17/17/17	-
6	CLF	B	601	1,2	-	-	0/12/10/10

All (28) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	F	302	ADP	C8-N7	8.47	1.49	1.34
5	A	502	ICS	S4B-FE7	-4.31	2.21	2.32
5	C	502	ICS	S4B-FE7	-4.25	2.21	2.32
5	C	502	ICS	S3B-FE6	-4.19	2.22	2.32
5	A	502	ICS	S3B-FE6	-4.19	2.22	2.32
5	A	502	ICS	S1B-FE6	-3.75	2.23	2.32
5	C	502	ICS	S1B-FE6	-3.75	2.23	2.32
5	A	502	ICS	S3B-FE7	-3.16	2.24	2.32
5	A	502	ICS	S2A-FE2	-3.16	2.24	2.32
5	C	502	ICS	S2A-FE2	-3.14	2.24	2.32
5	C	502	ICS	S3B-FE7	-3.12	2.24	2.32
5	A	502	ICS	S2B-FE6	-3.08	2.17	2.24
5	C	502	ICS	S4B-FE5	-3.06	2.24	2.32
5	A	502	ICS	S4B-FE5	-3.05	2.24	2.32
5	C	502	ICS	S2B-FE6	-3.02	2.17	2.24
10	F	302	ADP	C5-C4	3.00	1.48	1.40
5	C	502	ICS	S4A-FE3	-2.92	2.25	2.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	502	ICS	S4A-FE3	-2.87	2.25	2.32
5	C	502	ICS	S1A-FE2	-2.54	2.26	2.32
5	A	502	ICS	S1A-FE2	-2.52	2.26	2.32
4	C	501	HCA	C3-C7	-2.42	1.50	1.53
5	A	502	ICS	S1B-FE5	-2.31	2.26	2.32
4	A	501	HCA	C3-C7	-2.30	1.51	1.53
5	C	502	ICS	S1B-FE5	-2.26	2.26	2.32
10	G	303	ADP	C5-C4	2.13	1.46	1.40
5	C	502	ICS	S2A-FE3	-2.13	2.27	2.32
10	H	302	ADP	C5-C4	2.11	1.46	1.40
5	A	502	ICS	S2A-FE3	-2.07	2.27	2.32

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
10	F	302	ADP	C4-C5-N7	-5.21	103.97	109.40
10	F	302	ADP	PA-O3A-PB	-4.44	117.57	132.83
10	G	303	ADP	PA-O3A-PB	-3.67	120.22	132.83
10	H	302	ADP	C3'-C2'-C1'	3.49	106.24	100.98
10	G	303	ADP	N3-C2-N1	-3.43	123.32	128.68
10	H	302	ADP	N3-C2-N1	-3.39	123.38	128.68
10	H	302	ADP	PA-O3A-PB	-3.33	121.39	132.83
10	G	303	ADP	C3'-C2'-C1'	3.21	105.82	100.98
4	C	501	HCA	O6-C7-C3	3.15	118.52	113.05
4	A	501	HCA	O6-C7-C3	3.07	118.39	113.05
10	F	302	ADP	C3'-C2'-C1'	3.06	105.58	100.98
10	F	302	ADP	N3-C2-N1	-3.02	123.96	128.68
10	H	302	ADP	C4-C5-N7	-2.88	106.40	109.40
10	G	303	ADP	C4-C5-N7	-2.74	106.54	109.40
4	C	501	HCA	O5-C7-C3	-2.65	118.49	122.25
4	A	501	HCA	O5-C7-C3	-2.51	118.70	122.25
10	G	303	ADP	O3B-PB-O2B	2.37	116.71	107.64
10	E	303	ADP	C5-C6-N6	2.24	123.76	120.35
10	G	303	ADP	O2A-PA-O1A	2.12	122.71	112.24
10	G	303	ADP	C2-N1-C6	2.03	122.22	118.75

There are no chirality outliers.

All (25) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	501	HCA	C1-C2-C3-C4
4	A	501	HCA	C1-C2-C3-C7

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Mol	Chain	Res	Type	Atoms
4	A	501	HCA	C1-C2-C3-O7
4	A	501	HCA	C3-C4-C5-C6
4	C	501	HCA	C1-C2-C3-C4
4	C	501	HCA	C2-C3-C4-C5
10	F	302	ADP	C5'-O5'-PA-O2A
10	F	302	ADP	C5'-O5'-PA-O3A
10	G	303	ADP	C5'-O5'-PA-O1A
10	E	303	ADP	O4'-C4'-C5'-O5'
10	E	303	ADP	C3'-C4'-C5'-O5'
10	F	302	ADP	O4'-C4'-C5'-O5'
4	C	501	HCA	C1-C2-C3-C7
10	F	302	ADP	C3'-C4'-C5'-O5'
4	C	501	HCA	C1-C2-C3-O7
10	F	302	ADP	C5'-O5'-PA-O1A
10	E	303	ADP	PA-O3A-PB-O1B
4	C	501	HCA	O7-C3-C4-C5
10	H	302	ADP	O4'-C4'-C5'-O5'
4	A	501	HCA	C4-C5-C6-O4
10	E	303	ADP	PA-O3A-PB-O3B
10	G	303	ADP	C5'-O5'-PA-O3A
4	A	501	HCA	C4-C5-C6-O3
4	C	501	HCA	C7-C3-C4-C5
4	C	501	HCA	C4-C5-C6-O4

There are no ring outliers.

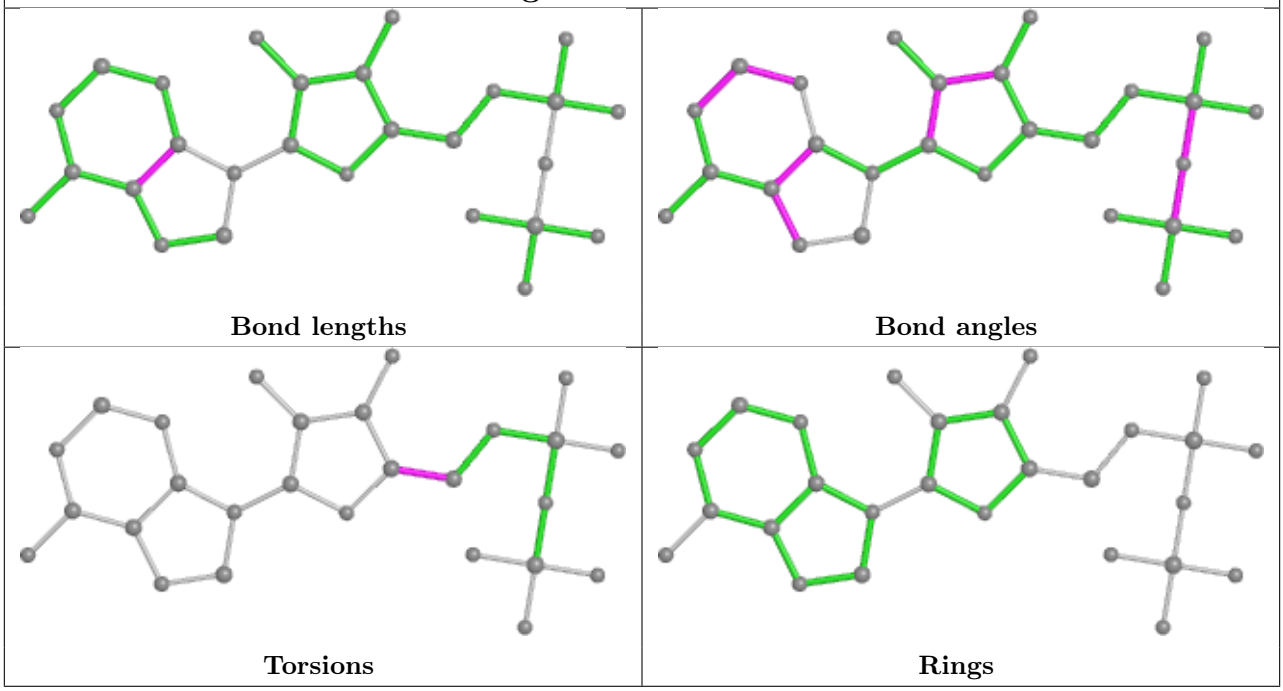
8 monomers are involved in 43 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	H	302	ADP	22	0
5	C	502	ICS	1	0
5	A	502	ICS	2	0
6	D	601	CLF	1	0
10	G	303	ADP	3	0
10	E	303	ADP	2	0
10	F	302	ADP	11	0
6	B	601	CLF	1	0

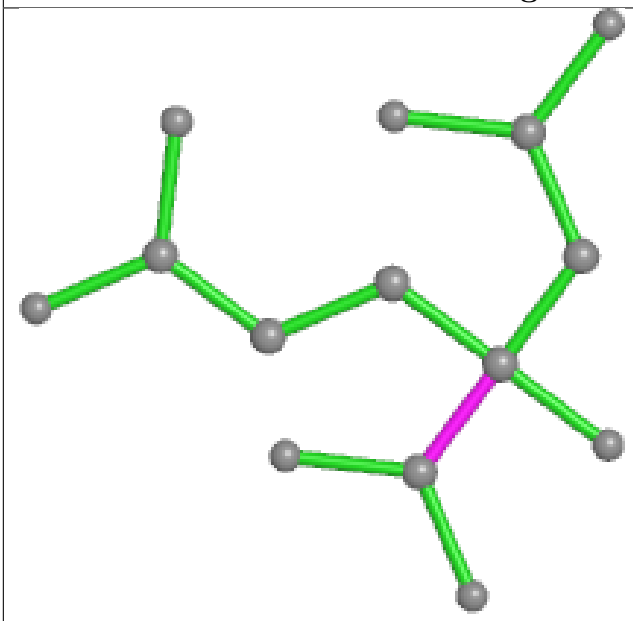
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier.

Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

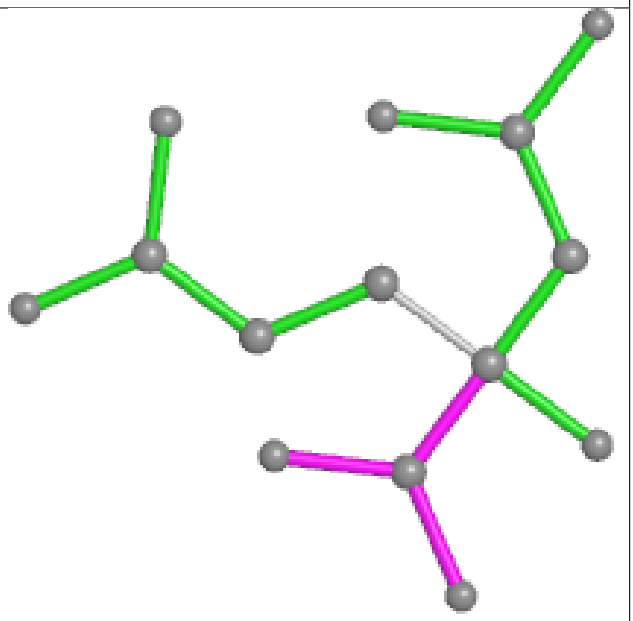
Ligand ADP H 302



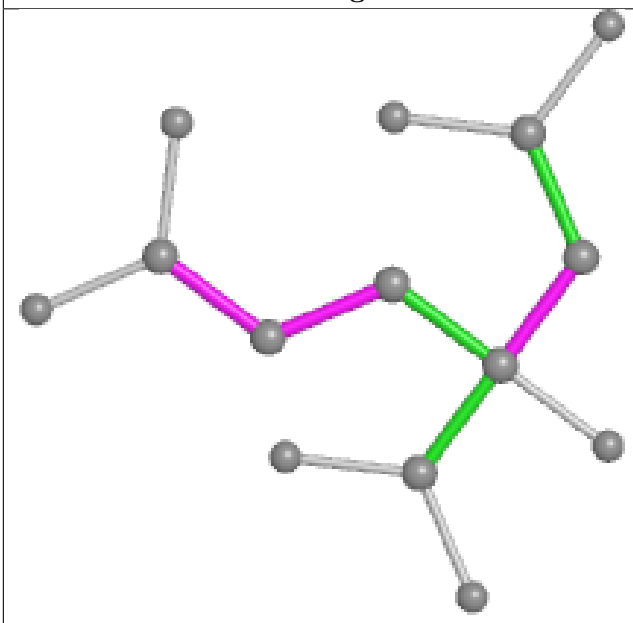
Ligand HCA A 501



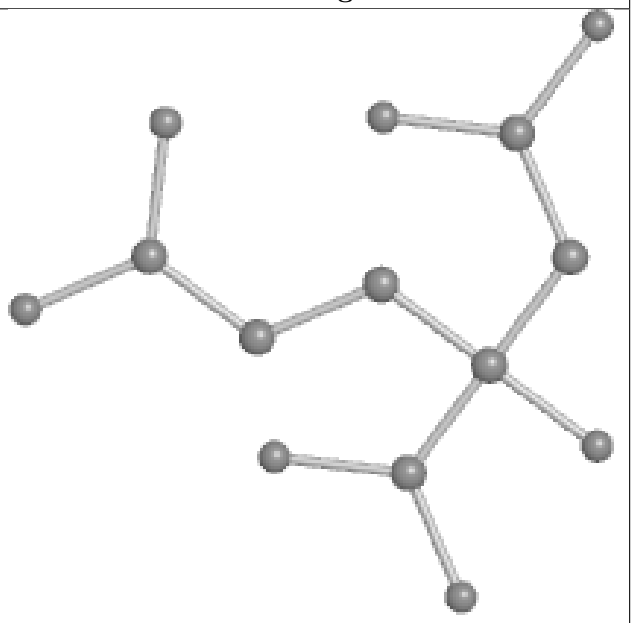
Bond lengths



Bond angles

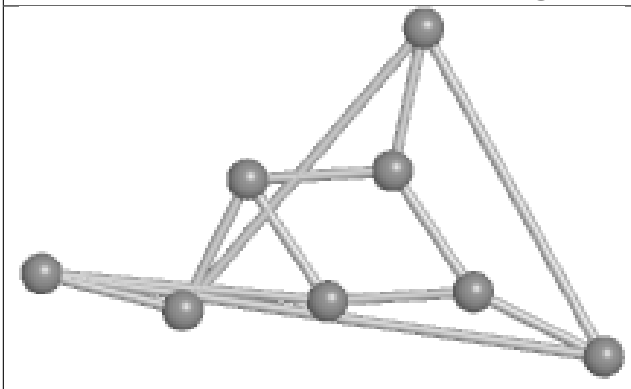


Torsions

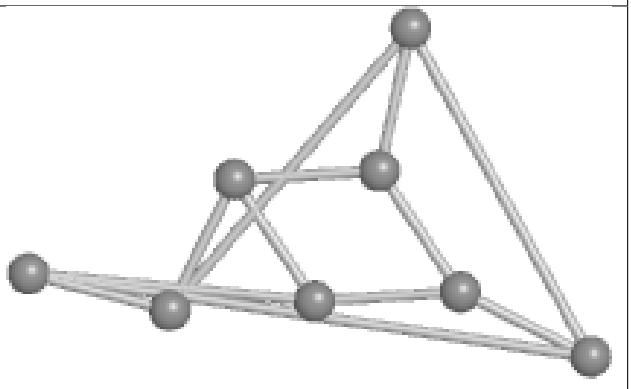


Rings

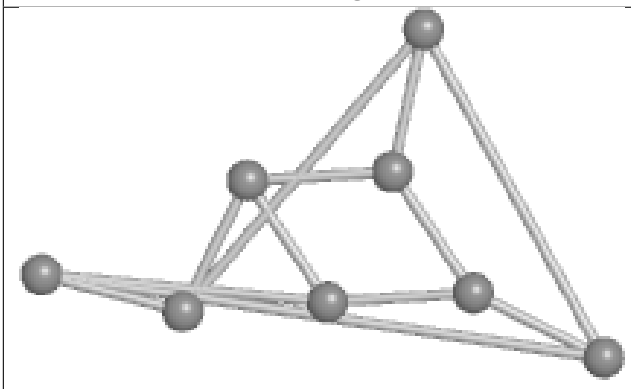
Ligand SF4 E 301



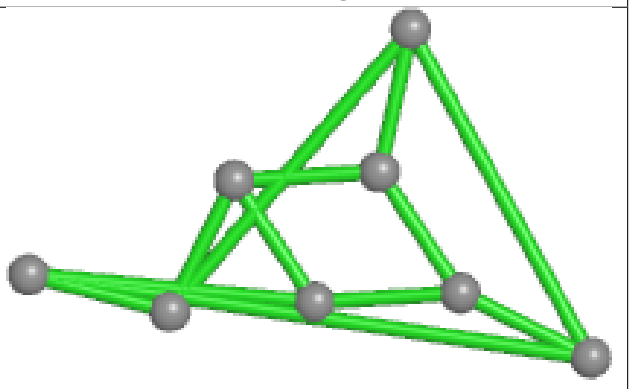
Bond lengths



Bond angles

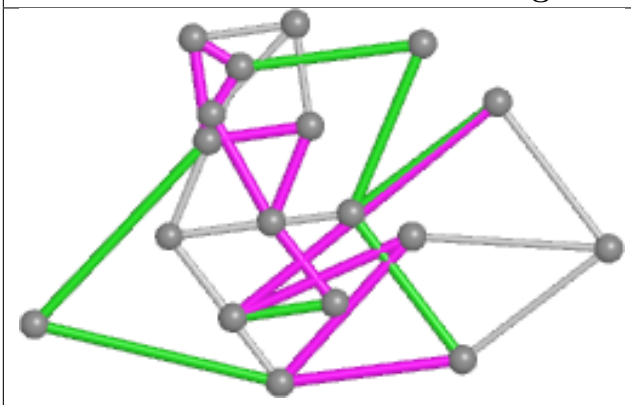


Torsions

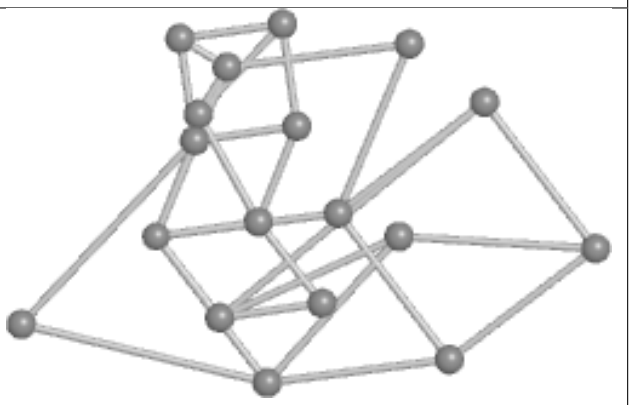


Rings

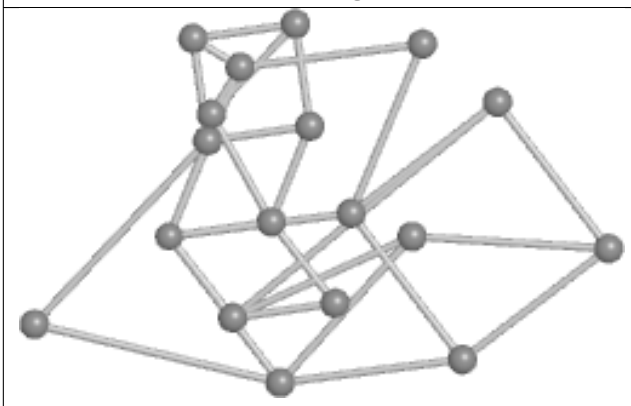
Ligand ICS C 502



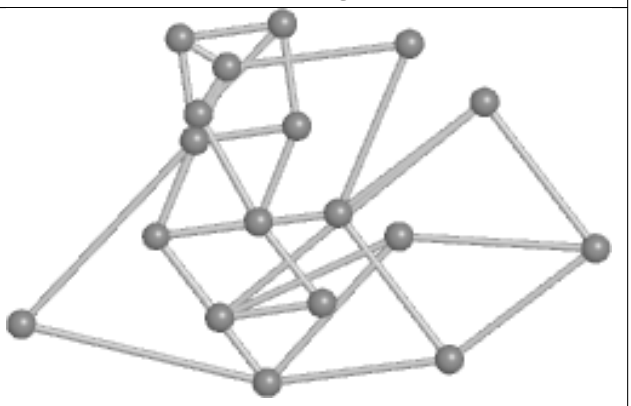
Bond lengths



Bond angles

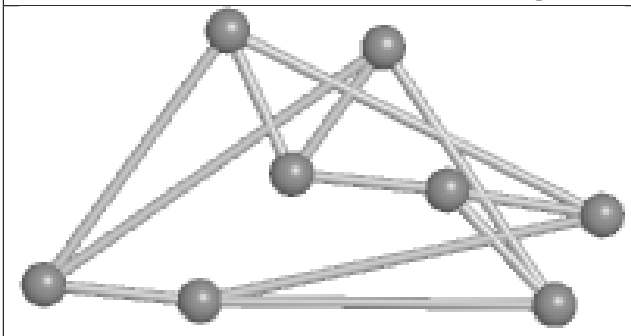


Torsions

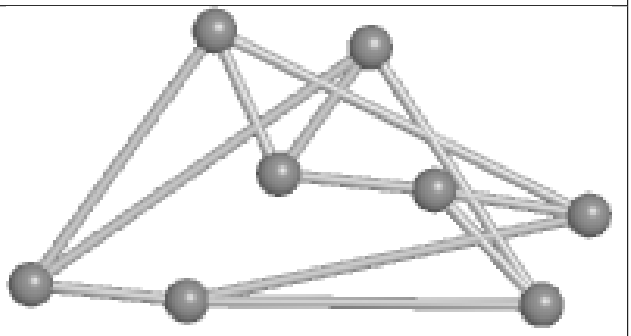


Rings

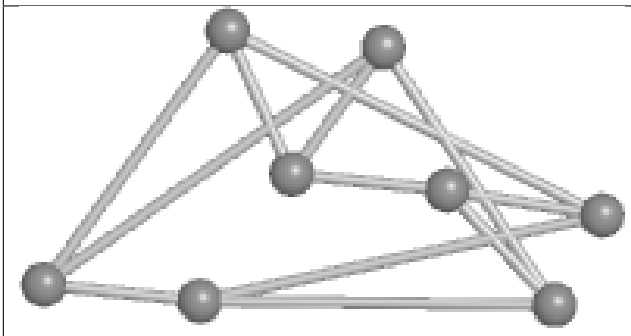
Ligand SF4 G 301



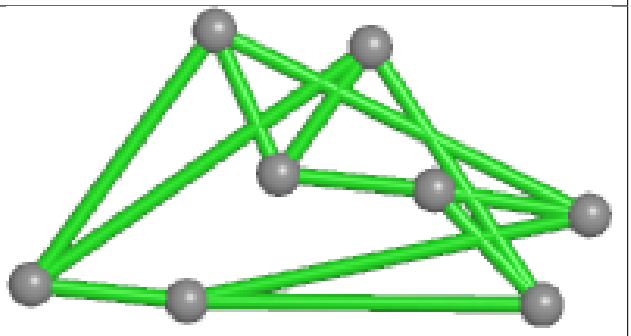
Bond lengths



Bond angles

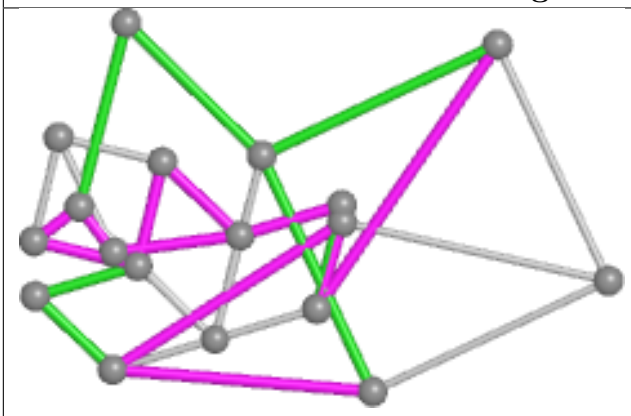


Torsions

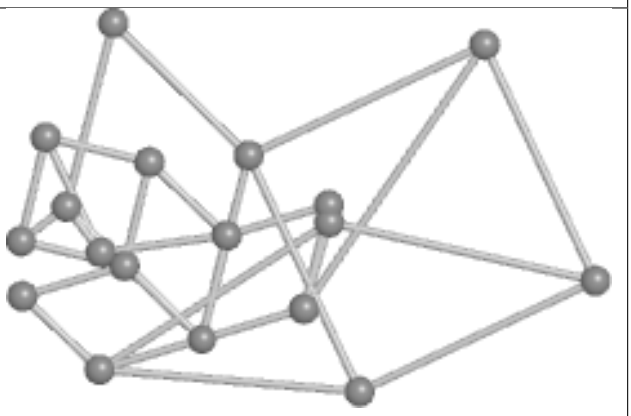


Rings

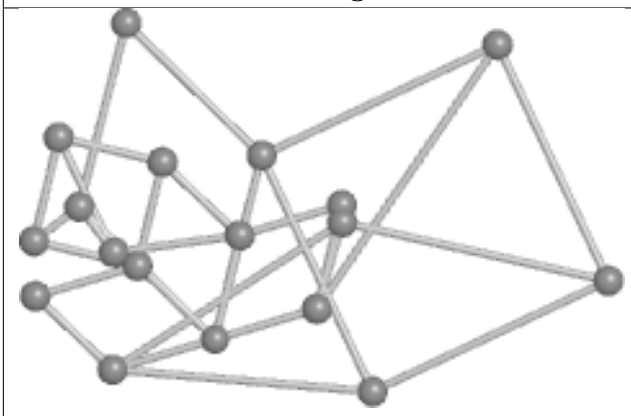
Ligand ICS A 502



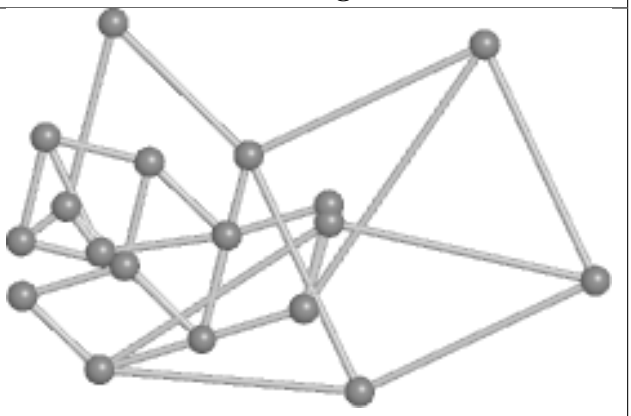
Bond lengths



Bond angles

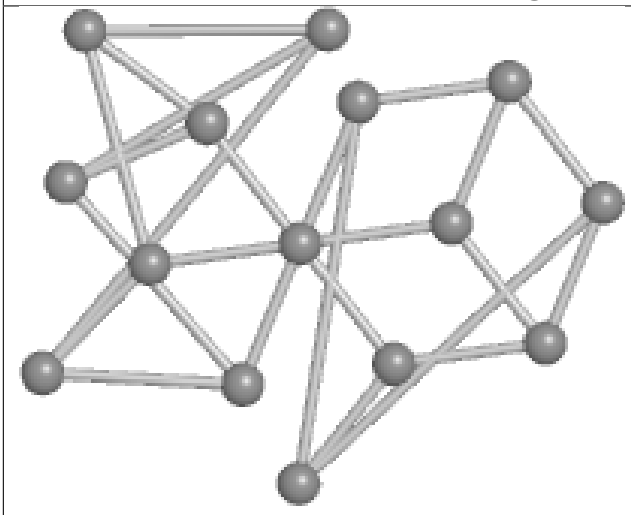


Torsions

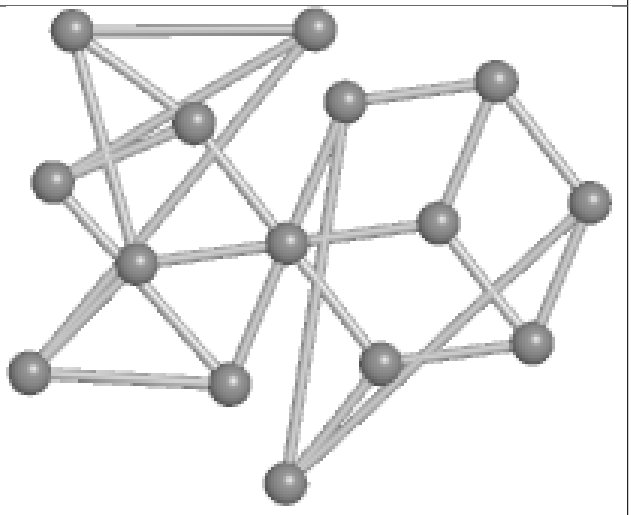


Rings

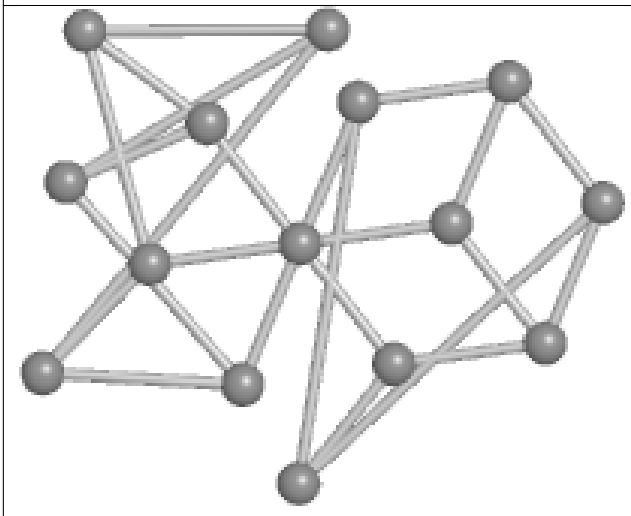
Ligand CLF D 601



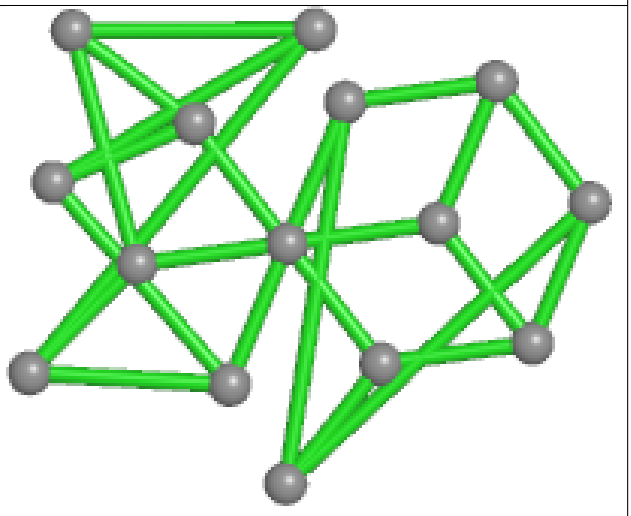
Bond lengths



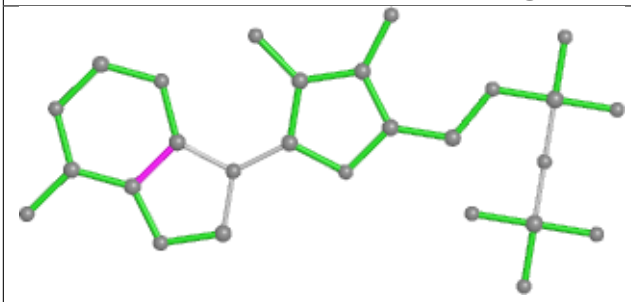
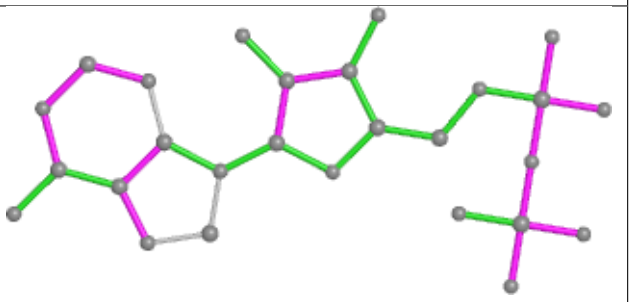
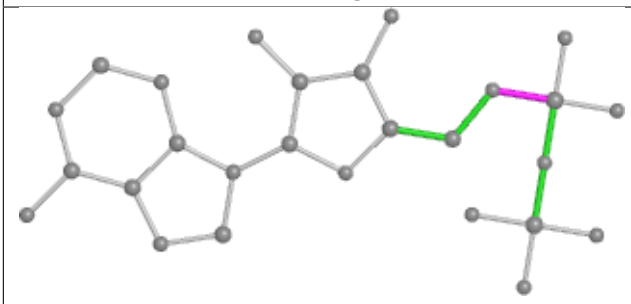
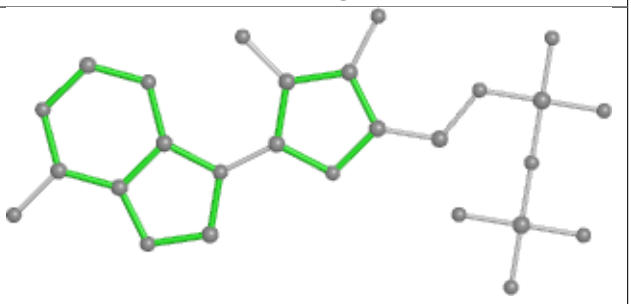
Bond angles

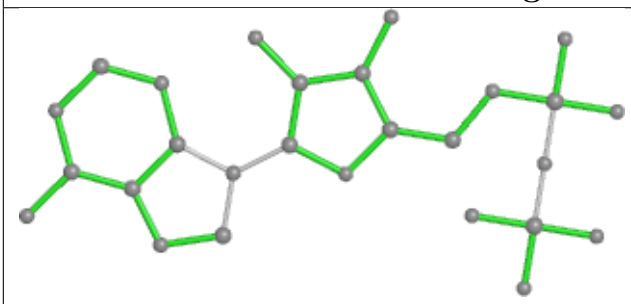
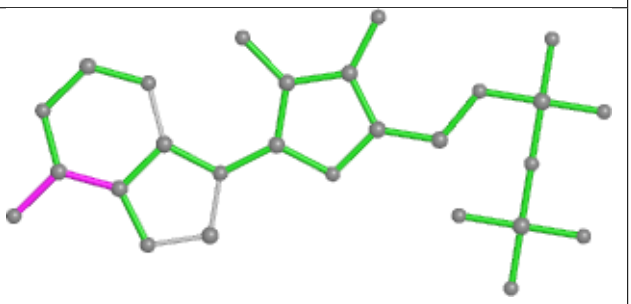
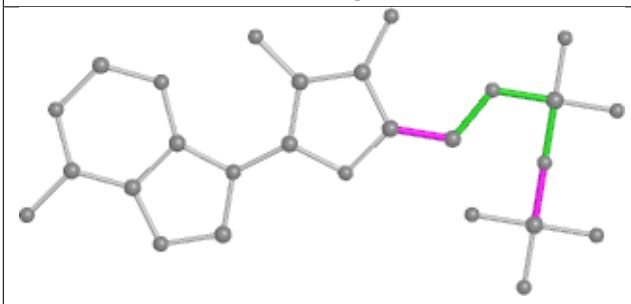
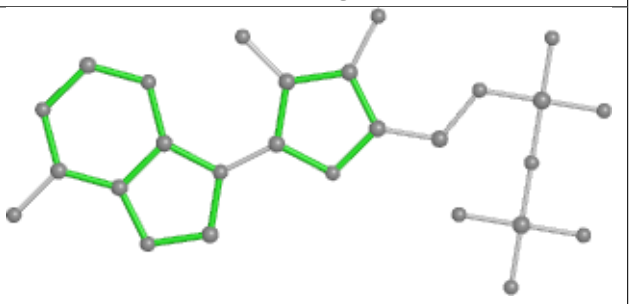


Torsions

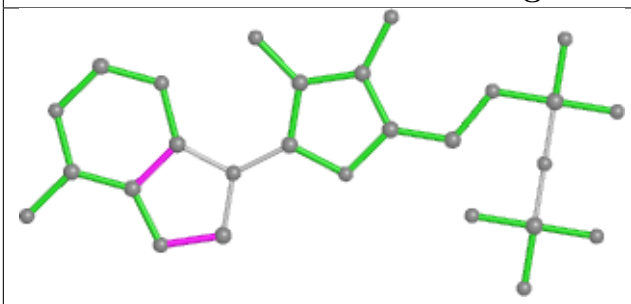


Rings

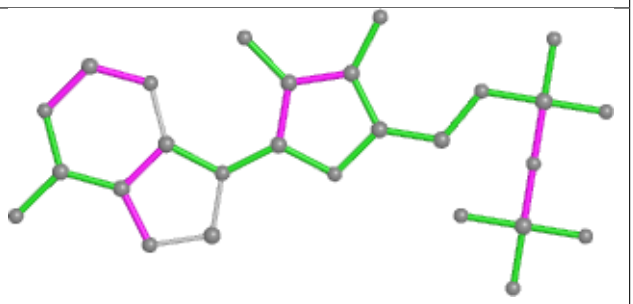
Ligand ADP G 303	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand ADP E 303	
 Bond lengths	 Bond angles
 Torsions	 Rings

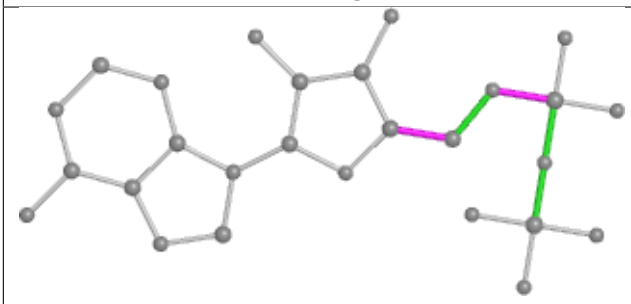
Ligand ADP F 302



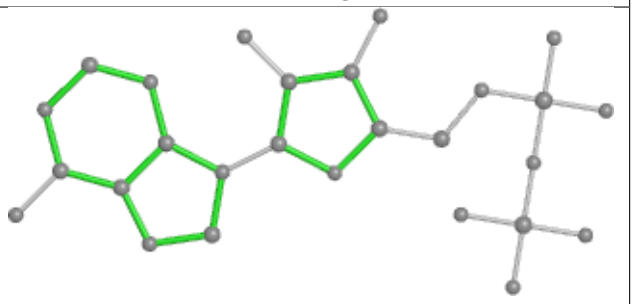
Bond lengths



Bond angles

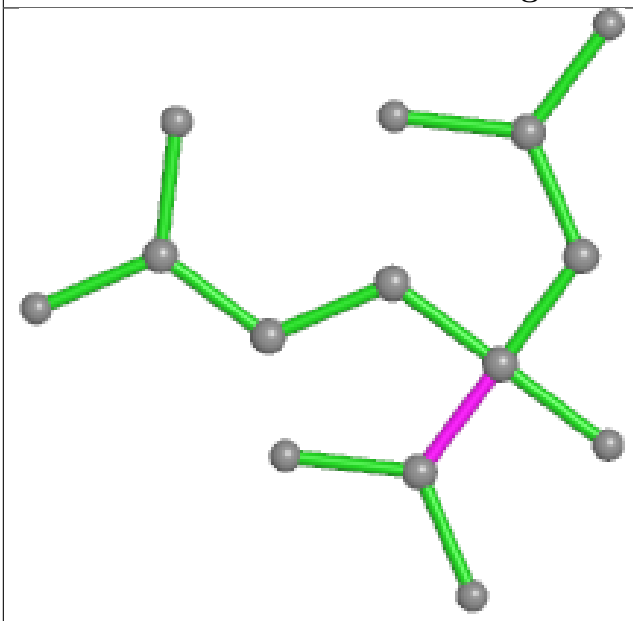


Torsions

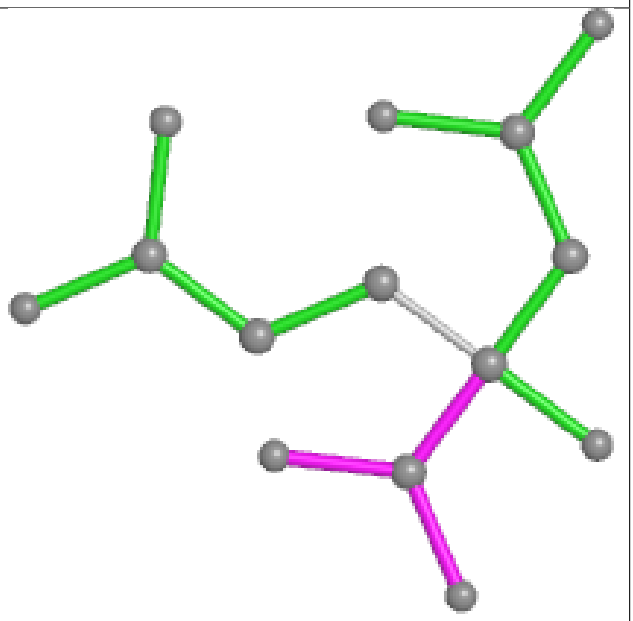


Rings

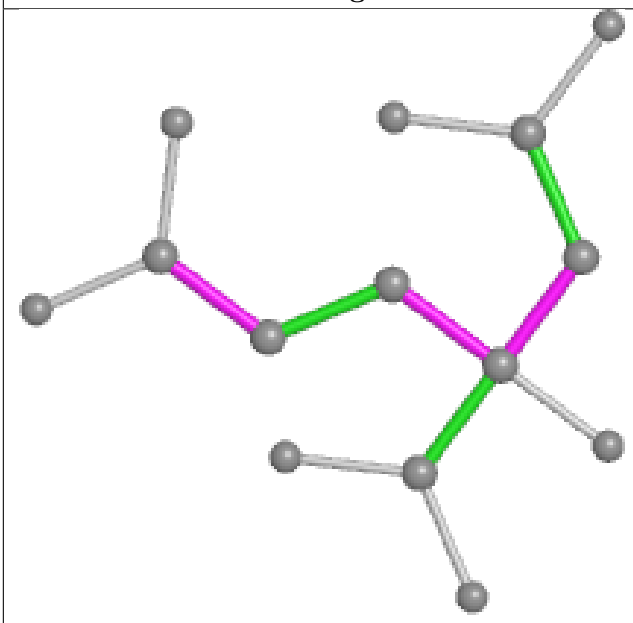
Ligand HCA C 501



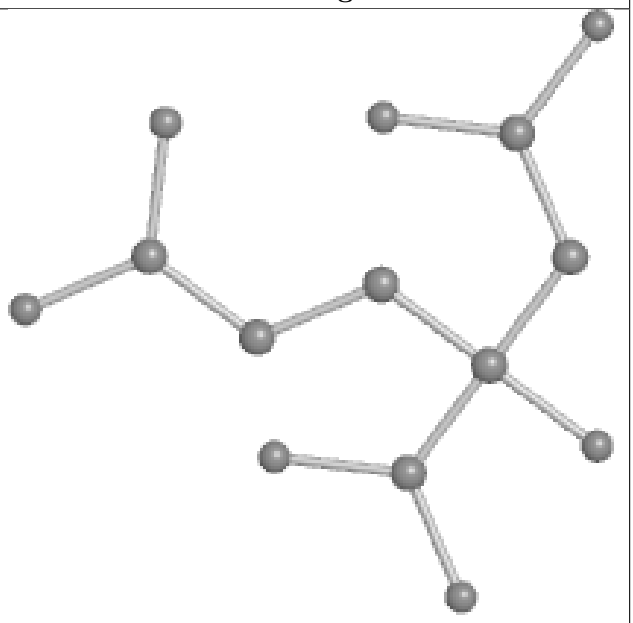
Bond lengths



Bond angles

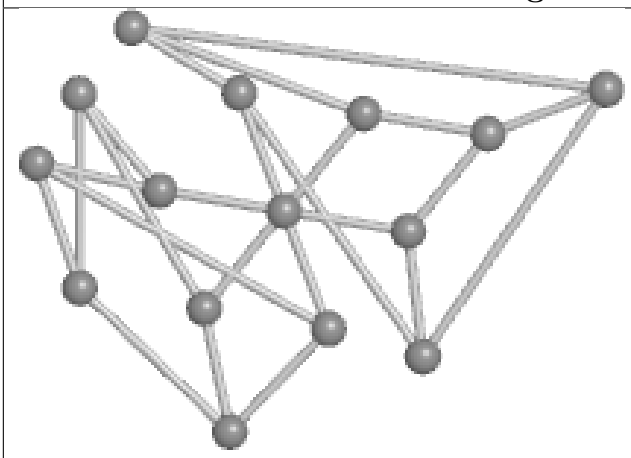


Torsions

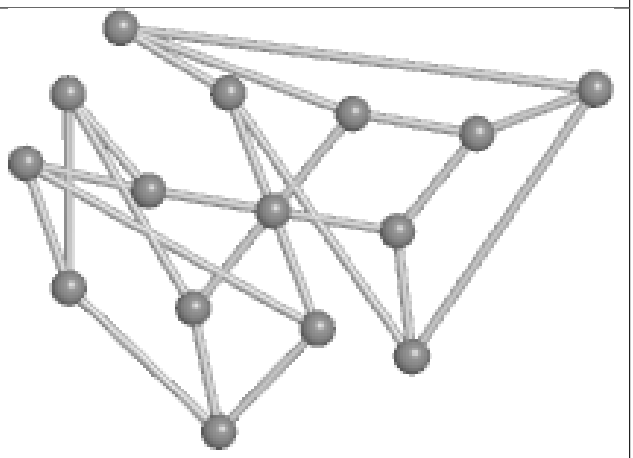


Rings

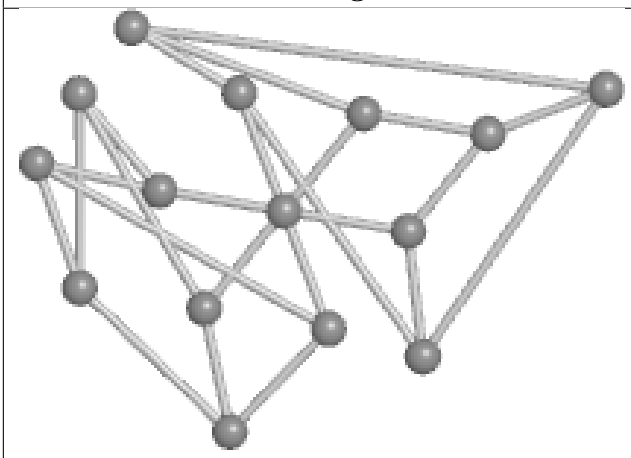
Ligand CLF B 601



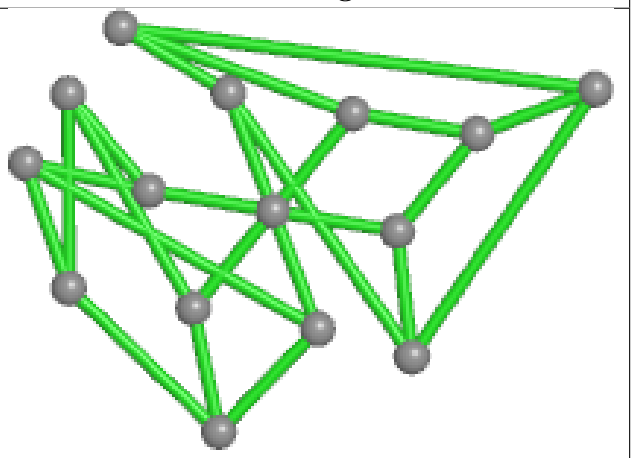
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

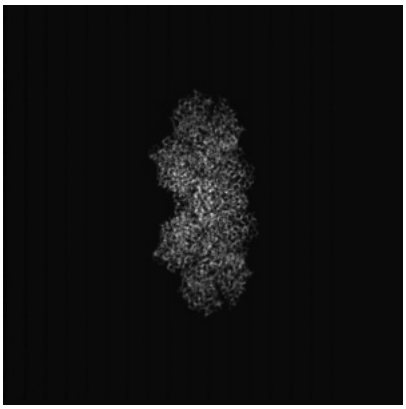
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-26764. These allow visual inspection of the internal detail of the map and identification of artifacts.

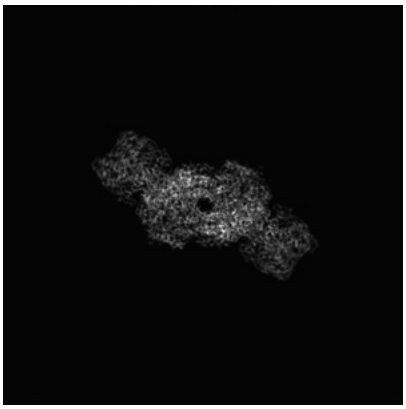
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

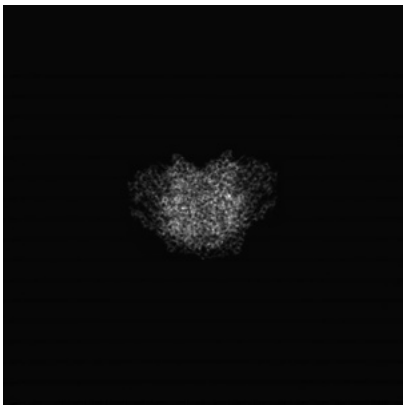
6.1.1 Primary map



X

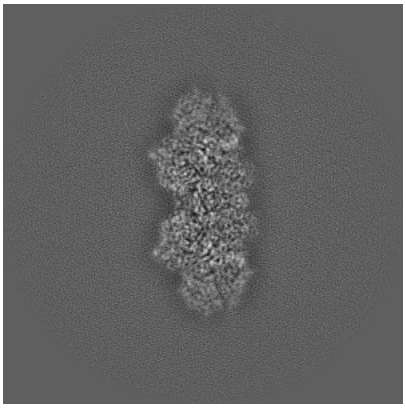


Y

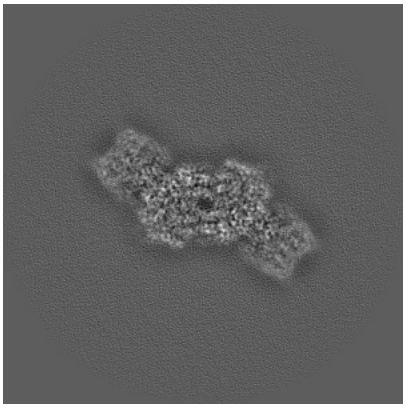


Z

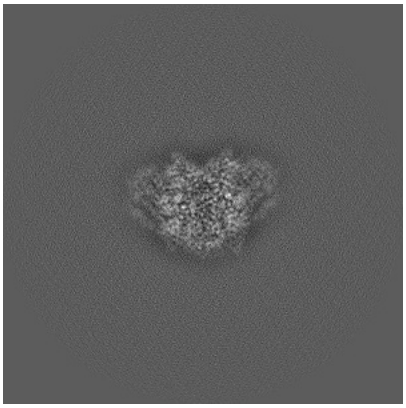
6.1.2 Raw map



X



Y



Z

The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

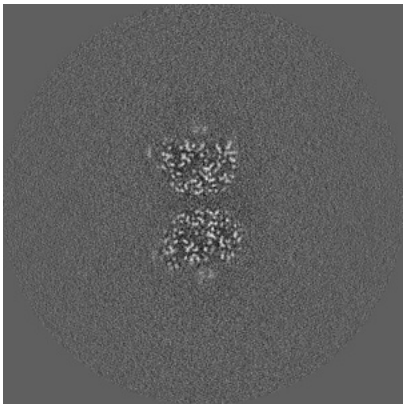
6.2.1 Primary map

X Index: 192

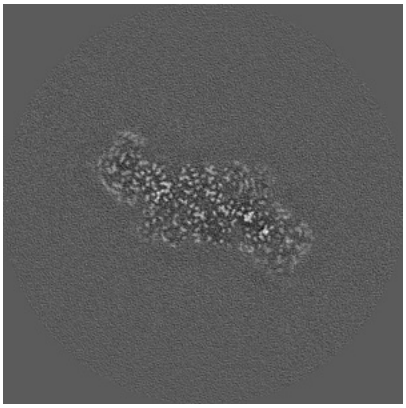
Y Index: 192

Z Index: 192

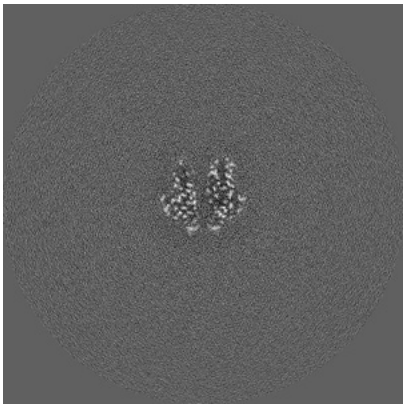
6.2.2 Raw map



X Index: 192



Y Index: 192



Z Index: 192

The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

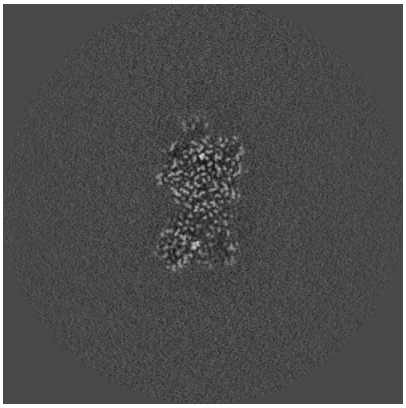
6.3.1 Primary map

X Index: 217

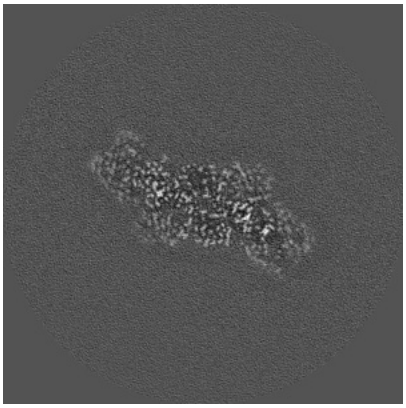
Y Index: 199

Z Index: 178

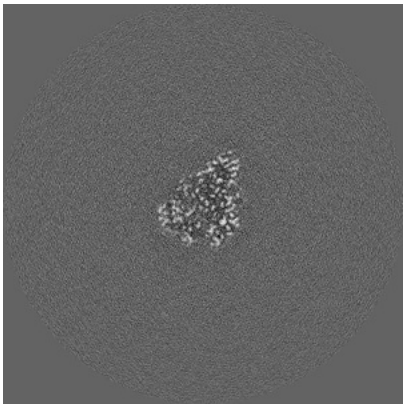
6.3.2 Raw map



X Index: 183



Y Index: 194

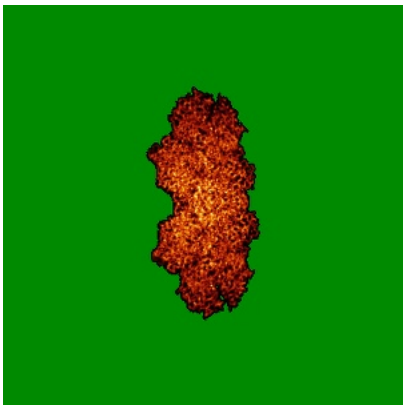


Z Index: 170

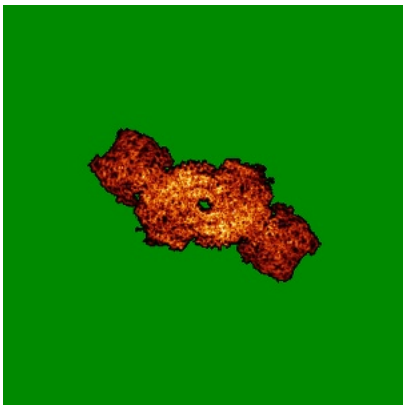
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

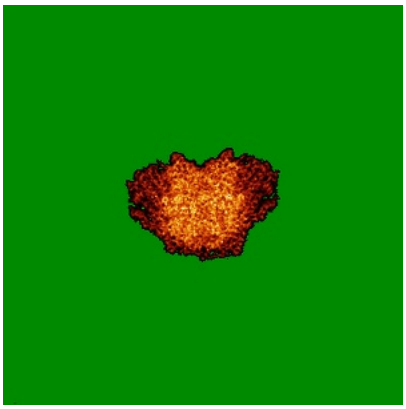
6.4.1 Primary map



X

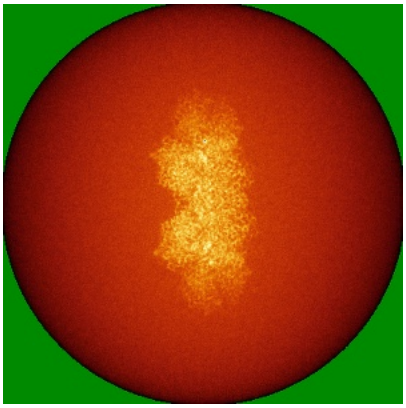


Y

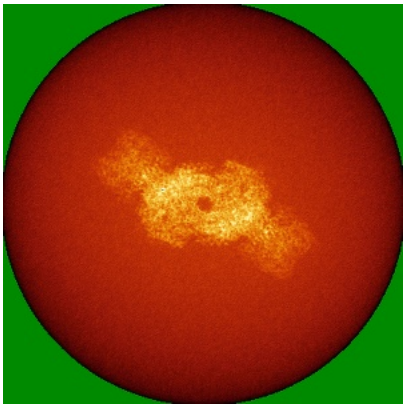


Z

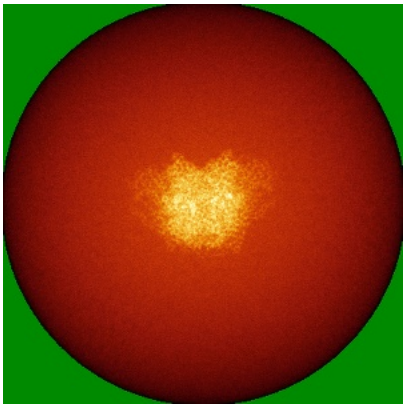
6.4.2 Raw map



X



Y



Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

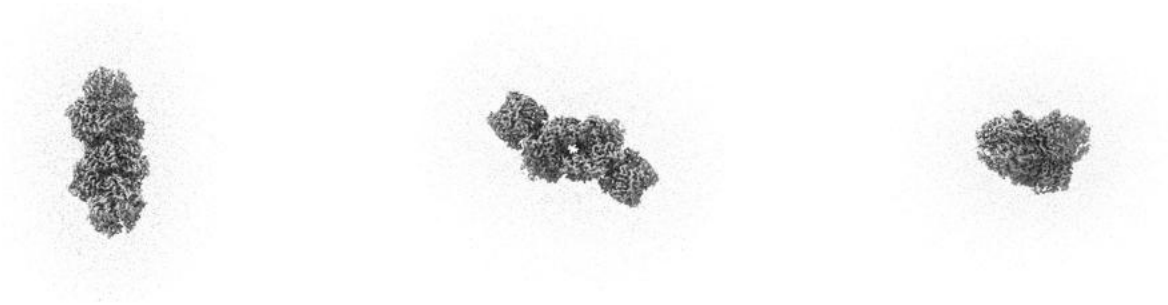
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.065. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

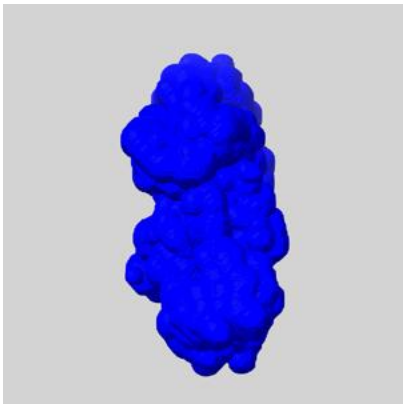
6.6 Mask visualisation

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

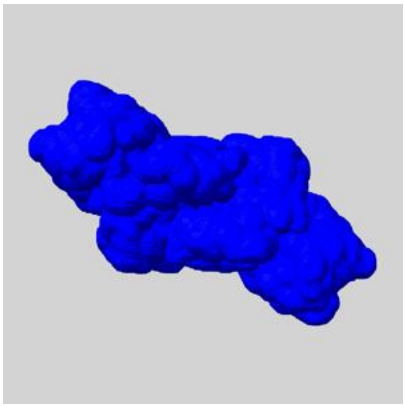
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

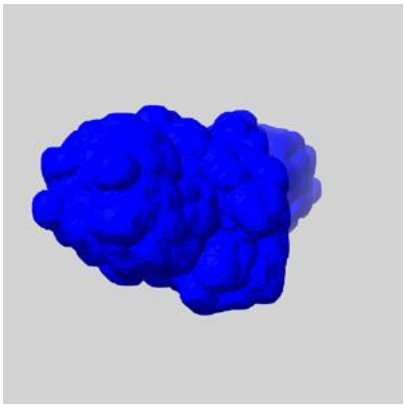
6.6.1 emd_26764_msk_1.map



X



Y

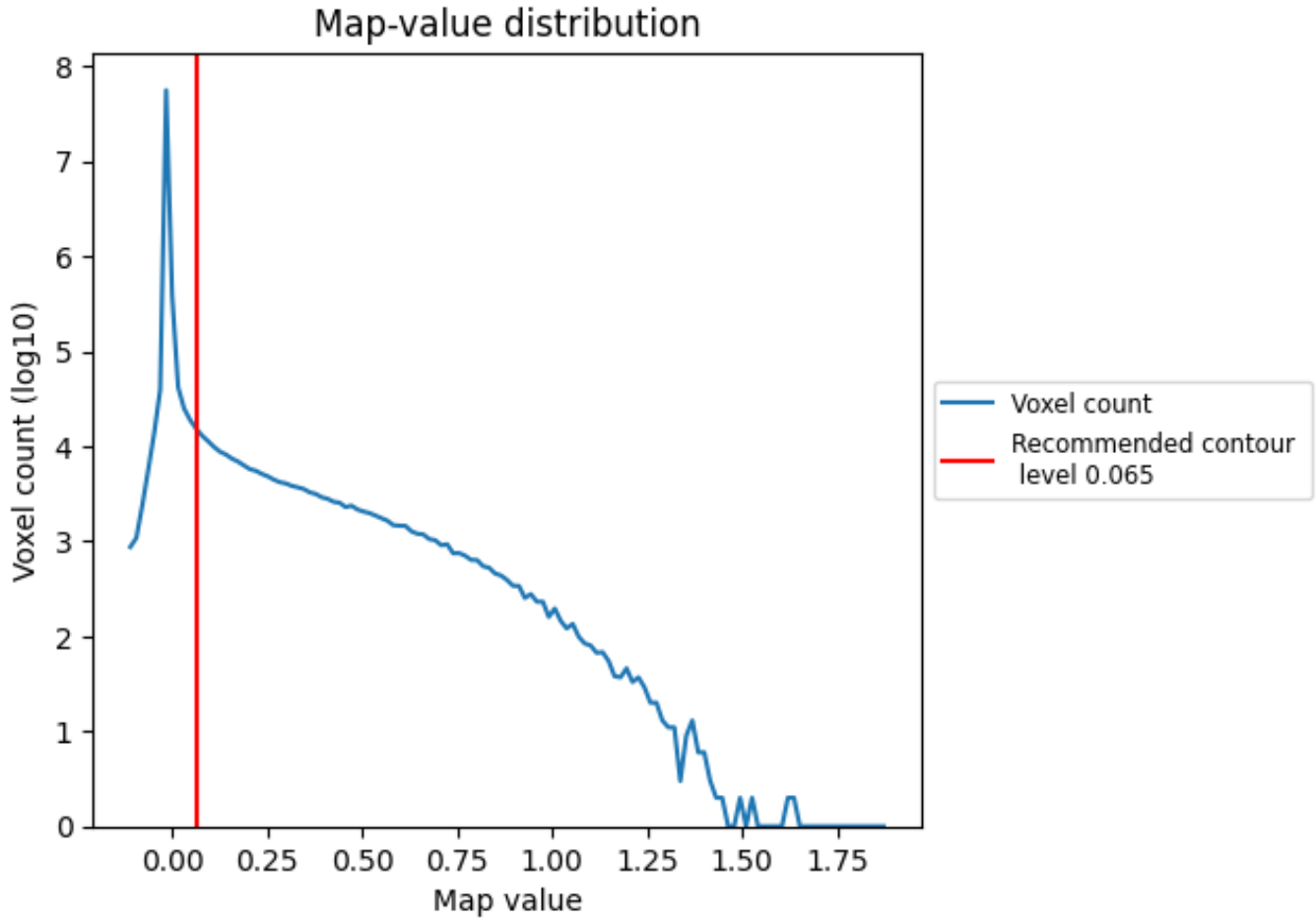


Z

7 Map analysis

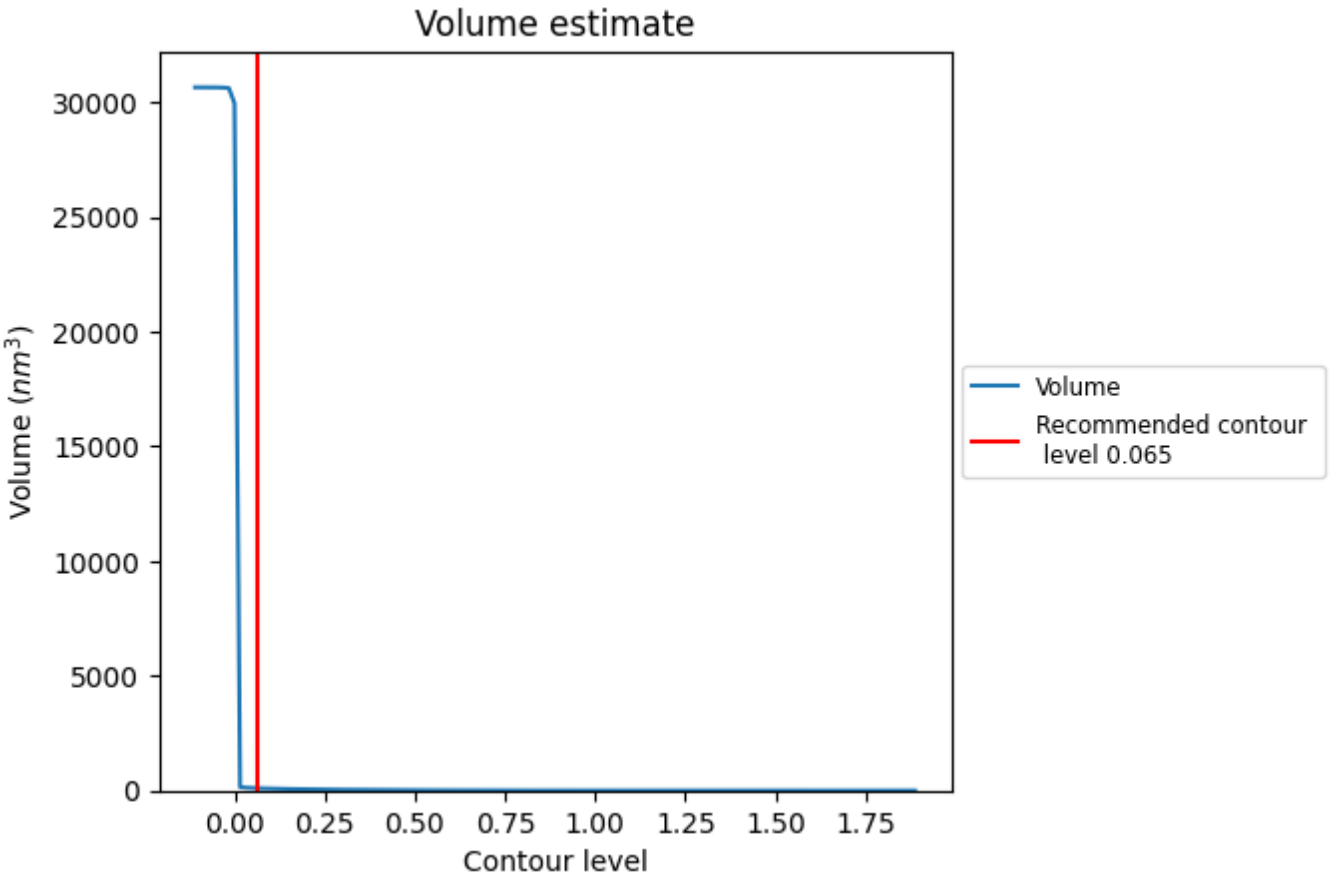
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

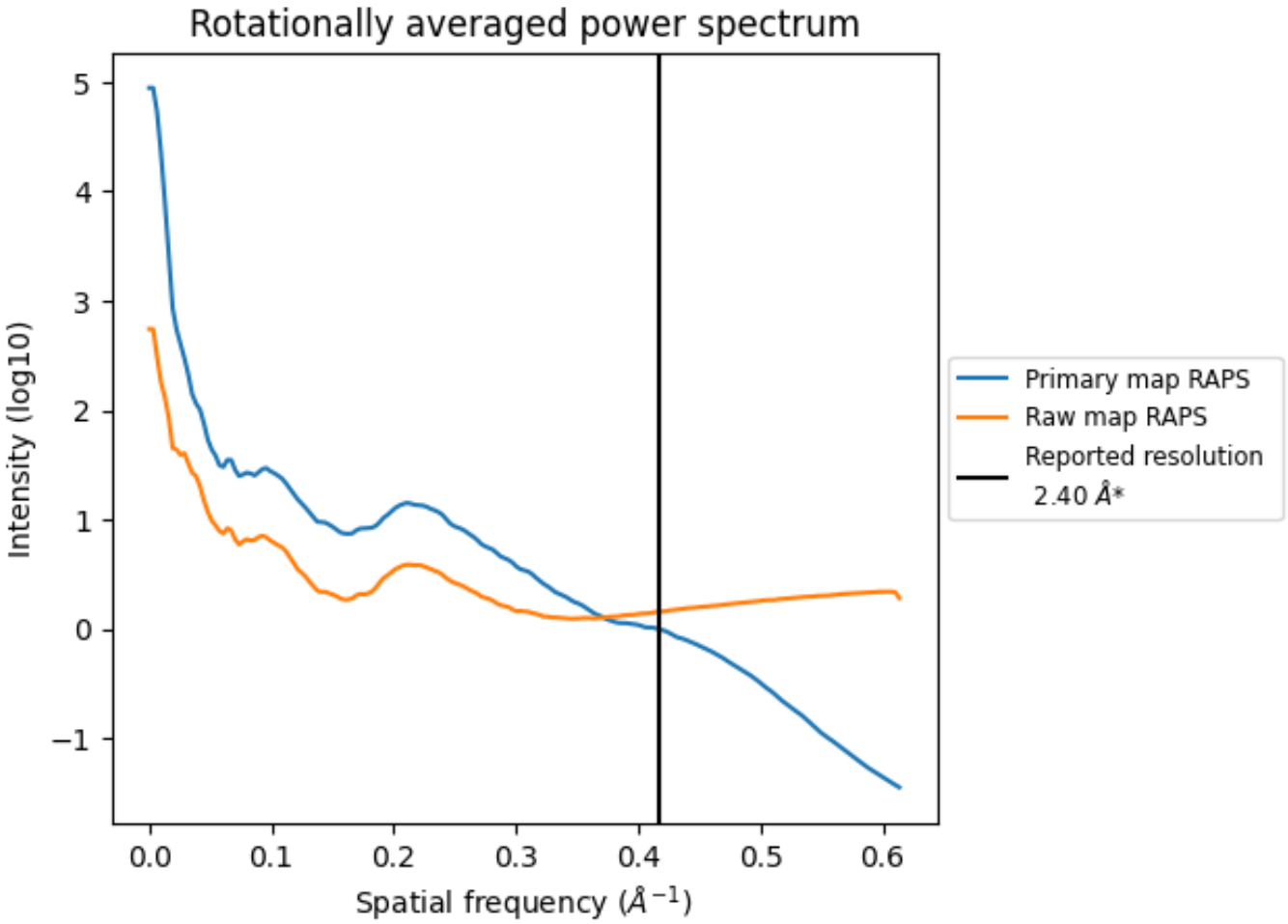
7.2 Volume estimate



The volume at the recommended contour level is 100 nm^3; this corresponds to an approximate mass of 90 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)

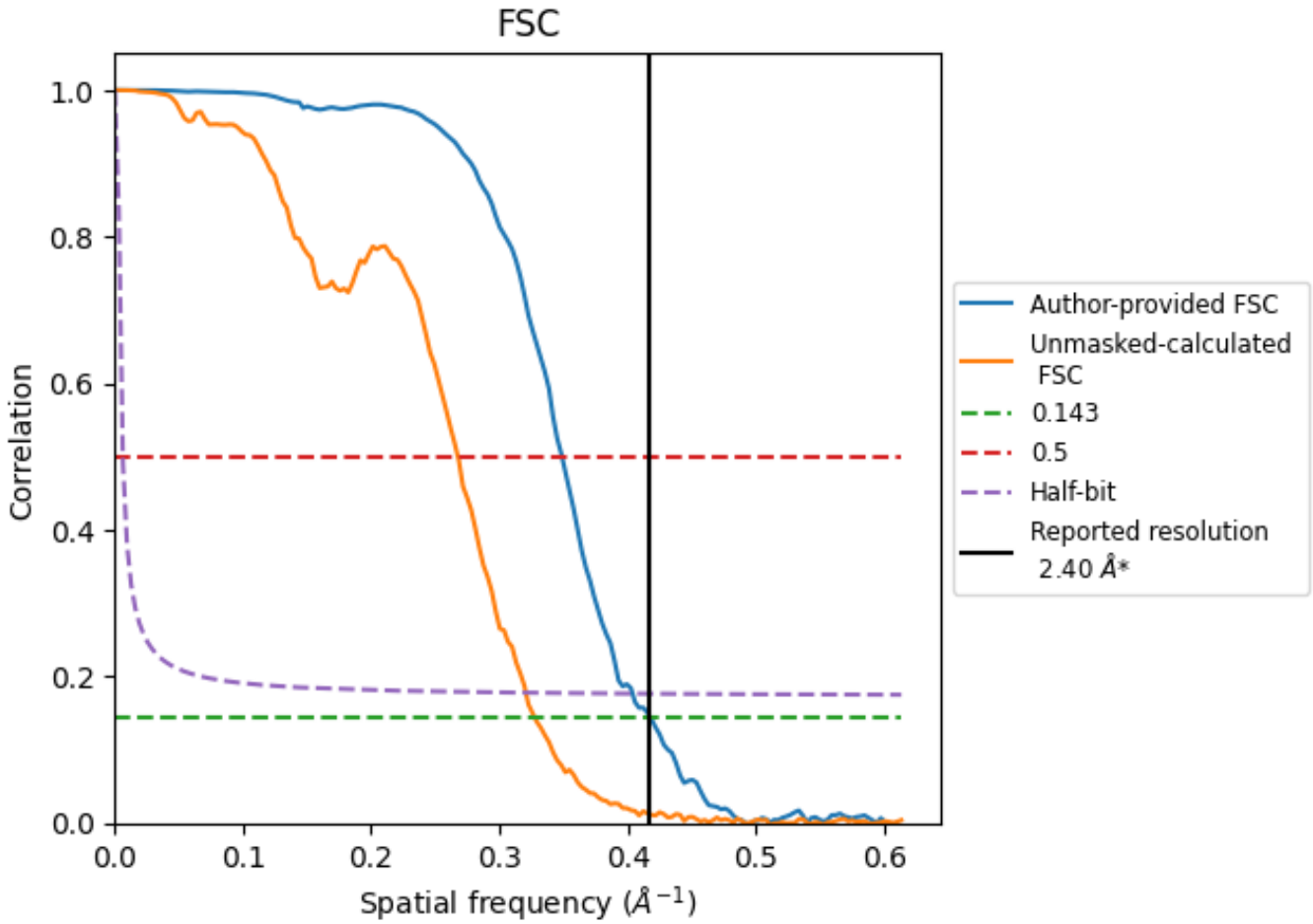


*Reported resolution corresponds to spatial frequency of 0.417 Å^{-1}

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.417 Å^{-1}

8.2 Resolution estimates (i)

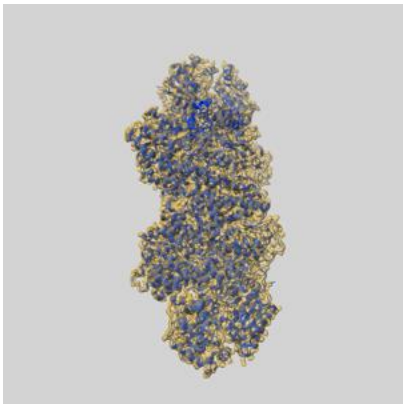
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.40	-	-
Author-provided FSC curve	2.39	2.87	2.48
Unmasked-calculated*	3.05	3.74	3.12

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.05 differs from the reported value 2.4 by more than 10 %

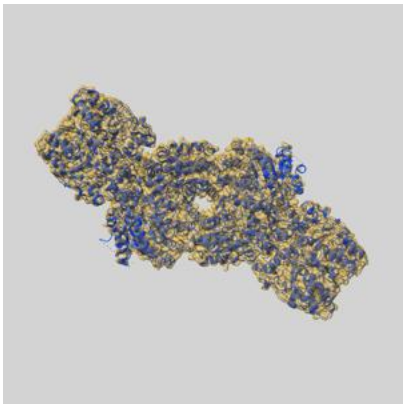
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-26764 and PDB model 7UTA. Per-residue inclusion information can be found in section 3 on page 10.

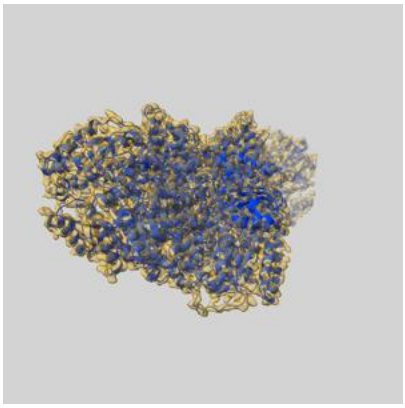
9.1 Map-model overlay



X



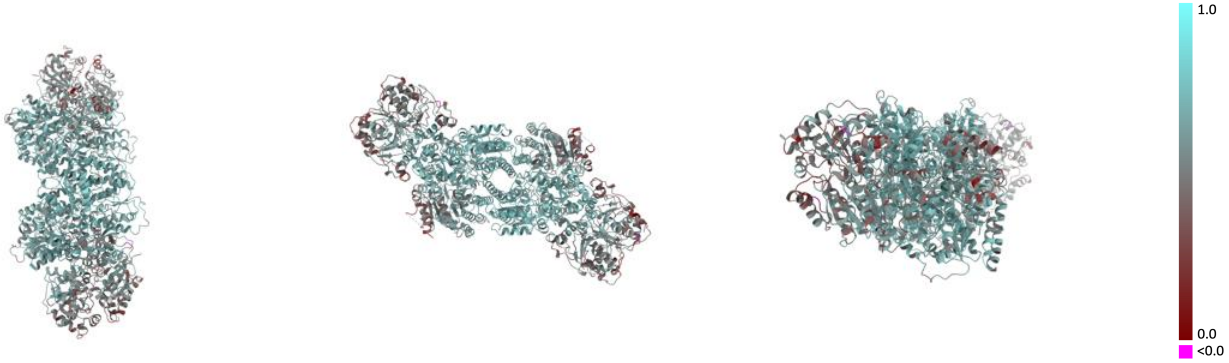
Y



Z

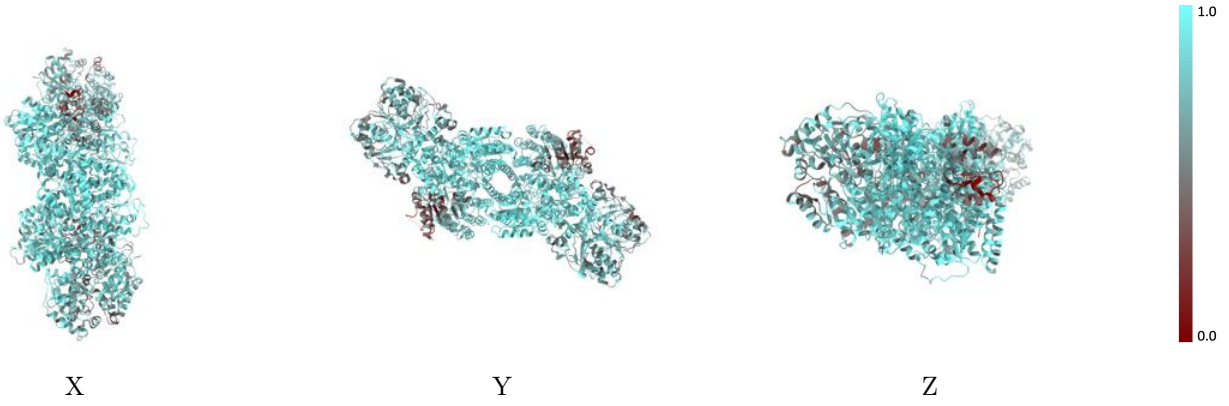
The images above show the 3D surface view of the map at the recommended contour level 0.065 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model



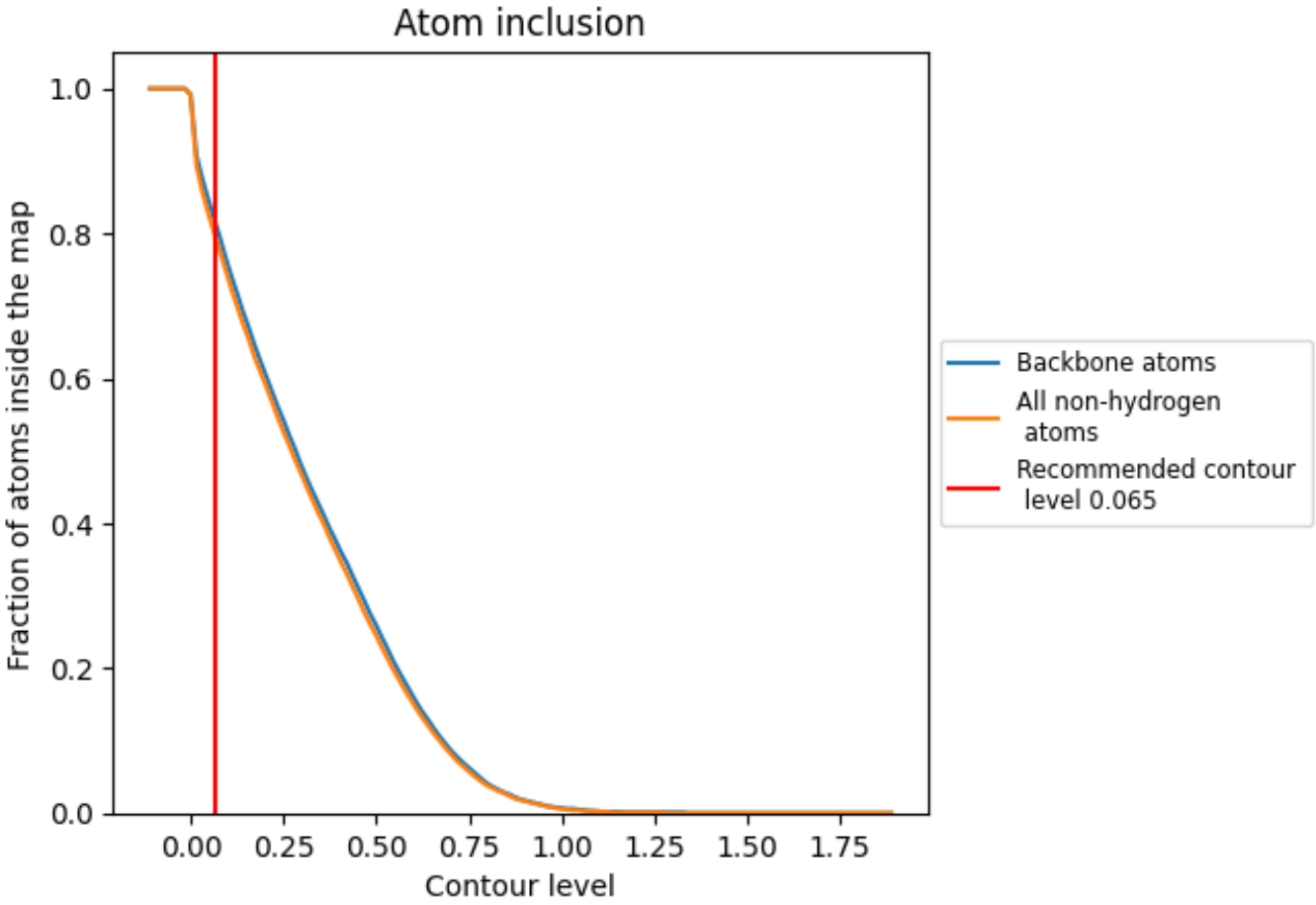
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.065).

9.4 Atom inclusion (i)



At the recommended contour level, 82% of all backbone atoms, 80% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.065) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7970	0.5840
A	0.7550	0.5880
B	0.9260	0.6730
C	0.7630	0.5930
D	0.9270	0.6750
E	0.7280	0.5040
F	0.7120	0.4820
G	0.7060	0.4860
H	0.7070	0.4820