Full wwPDB EM Validation Report ⓘ

Dec 14, 2024 – 08:52 PM EST

PDB ID	:	9C6C
EMDB ID	:	EMD-45244
Title	:	cryoEM structure of CRISPR associated effector, CARF-Adenosine deaminase 1, Cad1, in apo form with ATP (symmetric sites).
Authors	:	Majumder, P.; Patel, D.J.
Deposited on	:	2024-06-07
Resolution	:	3.40 Å(reported)
Based on initial model	:	.

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:

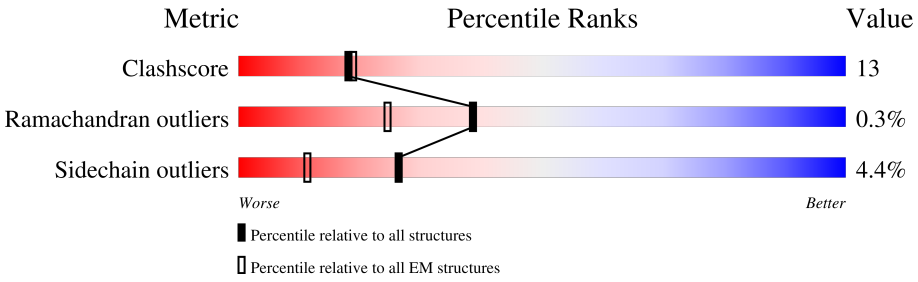
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

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 3.40 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	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 >=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	600	8% 65% 31%
1	B	600	12% 68% 28%
1	C	600	9% 71% 25%
1	D	600	13% 68% 28%
1	E	600	7% 71% 26%
1	F	600	14% 65% 29%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 27808 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.

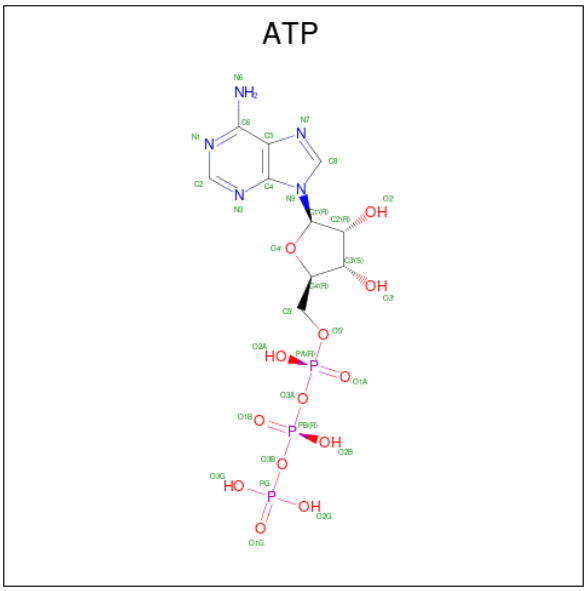
- Molecule 1 is a protein called Adenosine deaminase domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	592	Total	C	N	O	S	0	0
			4666	2973	804	863	26		
1	B	582	Total	C	N	O	S	0	0
			4589	2926	791	844	28		
1	C	590	Total	C	N	O	S	0	0
			4654	2967	801	860	26		
1	D	581	Total	C	N	O	S	0	0
			4580	2921	790	842	27		
1	E	593	Total	C	N	O	S	0	0
			4674	2978	805	864	27		
1	F	578	Total	C	N	O	S	0	0
			4546	2898	781	839	28		

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
2	A	1	Total	Mg	0
			1	1	
2	B	1	Total	Mg	0
			1	1	
2	C	1	Total	Mg	0
			1	1	
2	D	1	Total	Mg	0
			1	1	
2	E	1	Total	Mg	0
			1	1	
2	F	1	Total	Mg	0
			1	1	

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



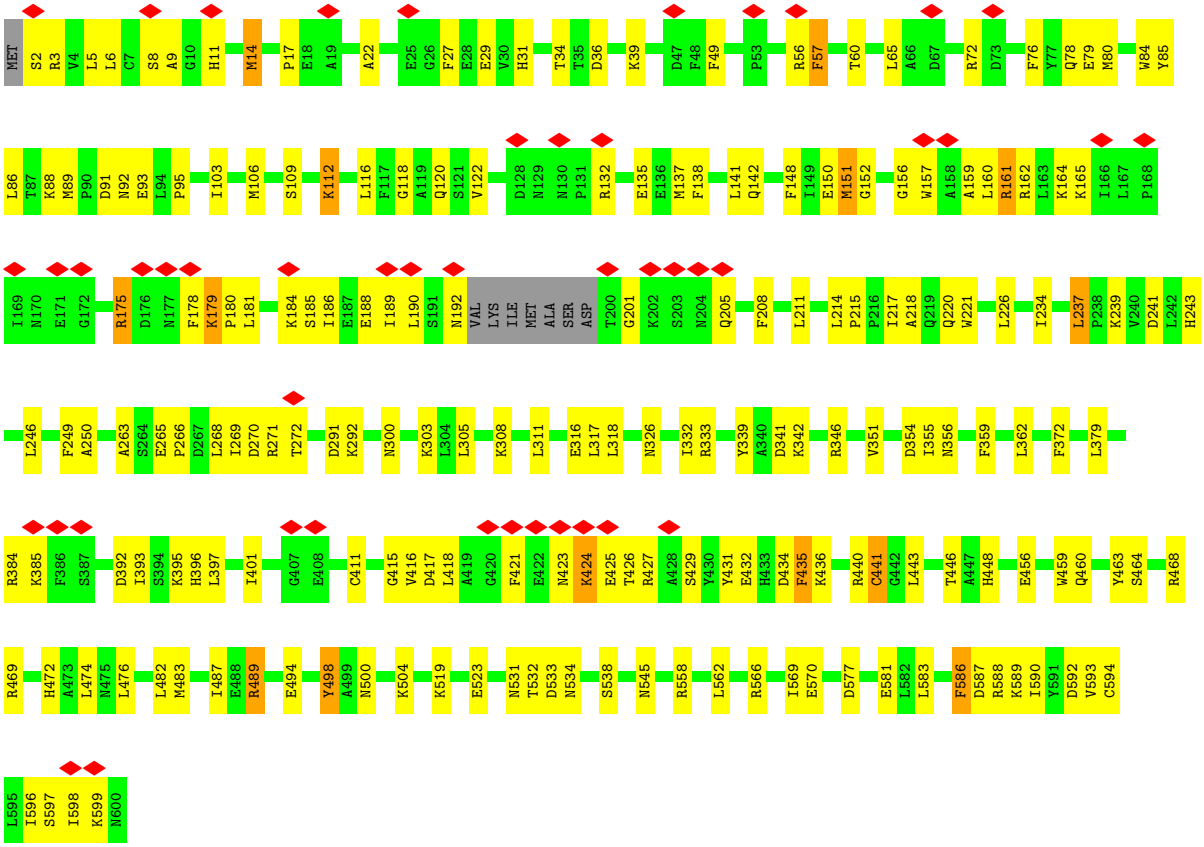
Mol	Chain	Residues	Atoms					AltConf
3	B	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	D	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	F	1	Total	C	N	O	P	0
			31	10	5	13	3	

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.

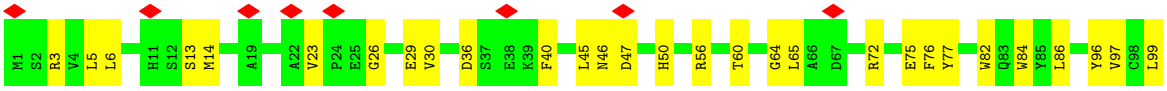
• Molecule 1: Adenosine deaminase domain-containing protein

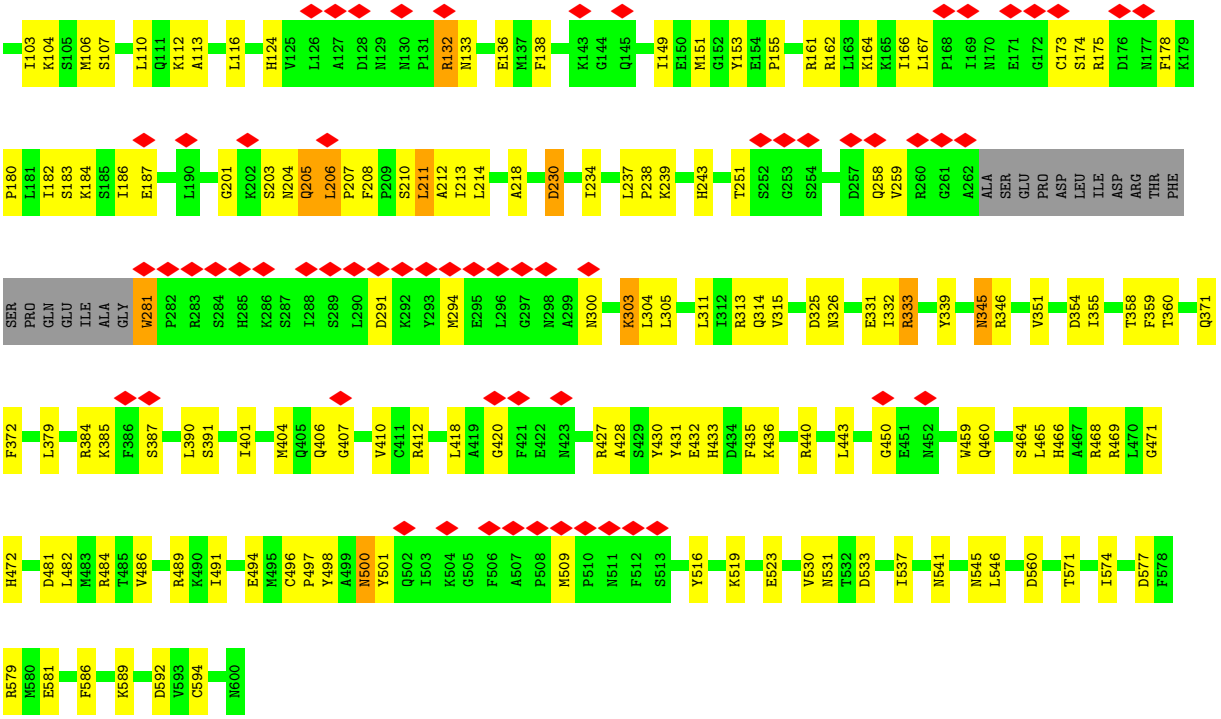
Chain A:



• Molecule 1: Adenosine deaminase domain-containing protein

Chain B:



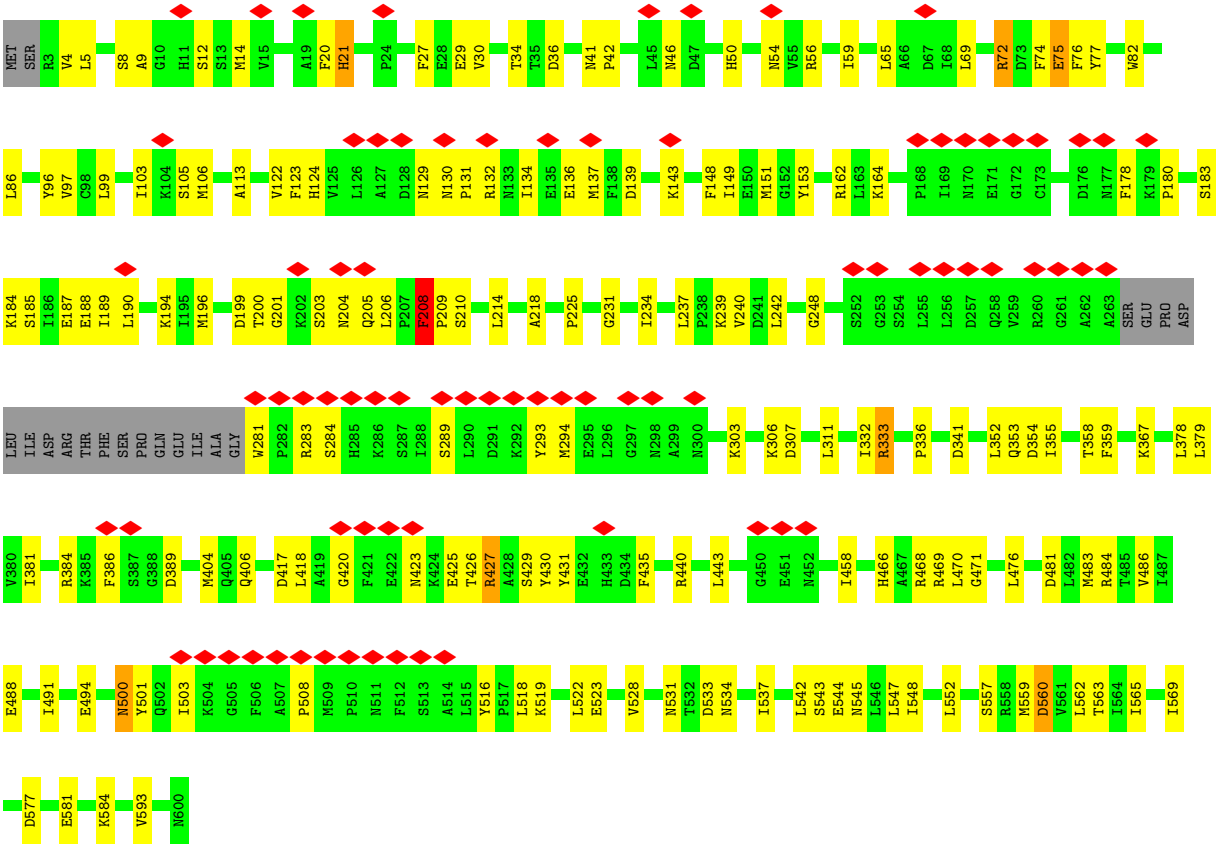


• Molecule 1: Adenosine deaminase domain-containing protein

Chain C:

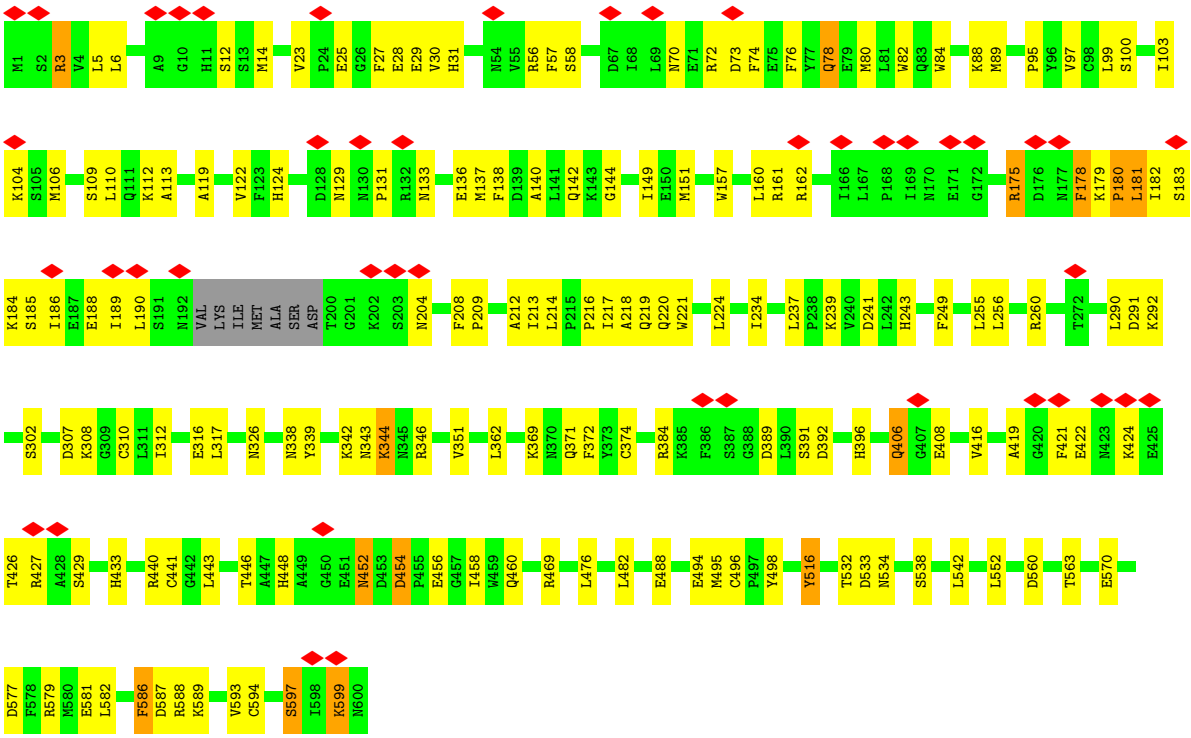
• Molecule 1: Adenosine deaminase domain-containing protein

Chain D:



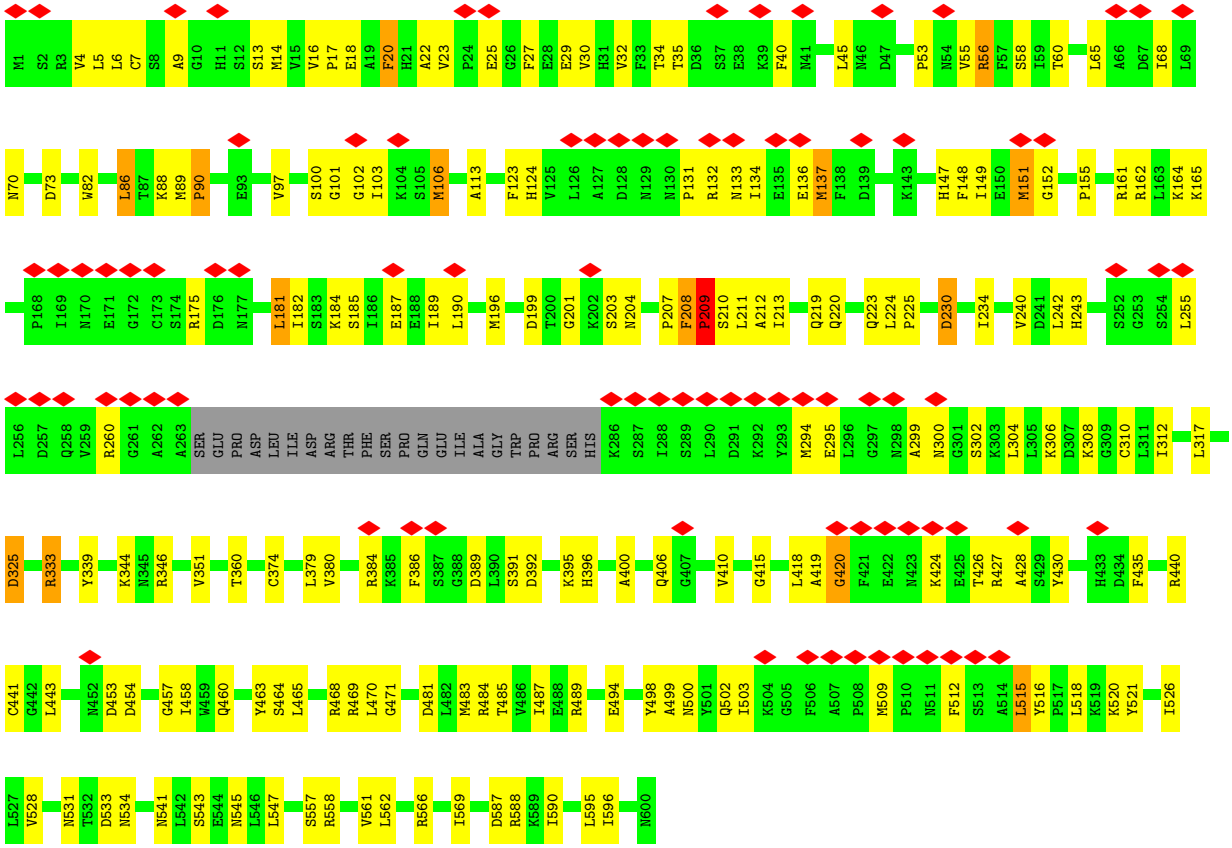
• Molecule 1: Adenosine deaminase domain-containing protein

Chain E:



• Molecule 1: Adenosine deaminase domain-containing protein

Chain F:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	106838	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	53	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.394	Depositor
Minimum map value	-1.605	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.057	Depositor
Recommended contour level	0.237	Depositor
Map size (Å)	342.08002, 342.08002, 342.08002	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.069, 1.069, 1.069	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.26	0/4770	0.50	0/6462
1	B	0.26	0/4690	0.51	0/6350
1	C	0.25	0/4758	0.50	1/6446 (0.0%)
1	D	0.26	0/4681	0.50	0/6339
1	E	0.25	0/4778	0.51	3/6472 (0.0%)
1	F	0.27	0/4643	0.54	2/6285 (0.0%)
All	All	0.26	0/28320	0.51	6/38354 (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	D	0	1
1	F	0	1
All	All	0	2

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	180	PRO	CA-N-CD	-8.71	99.30	111.50
1	F	209	PRO	CA-N-CD	-8.45	99.67	111.50
1	F	53	PRO	CA-N-CD	-7.56	100.91	111.50
1	E	454	ASP	CB-CG-OD1	5.34	123.11	118.30
1	E	181	LEU	CA-CB-CG	5.05	126.91	115.30
1	C	86	LEU	CA-CB-CG	5.01	126.81	115.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	208	PHE	Peptide
1	F	89	MET	Peptide

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	4666	0	4635	151	0
1	B	4589	0	4576	124	0
1	C	4654	0	4623	107	0
1	D	4580	0	4564	116	0
1	E	4674	0	4647	116	0
1	F	4546	0	4539	140	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
3	B	31	0	11	1	0
3	D	31	0	11	1	0
3	F	31	0	11	2	0
All	All	27808	0	27617	721	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 13.

All (721) 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:F:418:LEU:HD23	1:F:465:LEU:HD13	1.36	1.03
1:C:201:GLY:O	1:C:205:GLN:HB2	1.65	0.96
1:C:234:ILE:HD11	1:C:546:LEU:HB3	1.49	0.95
1:F:208:PHE:CD2	1:F:209:PRO:HD2	2.04	0.93
1:A:201:GLY:O	1:A:205:GLN:HB2	1.80	0.81

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:384:ARG:NH1	1:A:426:THR:O	2.14	0.80
1:F:418:LEU:CD2	1:F:465:LEU:HD13	2.11	0.80
1:C:204:ASN:HD22	1:D:584:LYS:HB2	1.46	0.80
1:F:418:LEU:HD11	1:F:435:PHE:HE1	1.47	0.79
1:F:418:LEU:HD11	1:F:435:PHE:CE1	2.19	0.78
1:F:384:ARG:HD2	1:F:419:ALA:C	2.04	0.77
1:B:259:VAL:HG21	1:B:314:GLN:HG2	1.67	0.75
1:C:185:SER:O	1:C:220:GLN:NE2	2.19	0.75
1:E:131:PRO:HB3	1:E:136:GLU:HB3	1.69	0.75
1:B:201:GLY:O	1:B:204:ASN:ND2	2.19	0.75
1:F:384:ARG:HH11	1:F:419:ALA:CA	1.99	0.75
1:F:418:LEU:HG	1:F:435:PHE:CZ	2.22	0.74
1:D:208:PHE:CD2	1:D:209:PRO:HD3	2.22	0.74
1:B:496:CYS:O	1:B:500:ASN:ND2	2.21	0.73
1:A:162:ARG:HA	1:A:165:LYS:HG2	1.69	0.73
1:D:124:HIS:HB2	1:D:149:ILE:HB	1.70	0.73
1:E:291:ASP:OD1	1:E:292:LYS:N	2.21	0.73
1:D:12:SER:OG	1:D:14:MET:SD	2.46	0.73
1:C:589:LYS:O	1:C:593:VAL:HG23	1.89	0.72
1:C:162:ARG:HG2	1:C:599:LYS:HE2	1.69	0.72
1:D:404:MET:HG2	1:D:443:LEU:HD21	1.69	0.72
1:B:211:LEU:HD13	1:B:214:LEU:HD13	1.73	0.71
1:D:132:ARG:N	1:D:136:GLU:OE2	2.17	0.71
1:E:99:LEU:HB3	1:E:110:LEU:HD22	1.71	0.70
1:C:353:GLN:NE2	1:C:406:GLN:OE1	2.24	0.70
1:B:211:LEU:HD12	1:B:212:ALA:H	1.55	0.69
1:F:384:ARG:HD2	1:F:419:ALA:O	1.93	0.69
1:C:213:ILE:HG21	1:D:196:MET:HG3	1.74	0.68
1:F:201:GLY:O	1:F:204:ASN:ND2	2.27	0.68
1:E:56:ARG:HH12	1:E:58:SER:HB3	1.57	0.68
1:A:427:ARG:HG3	1:A:429:SER:H	1.58	0.68
1:B:384:ARG:HB2	1:B:420:GLY:HA3	1.75	0.68
1:C:97:VAL:HG13	1:C:122:VAL:HG23	1.75	0.67
1:C:415:GLY:HA2	1:C:443:LEU:HD22	1.77	0.67
1:F:86:LEU:HD21	1:F:164:LYS:HA	1.75	0.67
1:C:158:ALA:HB3	1:C:595:LEU:HD21	1.75	0.66
1:E:588:ARG:HD3	1:F:203:SER:HB2	1.76	0.66
1:E:421:PHE:O	1:E:426:THR:OG1	2.13	0.66
1:F:225:PRO:HA	1:F:557:SER:HA	1.76	0.66
1:A:384:ARG:HB2	1:A:426:THR:HG22	1.77	0.66
1:E:234:ILE:O	1:E:239:LYS:NZ	2.29	0.66

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:226:LEU:HA	1:A:558:ARG:HE	1.61	0.66
1:E:589:LYS:O	1:E:593:VAL:HG23	1.95	0.66
1:F:427:ARG:NH2	1:F:454:ASP:OD1	2.21	0.66
1:E:157:TRP:HD1	1:E:160:LEU:HB2	1.61	0.65
1:B:72:ARG:HH22	1:B:175:ARG:HE	1.45	0.65
1:D:86:LEU:HD21	1:D:164:LYS:HA	1.79	0.65
1:E:3:ARG:NH1	1:E:28:GLU:OE1	2.30	0.65
1:E:161:ARG:HG2	1:E:599:LYS:HE2	1.78	0.65
1:F:469:ARG:NE	1:F:494:GLU:OE2	2.25	0.65
1:B:333:ARG:HG3	1:B:379:LEU:HB2	1.78	0.65
1:B:460:GLN:O	1:B:464:SER:OG	2.07	0.65
1:D:481:ASP:OD1	1:D:484:ARG:NH2	2.29	0.65
1:A:346:ARG:NH2	1:A:354:ASP:OD2	2.30	0.64
1:B:404:MET:HG2	1:B:443:LEU:HD12	1.80	0.64
1:A:234:ILE:O	1:A:239:LYS:NZ	2.30	0.64
1:A:483:MET:O	1:A:487:ILE:HD12	1.97	0.64
1:D:21:HIS:O	1:D:21:HIS:ND1	2.24	0.64
1:E:406:GLN:NE2	1:E:408:GLU:O	2.31	0.64
1:F:208:PHE:CD1	1:F:566:ARG:HB2	2.32	0.64
1:C:103:ILE:HG12	1:C:106:MET:SD	2.38	0.64
1:D:486:VAL:HG23	1:D:491:ILE:HB	1.77	0.64
1:E:178:PHE:CE1	1:E:180:PRO:HD3	2.32	0.64
1:E:212:ALA:HB1	1:F:213:ILE:HD11	1.80	0.64
1:B:204:ASN:OD1	1:B:205:GLN:N	2.30	0.64
1:E:12:SER:OG	1:E:14:MET:SD	2.55	0.63
1:A:151:MET:SD	1:A:151:MET:N	2.68	0.63
1:C:534:ASN:O	1:C:538:SER:OG	2.16	0.63
1:D:134:ILE:HA	1:D:137:MET:HG2	1.80	0.63
1:C:392:ASP:O	1:C:396:HIS:ND1	2.31	0.63
1:D:225:PRO:HA	1:D:557:SER:HA	1.79	0.63
1:F:384:ARG:NH1	1:F:420:GLY:N	2.46	0.63
1:F:463:TYR:OH	1:F:485:THR:OG1	2.13	0.63
1:A:188:GLU:O	1:A:192:ASN:ND2	2.30	0.63
1:A:456:GLU:O	1:A:460:GLN:HG2	1.98	0.63
1:C:402:THR:HA	1:C:405:GLN:NE2	2.13	0.63
1:F:384:ARG:HH11	1:F:419:ALA:HB1	1.63	0.63
1:D:281:TRP:N	1:D:284:SER:HG	1.97	0.63
1:F:4:VAL:HA	1:F:29:GLU:HB3	1.80	0.63
1:A:534:ASN:O	1:A:538:SER:OG	2.14	0.62
1:D:208:PHE:HE2	1:D:562:LEU:HB3	1.64	0.62
1:B:29:GLU:HG3	1:B:56:ARG:HB2	1.82	0.62

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:133:ASN:OD1	1:C:134:ILE:N	2.32	0.62
1:C:3:ARG:NH2	1:C:26:GLY:O	2.33	0.61
1:A:2:SER:OG	1:A:3:ARG:N	2.34	0.61
1:F:9:ALA:HA	1:F:101:GLY:HA3	1.82	0.61
1:A:185:SER:OG	1:A:220:GLN:NE2	2.33	0.61
1:C:203:SER:OG	1:D:584:LYS:NZ	2.33	0.61
1:C:427:ARG:NH1	1:C:454:ASP:O	2.33	0.61
1:E:184:LYS:NZ	1:E:188:GLU:HB3	2.15	0.61
1:A:589:LYS:O	1:A:593:VAL:HG23	1.99	0.61
1:E:104:LYS:NZ	1:F:102:GLY:O	2.32	0.61
1:E:183:SER:HA	1:E:186:ILE:HD12	1.83	0.61
1:E:534:ASN:O	1:E:538:SER:OG	2.17	0.60
1:A:179:LYS:HD2	1:A:179:LYS:O	2.01	0.60
1:A:6:LEU:HB3	1:A:84:TRP:HH2	1.65	0.60
1:A:116:LEU:HD23	1:A:157:TRP:HE1	1.66	0.60
1:B:104:LYS:HD3	1:B:104:LYS:N	2.16	0.60
1:B:281:TRP:NE1	1:B:537:ILE:O	2.34	0.60
1:F:45:LEU:HD23	1:F:45:LEU:H	1.66	0.60
1:F:453:ASP:OD1	1:F:454:ASP:N	2.34	0.60
1:A:162:ARG:HE	1:A:599:LYS:HD3	1.65	0.60
1:B:124:HIS:N	1:B:149:ILE:O	2.32	0.60
1:A:179:LYS:HD3	1:A:181:LEU:HG	1.83	0.60
1:B:46:ASN:O	1:B:50:HIS:ND1	2.33	0.60
1:C:481:ASP:N	1:C:481:ASP:OD1	2.33	0.60
1:D:544:GLU:O	1:D:548:ILE:HG12	2.01	0.60
1:D:46:ASN:O	1:D:50:HIS:ND1	2.35	0.59
1:D:122:VAL:HG23	1:D:151:MET:HB2	1.83	0.59
1:A:569:ILE:HG21	1:A:583:LEU:HD13	1.85	0.59
1:E:392:ASP:O	1:E:396:HIS:ND1	2.34	0.59
1:C:432:GLU:O	1:C:436:LYS:NZ	2.35	0.59
1:E:188:GLU:HB2	1:E:224:LEU:HD21	1.84	0.59
1:C:6:LEU:HB3	1:C:84:TRP:HH2	1.66	0.59
1:F:424:LYS:HG3	1:F:426:THR:HG23	1.83	0.59
1:F:65:LEU:HD21	1:F:68:ILE:HA	1.85	0.59
1:F:384:ARG:HH11	1:F:419:ALA:CB	2.14	0.59
1:B:471:GLY:HA2	1:B:494:GLU:HB2	1.85	0.59
1:E:103:ILE:HG12	1:E:106:MET:SD	2.43	0.59
1:B:112:LYS:HD2	1:B:116:LEU:HD13	1.85	0.58
1:B:469:ARG:NH1	1:B:494:GLU:OE2	2.36	0.58
1:F:208:PHE:CG	1:F:209:PRO:HD2	2.37	0.58
1:C:302:SER:OG	1:C:338:ASN:O	2.20	0.58

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:392:ASP:O	1:A:396:HIS:ND1	2.36	0.58
1:E:217:ILE:HD12	1:E:220:GLN:HE21	1.67	0.58
1:F:165:LYS:HB3	1:F:596:ILE:HD11	1.85	0.58
1:E:129:ASN:ND2	1:E:136:GLU:OE2	2.37	0.58
1:C:132:ARG:O	1:C:132:ARG:NH1	2.29	0.58
1:C:234:ILE:O	1:C:239:LYS:NZ	2.37	0.58
1:A:249:PHE:HE2	1:A:317:LEU:HB3	1.68	0.58
1:B:331:GLU:OE1	1:B:469:ARG:NH2	2.36	0.58
1:B:354:ASP:O	1:B:358:THR:HG22	2.04	0.58
1:C:5:LEU:HD21	1:C:30:VAL:HG22	1.86	0.57
1:A:266:PRO:O	1:A:271:ARG:NH2	2.37	0.57
1:A:415:GLY:HA2	1:A:443:LEU:HD22	1.85	0.57
1:B:251:THR:HG21	1:B:537:ILE:HG12	1.86	0.57
1:D:97:VAL:HB	1:D:122:VAL:HG12	1.86	0.57
1:F:7:CYS:HB2	1:F:32:VAL:HG22	1.85	0.57
1:F:457:GLY:O	1:F:460:GLN:NE2	2.36	0.57
1:C:584:LYS:HD3	1:D:205:GLN:HA	1.85	0.57
1:E:243:HIS:HD2	1:E:533:ASP:HA	1.68	0.57
1:A:93:GLU:OE2	1:A:93:GLU:N	2.37	0.57
1:A:160:LEU:HA	1:A:599:LYS:HA	1.87	0.57
1:A:263:ALA:HB3	1:A:269:ILE:HD11	1.87	0.57
1:C:29:GLU:HG3	1:C:56:ARG:HB3	1.84	0.57
1:A:241:ASP:OD2	1:A:532:THR:OG1	2.22	0.57
1:D:381:ILE:HA	1:D:417:ASP:HB3	1.87	0.57
1:E:140:ALA:O	1:E:144:GLY:N	2.38	0.57
1:A:566:ARG:NH2	1:A:570:GLU:OE1	2.33	0.57
3:B:701:ATP:O3G	3:B:701:ATP:O3'	2.23	0.57
1:D:240:VAL:HG21	1:D:569:ILE:HG22	1.87	0.57
1:A:489:ARG:NH1	1:A:489:ARG:HA	2.20	0.57
1:C:161:ARG:HG2	1:C:599:LYS:HE3	1.86	0.57
1:C:460:GLN:O	1:C:464:SER:OG	2.23	0.57
1:A:397:LEU:O	1:A:401:ILE:HG22	2.05	0.56
1:B:155:PRO:O	1:B:161:ARG:NH2	2.38	0.56
1:E:70:ASN:HD21	1:E:72:ARG:HG2	1.70	0.56
1:E:456:GLU:O	1:E:460:GLN:HG2	2.05	0.56
1:F:481:ASP:OD1	1:F:484:ARG:NH2	2.38	0.56
1:A:237:LEU:O	1:A:239:LYS:NZ	2.36	0.56
1:D:99:LEU:HD22	1:D:124:HIS:NE2	2.21	0.56
1:F:23:VAL:HG12	1:F:25:GLU:H	1.71	0.56
1:F:208:PHE:HD2	1:F:562:LEU:HD23	1.71	0.56
3:F:701:ATP:O3G	3:F:701:ATP:O3'	2.23	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:286:LYS:NZ	1:C:287:SER:O	2.38	0.56
1:E:316:GLU:HG2	1:E:362:LEU:HD11	1.88	0.56
1:D:130:ASN:O	1:D:132:ARG:NH1	2.39	0.56
1:D:333:ARG:HG3	1:D:379:LEU:HB2	1.86	0.56
1:F:243:HIS:N	1:F:531:ASN:HD22	2.04	0.56
1:B:243:HIS:HD2	1:B:533:ASP:HA	1.71	0.55
1:D:427:ARG:HG3	1:D:429:SER:H	1.72	0.55
3:D:701:ATP:O3'	3:D:701:ATP:O3G	2.23	0.55
1:F:132:ARG:O	1:F:132:ARG:NH1	2.39	0.55
1:B:104:LYS:HD3	1:B:104:LYS:H	1.70	0.55
1:B:99:LEU:HD22	1:B:124:HIS:CE1	2.41	0.55
1:B:519:LYS:O	1:B:523:GLU:HG2	2.06	0.55
1:D:234:ILE:O	1:D:239:LYS:NZ	2.39	0.55
1:D:311:LEU:HD11	1:D:355:ILE:HD11	1.89	0.55
1:A:234:ILE:HD13	1:A:237:LEU:HD12	1.89	0.55
1:C:249:PHE:HE2	1:C:317:LEU:HB3	1.72	0.55
1:E:422:GLU:O	1:E:422:GLU:HG2	2.05	0.55
1:E:488:GLU:O	1:F:468:ARG:NH2	2.30	0.55
1:A:342:LYS:NZ	1:D:406:GLN:O	2.39	0.55
1:C:163:LEU:HA	1:C:166:ILE:HG13	1.87	0.55
1:A:333:ARG:NH2	1:A:446:THR:OG1	2.40	0.55
1:B:206:LEU:HB3	1:B:207:PRO:HD3	1.87	0.55
1:D:201:GLY:O	1:D:204:ASN:ND2	2.39	0.55
1:B:501:TYR:HE1	1:B:509:MET:HG3	1.72	0.55
1:D:189:ILE:HG13	1:D:190:LEU:N	2.21	0.55
1:E:23:VAL:HB	1:E:27:PHE:HE1	1.71	0.55
1:E:185:SER:O	1:E:188:GLU:N	2.40	0.55
1:D:185:SER:O	1:D:188:GLU:HG3	2.06	0.54
1:F:155:PRO:O	1:F:161:ARG:NH2	2.38	0.54
1:D:283:ARG:HE	1:D:501:TYR:HE2	1.55	0.54
1:A:531:ASN:O	1:A:545:ASN:ND2	2.40	0.54
1:D:124:HIS:N	1:D:149:ILE:O	2.36	0.54
1:F:208:PHE:HD1	1:F:566:ARG:HB2	1.72	0.54
1:A:250:ALA:O	1:A:300:ASN:ND2	2.39	0.54
1:A:460:GLN:O	1:A:464:SER:OG	2.24	0.54
1:C:68:ILE:HD11	1:C:77:TYR:HD2	1.72	0.54
1:C:221:TRP:CE2	1:C:598:ILE:HG12	2.42	0.54
1:F:22:ALA:HB3	1:F:27:PHE:HE2	1.72	0.54
1:B:311:LEU:HD11	1:B:355:ILE:HD11	1.88	0.54
1:C:233:TRP:CE2	1:C:237:LEU:HD21	2.43	0.54
1:B:481:ASP:OD1	1:B:484:ARG:NH2	2.40	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:178:PHE:O	1:E:180:PRO:HD2	2.07	0.54
1:D:231:GLY:HA2	1:D:547:LEU:HD11	1.89	0.54
1:B:103:ILE:HG12	1:B:106:MET:HE2	1.89	0.54
1:C:593:VAL:O	1:C:597:SER:OG	2.23	0.54
1:D:131:PRO:HB3	1:D:136:GLU:OE1	2.07	0.54
1:E:587:ASP:OD1	1:E:588:ARG:N	2.41	0.54
1:A:189:ILE:HG22	1:A:190:LEU:HG	1.90	0.54
1:C:23:VAL:H	1:C:27:PHE:HE1	1.55	0.54
1:F:333:ARG:HG3	1:F:379:LEU:HB2	1.90	0.53
1:F:499:ALA:O	1:F:503:ILE:HG22	2.07	0.53
1:B:238:PRO:HG3	1:B:589:LYS:HG2	1.90	0.53
1:D:5:LEU:HB2	1:D:27:PHE:CD2	2.43	0.53
1:F:199:ASP:O	1:F:203:SER:OG	2.26	0.53
1:A:6:LEU:HB3	1:A:84:TRP:CH2	2.44	0.53
1:A:103:ILE:HG12	1:A:106:MET:SD	2.48	0.53
1:B:500:ASN:ND2	1:B:516:TYR:OH	2.40	0.53
1:C:209:PRO:HG2	1:D:206:LEU:O	2.08	0.53
1:F:308:LYS:O	1:F:312:ILE:HG12	2.09	0.53
1:A:468:ARG:HH12	1:B:489:ARG:NH1	2.07	0.53
1:D:354:ASP:O	1:D:358:THR:HG22	2.08	0.53
1:E:241:ASP:OD2	1:E:532:THR:OG1	2.23	0.53
1:E:560:ASP:O	1:E:563:THR:OG1	2.27	0.53
1:B:303:LYS:HE3	1:B:304:LEU:HB2	1.90	0.53
1:D:281:TRP:NE1	1:D:537:ILE:O	2.40	0.53
1:A:162:ARG:HA	1:A:165:LYS:HE2	1.91	0.52
1:B:3:ARG:NH1	1:B:26:GLY:O	2.42	0.52
1:E:23:VAL:HG12	1:E:25:GLU:H	1.73	0.52
1:E:249:PHE:HE2	1:E:317:LEU:HB3	1.74	0.52
1:B:427:ARG:HG2	1:B:430:TYR:HE1	1.74	0.52
1:F:82:TRP:HB3	1:F:182:ILE:HG21	1.91	0.52
1:C:116:LEU:HD21	1:C:182:ILE:HG21	1.90	0.52
1:F:384:ARG:HD3	1:F:419:ALA:HB1	1.91	0.52
1:A:135:GLU:CD	1:A:135:GLU:H	2.13	0.52
1:B:243:HIS:N	1:B:531:ASN:OD1	2.42	0.52
1:F:230:ASP:OD2	1:F:558:ARG:NE	2.42	0.52
1:B:13:SER:HB3	1:B:45:LEU:HD11	1.91	0.52
1:C:209:PRO:HG3	1:D:208:PHE:O	2.10	0.52
1:F:240:VAL:HG21	1:F:569:ILE:HG22	1.92	0.52
1:A:214:LEU:HD11	1:A:594:CYS:HB2	1.92	0.52
1:B:258:GLN:HE21	1:B:313:ARG:HH21	1.57	0.52
1:C:258:GLN:OE1	1:C:313:ARG:NH2	2.43	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:220:GLN:O	1:F:224:LEU:HD22	2.10	0.52
1:A:243:HIS:N	1:A:531:ASN:OD1	2.35	0.52
1:C:76:PHE:HD1	1:C:175:ARG:HB3	1.75	0.52
1:A:339:TYR:HB2	1:A:351:VAL:HG11	1.92	0.51
1:F:384:ARG:HA	1:F:420:GLY:HA2	1.91	0.51
1:F:428:ALA:HB1	1:F:465:LEU:HD11	1.91	0.51
1:A:189:ILE:HG12	1:A:220:GLN:HG2	1.91	0.51
1:A:384:ARG:HH11	1:A:426:THR:HB	1.74	0.51
1:B:162:ARG:NH2	1:B:592:ASP:OD2	2.25	0.51
1:E:80:MET:N	1:E:80:MET:SD	2.83	0.51
1:F:391:SER:O	1:F:395:LYS:HG3	2.10	0.51
1:A:2:SER:HB3	1:A:93:GLU:OE1	2.10	0.51
1:A:22:ALA:HA	1:A:148:PHE:CZ	2.45	0.51
1:A:208:PHE:HB2	1:A:211:LEU:HD12	1.91	0.51
1:B:325:ASP:OD2	1:B:541:ASN:ND2	2.44	0.51
1:C:380:VAL:HG21	1:C:400:ALA:HB2	1.91	0.51
1:F:18:GLU:HB3	1:F:148:PHE:CZ	2.45	0.51
1:D:205:GLN:NE2	1:D:206:LEU:H	2.09	0.51
1:E:160:LEU:H	1:E:161:ARG:HD2	1.76	0.51
1:C:463:TYR:O	1:D:466:HIS:NE2	2.32	0.51
1:E:185:SER:O	1:E:189:ILE:HG13	2.10	0.51
1:F:487:ILE:HD11	1:F:526:ILE:HG12	1.91	0.51
1:A:78:GLN:OE1	1:A:109:SER:OG	2.29	0.51
1:B:428:ALA:HB1	1:B:465:LEU:HD13	1.93	0.51
1:C:159:ALA:HB3	1:C:595:LEU:O	2.11	0.51
1:D:184:LYS:HA	1:D:187:GLU:HG3	1.93	0.51
1:F:541:ASN:ND2	1:F:543:SER:OG	2.44	0.51
1:B:315:VAL:HG11	1:B:358:THR:HG23	1.93	0.50
1:C:588:ARG:HB2	1:D:204:ASN:CB	2.41	0.50
1:F:255:LEU:HB3	1:F:317:LEU:HD21	1.94	0.50
1:A:218:ALA:HB2	1:A:598:ILE:HD13	1.94	0.50
1:C:18:GLU:HB3	1:C:125:VAL:HG11	1.91	0.50
1:F:561:VAL:HG23	1:F:562:LEU:HD12	1.93	0.50
1:C:418:LEU:HD11	1:C:431:TYR:HD2	1.75	0.50
1:E:89:MET:HG3	1:E:161:ARG:HH22	1.75	0.50
1:A:95:PRO:O	1:A:120:GLN:N	2.42	0.50
1:B:385:LYS:NZ	1:B:387:SER:OG	2.44	0.50
1:F:344:LYS:HB2	1:F:346:ARG:HG3	1.93	0.50
1:D:20:PHE:HD1	1:D:30:VAL:HG21	1.76	0.50
1:B:82:TRP:HB3	1:B:182:ILE:HG21	1.93	0.50
1:D:559:MET:O	1:D:563:THR:HG23	2.12	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:97:VAL:HG13	1:E:122:VAL:HG23	1.94	0.50
1:E:162:ARG:HB3	1:E:599:LYS:HD3	1.92	0.50
1:F:384:ARG:NH1	1:F:419:ALA:CA	2.70	0.50
1:C:17:PRO:HD3	1:C:45:LEU:HD21	1.92	0.49
1:C:207:PRO:O	1:C:211:LEU:HD12	2.12	0.49
1:D:423:ASN:N	1:D:426:THR:OG1	2.44	0.49
1:A:164:LYS:HE2	1:A:165:LYS:NZ	2.27	0.49
1:B:300:ASN:ND2	1:B:314:GLN:OE1	2.45	0.49
1:C:221:TRP:HA	1:C:224:LEU:HD23	1.93	0.49
1:F:208:PHE:HE2	1:F:590:ILE:HD13	1.76	0.49
1:B:243:HIS:CD2	1:B:533:ASP:HA	2.47	0.49
1:C:342:LYS:NZ	1:F:406:GLN:O	2.43	0.49
1:A:217:ILE:O	1:A:220:GLN:HG3	2.12	0.49
1:A:448:HIS:O	1:A:448:HIS:ND1	2.44	0.49
1:C:519:LYS:O	1:C:523:GLU:HG2	2.12	0.49
1:E:416:VAL:HG13	1:E:443:LEU:HD23	1.92	0.49
1:B:5:LEU:HD22	1:B:96:TYR:HB2	1.94	0.49
1:C:307:ASP:HB3	1:C:310:CYS:HB2	1.94	0.49
1:F:70:ASN:ND2	1:F:73:ASP:OD2	2.44	0.49
1:F:392:ASP:O	1:F:396:HIS:ND1	2.38	0.49
1:F:460:GLN:O	1:F:464:SER:OG	2.15	0.49
1:F:498:TYR:O	1:F:502:GLN:HG2	2.12	0.49
1:A:356:ASN:ND2	1:A:411:CYS:O	2.46	0.49
1:A:593:VAL:O	1:A:597:SER:HB3	2.13	0.49
1:D:469:ARG:NE	1:D:494:GLU:OE2	2.28	0.49
1:E:89:MET:HG3	1:E:161:ARG:NH2	2.28	0.49
1:E:593:VAL:O	1:E:597:SER:HB3	2.13	0.49
1:E:188:GLU:HG3	1:E:220:GLN:OE1	2.13	0.49
1:E:582:LEU:O	1:E:586:PHE:HB2	2.13	0.49
1:F:230:ASP:O	1:F:234:ILE:HG22	2.13	0.49
1:F:300:ASN:HA	1:F:304:LEU:HD23	1.95	0.49
1:B:436:LYS:O	1:B:436:LYS:HD3	2.12	0.49
1:E:185:SER:O	1:E:188:GLU:HG2	2.13	0.49
1:F:207:PRO:HG3	1:F:212:ALA:HB2	1.95	0.49
1:F:386:PHE:CE1	1:F:426:THR:HG22	2.47	0.49
1:F:234:ILE:HG21	1:F:547:LEU:HD21	1.95	0.49
1:F:384:ARG:NH1	1:F:419:ALA:HA	2.28	0.49
1:B:86:LEU:HD21	1:B:164:LYS:HA	1.94	0.48
1:C:391:SER:HB3	1:F:440:ARG:HG3	1.95	0.48
1:D:29:GLU:N	1:D:29:GLU:OE1	2.45	0.48
1:B:391:SER:HB3	1:E:440:ARG:HG3	1.94	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:208:PHE:CG	1:D:209:PRO:HD3	2.49	0.48
1:F:333:ARG:HD2	1:F:379:LEU:HD12	1.95	0.48
1:E:100:SER:HA	1:E:124:HIS:CE1	2.48	0.48
1:F:384:ARG:CZ	1:F:420:GLY:N	2.76	0.48
1:B:6:LEU:HB3	1:B:84:TRP:CH2	2.48	0.48
1:C:180:PRO:HB2	1:C:183:SER:HB3	1.95	0.48
1:F:418:LEU:CG	1:F:435:PHE:CZ	2.96	0.48
1:A:186:ILE:HG22	1:B:153:TYR:HB3	1.95	0.48
1:E:208:PHE:HB3	1:E:587:ASP:HB2	1.94	0.48
1:A:316:GLU:HG2	1:A:362:LEU:HD11	1.96	0.48
1:A:469:ARG:NE	1:A:494:GLU:OE2	2.33	0.48
1:C:218:ALA:HA	1:C:221:TRP:HB3	1.94	0.48
1:A:588:ARG:NH1	1:A:592:ASP:OD1	2.47	0.48
1:F:16:VAL:HG23	1:F:17:PRO:HD3	1.95	0.48
1:F:518:LEU:HG	1:F:528:VAL:HG11	1.96	0.48
1:A:424:LYS:HA	1:A:424:LYS:HD2	1.63	0.48
1:B:65:LEU:HD21	1:B:76:PHE:HD2	1.77	0.48
1:B:211:LEU:O	1:B:213:ILE:HG12	2.14	0.48
1:B:214:LEU:HD21	1:B:594:CYS:HB3	1.96	0.48
1:B:326:ASN:HA	1:B:372:PHE:HE2	1.79	0.48
1:B:450:GLY:HA3	1:B:472:HIS:HB2	1.95	0.48
1:B:509:MET:SD	1:B:509:MET:N	2.86	0.48
1:C:243:HIS:N	1:C:531:ASN:OD1	2.46	0.48
1:C:65:LEU:HD11	1:C:73:ASP:HB3	1.95	0.48
1:F:379:LEU:HD22	1:F:415:GLY:O	2.14	0.48
1:A:116:LEU:HA	1:A:157:TRP:HE1	1.78	0.47
1:A:186:ILE:HA	1:A:189:ILE:HG13	1.95	0.47
1:A:218:ALA:HA	1:A:221:TRP:HB3	1.96	0.47
1:A:588:ARG:NE	1:B:203:SER:OG	2.47	0.47
1:C:489:ARG:HD2	1:D:468:ARG:HD2	1.95	0.47
1:D:131:PRO:HB2	1:D:137:MET:CE	2.43	0.47
1:A:474:LEU:HD21	1:A:500:ASN:HD22	1.79	0.47
1:B:36:ASP:OD1	1:B:36:ASP:N	2.42	0.47
1:B:401:ILE:O	1:B:404:MET:HG3	2.14	0.47
1:D:74:PHE:HE1	1:D:105:SER:HB2	1.79	0.47
1:D:522:LEU:HD13	1:D:560:ASP:HB3	1.95	0.47
1:A:246:LEU:HD13	1:A:318:LEU:HD22	1.95	0.47
1:B:97:VAL:HG21	1:B:110:LEU:HD11	1.97	0.47
1:F:18:GLU:HB3	1:F:148:PHE:HZ	1.80	0.47
1:D:54:ASN:N	1:D:54:ASN:OD1	2.46	0.47
1:D:518:LEU:HD13	1:D:528:VAL:HG11	1.96	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:76:PHE:CD1	1:E:175:ARG:HB3	2.49	0.47
1:F:60:THR:O	1:F:60:THR:OG1	2.32	0.47
1:A:393:ILE:O	1:A:397:LEU:HD13	2.14	0.47
1:C:577:ASP:O	1:C:581:GLU:HG2	2.15	0.47
1:D:194:LYS:HD2	1:D:194:LYS:HA	1.65	0.47
1:D:531:ASN:O	1:D:545:ASN:ND2	2.48	0.47
1:E:344:LYS:HG3	1:E:346:ARG:HG3	1.97	0.47
1:E:369:LYS:HB2	1:E:371:GLN:HG3	1.96	0.47
1:F:260:ARG:NH2	1:F:299:ALA:O	2.48	0.47
1:F:380:VAL:HG11	1:F:400:ALA:HB2	1.97	0.47
1:C:157:TRP:HE3	1:C:160:LEU:HD22	1.80	0.47
1:E:181:LEU:HD12	1:E:182:ILE:HG13	1.96	0.47
1:F:189:ILE:HG13	1:F:190:LEU:N	2.30	0.47
1:F:521:TYR:CG	1:F:526:ILE:HD12	2.49	0.47
1:A:305:LEU:HD23	1:A:339:TYR:CE1	2.49	0.47
1:B:72:ARG:O	1:B:75:GLU:HG3	2.15	0.47
1:B:184:LYS:O	1:B:187:GLU:HG3	2.15	0.47
1:E:6:LEU:HB3	1:E:84:TRP:HH2	1.79	0.47
1:A:214:LEU:HD23	1:A:215:PRO:HD2	1.97	0.47
1:E:175:ARG:O	1:E:178:PHE:HD2	1.97	0.47
1:D:565:ILE:O	1:D:569:ILE:HG23	2.15	0.46
1:E:204:ASN:O	1:E:204:ASN:ND2	2.47	0.46
1:E:217:ILE:HD12	1:E:220:GLN:NE2	2.29	0.46
1:E:342:LYS:HA	1:E:342:LYS:HD3	1.79	0.46
1:A:417:ASP:OD1	1:A:418:LEU:N	2.49	0.46
1:A:29:GLU:HB3	1:A:31:HIS:HE1	1.80	0.46
1:A:291:ASP:OD1	1:A:292:LYS:N	2.49	0.46
1:D:519:LYS:O	1:D:523:GLU:HG2	2.15	0.46
1:A:265:GLU:OE1	1:A:268:LEU:N	2.49	0.46
1:A:432:GLU:O	1:A:436:LYS:HG2	2.14	0.46
1:C:77:TYR:HE2	1:C:106:MET:HA	1.81	0.46
1:D:289:SER:O	1:D:289:SER:OG	2.34	0.46
1:A:418:LEU:HD12	1:A:435:PHE:CE2	2.51	0.46
1:A:566:ARG:HH22	1:B:208:PHE:HZ	1.63	0.46
1:A:60:THR:HG21	1:A:84:TRP:CD1	2.50	0.46
1:B:390:LEU:HD23	1:B:390:LEU:HA	1.82	0.46
1:B:482:LEU:O	1:B:486:VAL:HG12	2.16	0.46
1:E:214:LEU:HD21	1:E:594:CYS:HB2	1.98	0.46
1:F:531:ASN:O	1:F:545:ASN:ND2	2.49	0.46
1:A:468:ARG:HG3	1:A:468:ARG:HH11	1.81	0.46
1:C:147:HIS:NE2	1:D:69:LEU:O	2.49	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:243:HIS:HD2	1:C:533:ASP:HA	1.81	0.46
1:C:385:LYS:HD2	1:C:385:LYS:HA	1.67	0.46
1:D:29:GLU:HG3	1:D:56:ARG:HB2	1.98	0.46
1:D:248:GLY:HA3	1:D:534:ASN:ND2	2.31	0.46
1:E:427:ARG:HG3	1:E:429:SER:H	1.81	0.46
1:E:495:MET:HE2	1:E:516:TYR:HE1	1.81	0.46
1:A:489:ARG:HD3	1:B:468:ARG:HD2	1.97	0.46
1:B:230:ASP:OD1	1:B:230:ASP:N	2.49	0.46
1:C:570:GLU:O	1:C:579:ARG:NH2	2.49	0.46
1:F:384:ARG:HH11	1:F:419:ALA:C	2.19	0.46
1:D:196:MET:CE	1:D:203:SER:HA	2.46	0.46
1:D:185:SER:O	1:D:189:ILE:HG23	2.15	0.46
1:F:441:CYS:SG	1:F:443:LEU:HD23	2.56	0.46
1:F:588:ARG:HH22	3:F:701:ATP:H3'	1.81	0.46
1:A:80:MET:SD	1:A:80:MET:N	2.89	0.45
1:A:79:GLU:HG3	1:A:80:MET:SD	2.56	0.45
1:B:234:ILE:O	1:B:239:LYS:NZ	2.49	0.45
1:D:332:ILE:HB	1:D:378:LEU:HD13	1.98	0.45
1:E:82:TRP:HE1	1:E:113:ALA:HB2	1.81	0.45
1:A:421:PHE:H	1:A:426:THR:HG21	1.82	0.45
1:C:333:ARG:HB3	1:C:381:ILE:HD11	1.98	0.45
1:F:243:HIS:CD2	1:F:333:ARG:HH21	2.33	0.45
1:F:339:TYR:HB2	1:F:351:VAL:HG11	1.98	0.45
1:A:86:LEU:O	1:A:164:LYS:HD2	2.16	0.45
1:A:150:GLU:HG2	1:A:152:GLY:H	1.80	0.45
1:A:221:TRP:CD1	1:A:598:ILE:HG22	2.51	0.45
1:B:65:LEU:HD21	1:B:76:PHE:CD2	2.51	0.45
1:B:577:ASP:O	1:B:581:GLU:HG2	2.16	0.45
1:C:341:ASP:OD2	1:C:344:LYS:NZ	2.49	0.45
1:D:14:MET:HA	1:D:14:MET:HE3	1.97	0.45
1:D:72:ARG:O	1:D:75:GLU:HG3	2.16	0.45
1:D:208:PHE:CE2	1:D:562:LEU:HB3	2.47	0.45
1:D:307:ASP:N	1:D:307:ASP:OD1	2.47	0.45
1:D:336:PRO:HG3	1:D:352:LEU:HD13	1.97	0.45
1:D:384:ARG:HB2	1:D:420:GLY:HA3	1.99	0.45
1:E:577:ASP:O	1:E:581:GLU:HG2	2.16	0.45
1:F:485:THR:O	1:F:489:ARG:HG3	2.16	0.45
1:A:385:LYS:HA	1:A:385:LYS:HD3	1.62	0.45
1:A:459:TRP:HE1	1:B:436:LYS:NZ	2.14	0.45
1:D:205:GLN:CD	1:D:206:LEU:H	2.20	0.45
1:E:516:TYR:HD2	1:E:552:LEU:HD12	1.82	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:519:LYS:O	1:A:523:GLU:HG2	2.17	0.45
1:D:548:ILE:O	1:D:552:LEU:HB3	2.17	0.45
1:A:392:ASP:HA	1:A:395:LYS:HE2	1.99	0.45
1:C:68:ILE:HD12	1:C:105:SER:HB2	1.97	0.45
1:D:353:GLN:OE1	1:D:353:GLN:HA	2.17	0.45
1:E:5:LEU:HB2	1:E:30:VAL:HA	1.98	0.45
1:F:418:LEU:N	1:F:418:LEU:CD1	2.80	0.45
1:A:56:ARG:NH1	1:A:57:PHE:O	2.46	0.45
1:A:76:PHE:O	1:A:79:GLU:HG2	2.17	0.45
1:A:175:ARG:H	1:A:175:ARG:HD3	1.82	0.45
1:B:36:ASP:OD2	1:B:64:GLY:N	2.42	0.45
1:B:82:TRP:CD1	1:B:113:ALA:HB2	2.52	0.45
1:B:237:LEU:HD12	1:B:238:PRO:HD2	1.99	0.45
1:B:469:ARG:HD3	1:B:571:THR:HG22	1.99	0.45
1:E:384:ARG:HG2	1:E:426:THR:HB	1.99	0.45
1:A:161:ARG:O	1:A:164:LYS:HG2	2.17	0.45
1:C:83:GLN:O	1:C:86:LEU:HD12	2.16	0.45
1:F:5:LEU:HB2	1:F:30:VAL:HA	1.99	0.45
1:B:407:GLY:O	1:B:412:ARG:NH2	2.51	0.44
1:D:77:TYR:OH	1:D:106:MET:HB3	2.17	0.44
1:E:570:GLU:O	1:E:579:ARG:NH2	2.49	0.44
1:F:533:ASP:OD2	1:F:534:ASN:ND2	2.42	0.44
1:D:65:LEU:HD11	1:D:76:PHE:HB3	2.00	0.44
1:E:209:PRO:HB2	1:F:207:PRO:HD2	1.99	0.44
1:E:458:ILE:HB	1:E:482:LEU:HD21	2.00	0.44
1:B:305:LEU:HD21	1:B:314:GLN:HG3	2.00	0.44
1:D:14:MET:SD	1:D:14:MET:N	2.90	0.44
1:A:592:ASP:O	1:A:596:ILE:HG12	2.17	0.44
1:E:31:HIS:CE1	1:E:88:LYS:HD2	2.52	0.44
1:A:332:ILE:O	1:A:379:LEU:N	2.43	0.44
1:B:531:ASN:O	1:B:545:ASN:ND2	2.51	0.44
1:C:177:ASN:OD1	1:C:177:ASN:N	2.48	0.44
1:D:214:LEU:HD13	1:D:218:ALA:HB1	1.99	0.44
1:A:11:HIS:ND1	1:A:39:LYS:HG2	2.33	0.44
1:B:174:SER:O	1:B:178:PHE:HB3	2.18	0.44
1:C:86:LEU:HA	1:C:89:MET:SD	2.58	0.44
1:C:342:LYS:HD2	1:C:342:LYS:HA	1.74	0.44
1:C:427:ARG:NH1	1:C:454:ASP:OD1	2.51	0.44
1:D:103:ILE:HG12	1:D:106:MET:CE	2.47	0.44
1:E:23:VAL:HB	1:E:27:PHE:CE1	2.50	0.44
1:F:100:SER:OG	1:F:124:HIS:ND1	2.44	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:159:ALA:HB1	1:A:599:LYS:HD2	1.98	0.44
1:C:312:ILE:HD11	1:C:354:ASP:OD1	2.18	0.44
1:C:327:VAL:O	1:C:374:CYS:HB3	2.17	0.44
1:E:488:GLU:HG2	1:F:468:ARG:NE	2.33	0.44
1:C:161:ARG:CG	1:C:599:LYS:HE3	2.47	0.44
1:B:339:TYR:HB2	1:B:351:VAL:HG11	2.00	0.43
1:B:497:PRO:HD2	1:B:545:ASN:ND2	2.33	0.43
1:D:41:ASN:HA	1:D:42:PRO:HD3	1.91	0.43
1:D:237:LEU:HD12	1:D:593:VAL:HG11	1.98	0.43
1:E:302:SER:OG	1:E:338:ASN:O	2.34	0.43
1:F:133:ASN:HB3	1:F:136:GLU:CD	2.39	0.43
1:A:249:PHE:CE2	1:A:317:LEU:HB3	2.51	0.43
1:B:214:LEU:HD23	1:B:218:ALA:HB1	2.00	0.43
1:F:13:SER:H	1:F:14:MET:HE3	1.83	0.43
1:A:91:ASP:OD1	1:A:92:ASN:N	2.51	0.43
1:A:234:ILE:HD13	1:A:234:ILE:HA	1.94	0.43
1:A:583:LEU:HD12	1:A:583:LEU:HA	1.82	0.43
1:B:182:ILE:O	1:B:186:ILE:HG23	2.18	0.43
1:B:466:HIS:O	1:B:468:ARG:HD3	2.18	0.43
1:C:162:ARG:CG	1:C:599:LYS:HE2	2.45	0.43
1:C:267:ASP:OD1	1:C:267:ASP:N	2.50	0.43
1:E:179:LYS:O	1:E:179:LYS:HG3	2.18	0.43
1:E:241:ASP:HB2	1:E:542:LEU:HD22	2.01	0.43
1:F:360:THR:HG23	1:F:410:VAL:HG22	2.00	0.43
1:A:14:MET:HE3	1:A:14:MET:H	1.83	0.43
1:A:211:LEU:HD11	1:A:562:LEU:HD23	2.01	0.43
1:A:446:THR:OG1	1:A:446:THR:O	2.28	0.43
1:A:474:LEU:HD11	1:A:500:ASN:HB3	2.00	0.43
1:C:162:ARG:HA	1:C:165:LYS:NZ	2.33	0.43
1:E:482:LEU:HD12	1:E:482:LEU:HA	1.87	0.43
1:F:181:LEU:HD23	1:F:182:ILE:H	1.83	0.43
1:A:5:LEU:HG	1:A:27:PHE:CE2	2.53	0.43
1:D:425:GLU:HA	1:D:427:ARG:HH21	1.84	0.43
1:A:14:MET:O	1:A:17:PRO:HD2	2.18	0.43
1:A:138:PHE:O	1:A:141:LEU:HG	2.17	0.43
1:B:418:LEU:HD21	1:B:435:PHE:CE1	2.53	0.43
1:C:122:VAL:HG13	1:C:151:MET:SD	2.59	0.43
1:F:131:PRO:HG2	1:F:137:MET:HB3	2.01	0.43
1:F:418:LEU:HG	1:F:435:PHE:HZ	1.76	0.43
1:A:587:ASP:O	1:A:590:ILE:HG22	2.18	0.43
1:B:3:ARG:HH22	1:B:23:VAL:HG11	1.83	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:184:LYS:HA	1:B:184:LYS:HD2	1.78	0.43
1:D:242:LEU:HD13	1:D:469:ARG:NH1	2.33	0.43
1:F:151:MET:SD	1:F:152:GLY:N	2.92	0.43
1:A:9:ALA:HB3	1:A:34:THR:HB	1.99	0.43
1:A:308:LYS:HD2	1:A:346:ARG:HH12	1.83	0.43
1:A:423:ASN:O	1:A:425:GLU:N	2.52	0.43
1:C:454:ASP:OD1	1:C:454:ASP:N	2.51	0.43
1:C:516:TYR:CE1	1:C:518:LEU:HB2	2.53	0.43
1:D:180:PRO:HB2	1:D:183:SER:OG	2.19	0.43
1:D:205:GLN:NE2	1:D:206:LEU:HD23	2.34	0.43
1:E:74:PHE:CD2	1:F:149:ILE:HD12	2.54	0.43
1:E:389:ASP:O	1:E:391:SER:N	2.52	0.43
1:F:175:ARG:HE	1:F:175:ARG:HB3	1.63	0.43
1:F:209:PRO:HB3	1:F:587:ASP:HB2	1.99	0.43
1:A:504:LYS:HE3	1:A:504:LYS:HB2	1.71	0.43
1:D:209:PRO:O	1:D:210:SER:OG	2.27	0.43
1:F:149:ILE:HD13	1:F:149:ILE:HA	1.85	0.43
1:F:458:ILE:HG23	1:F:470:LEU:HD11	2.00	0.43
1:A:441:CYS:O	1:B:484:ARG:NH2	2.51	0.43
1:B:5:LEU:HB2	1:B:30:VAL:HG22	2.01	0.43
1:B:77:TYR:OH	1:B:106:MET:HB3	2.19	0.43
1:B:486:VAL:HG23	1:B:491:ILE:HG12	2.01	0.43
1:D:82:TRP:CD1	1:D:113:ALA:HB2	2.54	0.43
1:E:5:LEU:HD23	1:E:5:LEU:HA	1.86	0.43
1:E:213:ILE:HG21	1:F:196:MET:HG2	2.00	0.43
1:F:325:ASP:OD2	1:F:541:ASN:HB2	2.19	0.43
1:F:483:MET:O	1:F:487:ILE:HG12	2.19	0.43
1:A:566:ARG:HD2	1:A:566:ARG:HA	1.77	0.42
1:B:258:GLN:HE21	1:B:313:ARG:NH2	2.16	0.42
1:F:219:GLN:O	1:F:223:GLN:HG2	2.19	0.42
1:A:112:LYS:O	1:A:116:LEU:HB2	2.19	0.42
1:A:416:VAL:HG21	1:A:435:PHE:HE1	1.84	0.42
1:A:440:ARG:HG3	1:B:459:TRP:CZ2	2.54	0.42
1:B:60:THR:HG21	1:B:84:TRP:CD1	2.53	0.42
1:B:133:ASN:HB3	1:B:136:GLU:HG2	1.99	0.42
1:C:459:TRP:CZ2	1:D:440:ARG:HD2	2.54	0.42
1:E:218:ALA:HA	1:E:221:TRP:HB3	2.01	0.42
1:F:418:LEU:CD1	1:F:435:PHE:CE1	2.97	0.42
1:A:270:ASP:OD1	1:A:272:THR:OG1	2.31	0.42
1:B:211:LEU:CD1	1:B:212:ALA:H	2.29	0.42
1:A:138:PHE:O	1:A:142:GLN:HG2	2.20	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:489:ARG:HD3	1:B:468:ARG:CD	2.49	0.42
1:D:200:THR:O	1:D:204:ASN:ND2	2.41	0.42
1:E:3:ARG:HD2	1:E:27:PHE:HA	2.00	0.42
1:E:82:TRP:CE3	1:E:182:ILE:HD13	2.53	0.42
1:E:476:LEU:HD12	1:E:476:LEU:HA	1.88	0.42
1:F:56:ARG:HH12	1:F:58:SER:HB3	1.85	0.42
1:A:76:PHE:HD2	1:A:175:ARG:HB3	1.84	0.42
1:A:243:HIS:HD2	1:A:533:ASP:HA	1.85	0.42
1:A:463:TYR:HD1	1:B:466:HIS:CD2	2.37	0.42
1:C:137:MET:HA	1:C:140:ALA:HB3	2.01	0.42
1:C:392:ASP:HA	1:C:395:LYS:HG3	2.01	0.42
1:E:72:ARG:HG3	1:E:73:ASP:N	2.35	0.42
1:E:112:LYS:HZ3	1:E:186:ILE:HD11	1.84	0.42
1:E:149:ILE:HD12	1:E:149:ILE:HA	1.91	0.42
1:A:351:VAL:O	1:A:355:ILE:HG13	2.20	0.42
1:B:180:PRO:O	1:B:183:SER:OG	2.20	0.42
1:C:179:LYS:HZ3	1:C:180:PRO:HD2	1.83	0.42
1:E:137:MET:SD	1:E:137:MET:N	2.88	0.42
1:E:255:LEU:HD22	1:E:255:LEU:H	1.85	0.42
1:F:88:LYS:O	1:F:90:PRO:HD2	2.20	0.42
1:F:457:GLY:HA2	1:F:460:GLN:HE22	1.84	0.42
1:A:118:GLY:HA2	1:A:156:GLY:HA3	2.01	0.42
1:A:217:ILE:HD12	1:A:220:GLN:HE21	1.85	0.42
1:B:183:SER:O	1:B:186:ILE:HG12	2.20	0.42
1:B:418:LEU:HD11	1:B:435:PHE:HZ	1.85	0.42
1:D:4:VAL:HG22	1:D:29:GLU:HB2	2.02	0.42
1:D:208:PHE:O	1:D:210:SER:N	2.49	0.42
1:E:95:PRO:HD2	1:E:119:ALA:HA	2.01	0.42
1:E:162:ARG:HD2	1:E:599:LYS:HB3	2.02	0.42
1:B:86:LEU:HD23	1:B:167:LEU:HD11	2.01	0.42
1:C:250:ALA:O	1:C:300:ASN:ND2	2.52	0.42
1:C:339:TYR:HB2	1:C:351:VAL:HG11	2.02	0.42
1:D:200:THR:HA	1:D:203:SER:HB3	2.01	0.42
1:E:133:ASN:ND2	1:E:136:GLU:HB2	2.35	0.42
1:F:424:LYS:O	1:F:427:ARG:HD2	2.19	0.42
1:A:84:TRP:NE1	1:A:88:LYS:HD2	2.35	0.42
1:A:326:ASN:HA	1:A:372:PHE:HE2	1.85	0.42
1:A:384:ARG:HD2	1:A:426:THR:HB	2.01	0.42
1:C:68:ILE:HD11	1:C:77:TYR:CD2	2.52	0.42
1:D:105:SER:OG	1:D:106:MET:HE1	2.19	0.42
1:D:500:ASN:OD1	1:D:516:TYR:OH	2.24	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:419:ALA:HB2	1:E:448:HIS:HB3	2.01	0.42
1:E:422:GLU:OE1	1:E:452:ASN:N	2.43	0.42
1:F:302:SER:O	1:F:306:LYS:HG3	2.20	0.42
1:A:569:ILE:HD11	1:A:586:PHE:CD2	2.55	0.41
1:C:477:LEU:HD21	1:C:520:LYS:HD2	2.01	0.41
1:F:34:THR:HG22	1:F:35:THR:O	2.20	0.41
1:A:162:ARG:HG3	1:A:599:LYS:HB3	2.02	0.41
1:B:360:THR:HG23	1:B:410:VAL:HG22	2.02	0.41
1:B:574:ILE:HD11	1:B:579:ARG:HE	1.85	0.41
1:C:45:LEU:HB3	1:C:57:PHE:CZ	2.55	0.41
1:E:256:LEU:HD21	1:E:260:ARG:NH1	2.35	0.41
1:E:446:THR:HG23	1:E:469:ARG:HB2	2.02	0.41
1:A:116:LEU:HD23	1:A:116:LEU:HA	1.88	0.41
1:A:122:VAL:HG13	1:A:151:MET:SD	2.60	0.41
1:A:159:ALA:HB3	1:A:596:ILE:HA	2.02	0.41
1:B:432:GLU:H	1:B:432:GLU:CD	2.24	0.41
1:C:123:PHE:HB3	1:C:150:GLU:HG2	2.01	0.41
1:E:339:TYR:HB2	1:E:351:VAL:HG11	2.02	0.41
1:F:184:LYS:O	1:F:187:GLU:HG3	2.19	0.41
1:A:65:LEU:HD23	1:A:65:LEU:HA	1.81	0.41
1:A:214:LEU:CD2	1:A:218:ALA:HB3	2.50	0.41
1:A:456:GLU:OE2	1:A:460:GLN:NE2	2.53	0.41
1:A:577:ASP:O	1:A:581:GLU:HG2	2.20	0.41
1:B:173:CYS:SG	1:B:178:PHE:HB2	2.61	0.41
1:C:258:GLN:HB3	1:C:313:ARG:HH21	1.85	0.41
1:D:293:TYR:HE2	1:D:503:ILE:HD11	1.85	0.41
1:E:216:PRO:HA	1:E:219:GLN:HB2	2.03	0.41
1:E:326:ASN:HA	1:E:372:PHE:HE2	1.85	0.41
1:F:20:PHE:HE1	1:F:55:VAL:HG11	1.85	0.41
1:E:138:PHE:O	1:E:142:GLN:HG2	2.21	0.41
1:E:190:LEU:HD23	1:E:190:LEU:HA	1.94	0.41
1:F:133:ASN:OD1	1:F:134:ILE:N	2.54	0.41
1:D:484:ARG:O	1:D:488:GLU:HG3	2.21	0.41
1:E:217:ILE:O	1:E:220:GLN:NE2	2.53	0.41
1:D:458:ILE:HG23	1:D:470:LEU:HD11	2.02	0.41
1:F:470:LEU:HD23	1:F:471:GLY:N	2.36	0.41
1:F:509:MET:HB2	1:F:512:PHE:HD2	1.84	0.41
1:B:13:SER:H	1:B:132:ARG:HH12	1.68	0.41
1:B:211:LEU:HD12	1:B:212:ALA:N	2.28	0.41
1:B:332:ILE:HD13	1:B:332:ILE:HA	1.91	0.41
1:B:346:ARG:HH21	1:B:351:VAL:HG22	1.86	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:233:TRP:O	1:C:237:LEU:HG	2.21	0.41
1:C:282:PRO:HB3	1:C:538:SER:O	2.20	0.41
1:D:577:ASP:O	1:D:581:GLU:HG2	2.20	0.41
1:A:85:TYR:O	1:A:89:MET:HG2	2.21	0.41
1:A:180:PRO:O	1:A:184:LYS:NZ	2.41	0.41
1:A:305:LEU:HD11	1:A:311:LEU:HD12	2.03	0.41
1:B:406:GLN:O	1:E:342:LYS:NZ	2.37	0.41
1:B:530:VAL:HG11	1:B:546:LEU:HD23	2.03	0.41
1:C:6:LEU:O	1:C:97:VAL:HA	2.21	0.41
1:C:560:ASP:O	1:C:563:THR:HG22	2.21	0.41
1:D:139:ASP:O	1:D:143:LYS:HG3	2.20	0.41
1:D:418:LEU:HD21	1:D:435:PHE:CZ	2.55	0.41
1:D:543:SER:O	1:D:547:LEU:HD22	2.21	0.41
1:E:209:PRO:HB3	1:F:210:SER:HA	2.02	0.41
1:E:308:LYS:O	1:E:312:ILE:HG12	2.20	0.41
1:F:6:LEU:O	1:F:97:VAL:HA	2.21	0.41
1:F:82:TRP:CD1	1:F:113:ALA:HB2	2.56	0.41
1:F:162:ARG:HH21	1:F:165:LYS:HE3	1.86	0.41
1:F:384:ARG:NH1	1:F:419:ALA:C	2.74	0.41
1:F:547:LEU:HA	1:F:547:LEU:HD23	1.83	0.41
1:A:498:TYR:HB2	1:A:545:ASN:OD1	2.22	0.41
1:B:104:LYS:H	1:B:104:LYS:CD	2.33	0.41
1:B:166:ILE:HD12	1:B:166:ILE:HA	1.90	0.41
1:B:259:VAL:HG23	1:B:313:ARG:HB3	2.03	0.41
1:B:436:LYS:HD3	1:B:440:ARG:HG2	2.03	0.41
1:C:506:PHE:O	1:C:509:MET:HB3	2.20	0.41
1:D:27:PHE:HE2	1:D:96:TYR:HB2	1.86	0.41
1:D:199:ASP:OD1	1:D:200:THR:N	2.46	0.41
1:D:470:LEU:HD23	1:D:471:GLY:N	2.35	0.41
1:E:160:LEU:HD12	1:E:160:LEU:HA	1.83	0.41
1:F:515:LEU:HD11	1:F:520:LYS:HZ1	1.86	0.41
1:F:595:LEU:HD12	1:F:595:LEU:HA	1.89	0.41
1:A:476:LEU:HD11	1:A:482:LEU:HG	2.03	0.40
1:C:182:ILE:H	1:C:182:ILE:HD12	1.86	0.40
1:C:384:ARG:HD3	1:C:420:GLY:HA3	2.03	0.40
1:C:498:TYR:HB2	1:C:545:ASN:OD1	2.21	0.40
1:D:59:ILE:HD13	1:D:59:ILE:HA	1.91	0.40
1:D:367:LYS:HE2	1:D:367:LYS:HB2	1.90	0.40
1:D:417:ASP:OD1	1:D:418:LEU:N	2.54	0.40
1:D:476:LEU:O	1:D:483:MET:HG3	2.21	0.40
1:F:103:ILE:HG12	1:F:106:MET:SD	2.61	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:242:LEU:HD13	1:F:469:ARG:NH1	2.35	0.40
1:C:72:ARG:O	1:C:75:GLU:HG3	2.21	0.40
1:D:9:ALA:HB3	1:D:34:THR:HB	2.02	0.40
1:D:201:GLY:HA2	1:D:204:ASN:HD21	1.86	0.40
1:E:190:LEU:HD11	1:F:155:PRO:HA	2.02	0.40
1:E:307:ASP:HB2	1:E:310:CYS:HB2	2.02	0.40
1:B:99:LEU:HG	1:B:107:SER:HB2	2.04	0.40
1:B:345:ASN:O	1:B:345:ASN:ND2	2.53	0.40
1:C:588:ARG:HA	1:C:588:ARG:HD2	1.86	0.40
1:D:129:ASN:ND2	1:D:131:PRO:HG3	2.36	0.40
1:E:78:GLN:OE1	1:E:109:SER:OG	2.22	0.40
1:F:566:ARG:HA	1:F:566:ARG:HD2	1.71	0.40
1:B:440:ARG:HD2	1:B:440:ARG:HA	1.78	0.40
1:C:179:LYS:HA	1:C:179:LYS:HD2	1.82	0.40
1:D:431:TYR:HB2	1:D:435:PHE:HE2	1.85	0.40
1:E:5:LEU:N	1:E:29:GLU:O	2.43	0.40
1:E:469:ARG:NE	1:E:494:GLU:OE2	2.26	0.40
1:F:185:SER:O	1:F:189:ILE:HG23	2.21	0.40
1:F:207:PRO:HB2	1:F:211:LEU:HG	2.04	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	588/600 (98%)	556 (95%)	30 (5%)	2 (0%)	37 66
1	B	578/600 (96%)	545 (94%)	29 (5%)	4 (1%)	19 47
1	C	586/600 (98%)	560 (96%)	26 (4%)	0	100 100
1	D	577/600 (96%)	543 (94%)	32 (6%)	2 (0%)	37 66
1	E	589/600 (98%)	557 (95%)	32 (5%)	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	F	574/600 (96%)	537 (94%)	34 (6%)	3 (0%)	25 54
All	All	3492/3600 (97%)	3298 (94%)	183 (5%)	11 (0%)	38 66

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	205	GLN
1	B	206	LEU
1	B	211	LEU
1	D	508	PRO
1	F	90	PRO
1	A	424	LYS
1	F	209	PRO
1	A	472	HIS
1	B	210	SER
1	D	533	ASP
1	F	420	GLY

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	510/517 (99%)	485 (95%)	25 (5%)	21 48
1	B	502/517 (97%)	481 (96%)	21 (4%)	25 51
1	C	508/517 (98%)	490 (96%)	18 (4%)	31 56
1	D	500/517 (97%)	476 (95%)	24 (5%)	21 48
1	E	511/517 (99%)	488 (96%)	23 (4%)	23 50
1	F	497/517 (96%)	474 (95%)	23 (5%)	23 49
All	All	3028/3102 (98%)	2894 (96%)	134 (4%)	26 50

All (134) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	SER
1	A	14	MET
1	A	36	ASP
1	A	49	PHE
1	A	57	PHE
1	A	72	ARG
1	A	112	LYS
1	A	132	ARG
1	A	137	MET
1	A	151	MET
1	A	161	ARG
1	A	175	ARG
1	A	178	PHE
1	A	179	LYS
1	A	237	LEU
1	A	303	LYS
1	A	341	ASP
1	A	359	PHE
1	A	431	TYR
1	A	434	ASP
1	A	435	PHE
1	A	441	CYS
1	A	489	ARG
1	A	498	TYR
1	A	586	PHE
1	B	14	MET
1	B	40	PHE
1	B	47	ASP
1	B	132	ARG
1	B	138	PHE
1	B	151	MET
1	B	230	ASP
1	B	281	TRP
1	B	291	ASP
1	B	294	MET
1	B	303	LYS
1	B	333	ARG
1	B	345	ASN
1	B	359	PHE
1	B	371	GLN
1	B	431	TYR
1	B	433	HIS
1	B	498	TYR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	500	ASN
1	B	560	ASP
1	B	586	PHE
1	C	86	LEU
1	C	106	MET
1	C	137	MET
1	C	151	MET
1	C	174	SER
1	C	239	LYS
1	C	290	LEU
1	C	303	LYS
1	C	341	ASP
1	C	346	ARG
1	C	352	LEU
1	C	354	ASP
1	C	386	PHE
1	C	427	ARG
1	C	481	ASP
1	C	558	ARG
1	C	588	ARG
1	C	594	CYS
1	D	8	SER
1	D	21	HIS
1	D	36	ASP
1	D	72	ARG
1	D	75	GLU
1	D	123	PHE
1	D	148	PHE
1	D	153	TYR
1	D	162	ARG
1	D	178	PHE
1	D	208	PHE
1	D	294	MET
1	D	303	LYS
1	D	306	LYS
1	D	333	ARG
1	D	341	ASP
1	D	359	PHE
1	D	386	PHE
1	D	389	ASP
1	D	427	ARG
1	D	430	TYR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	D	500	ASN
1	D	542	LEU
1	D	560	ASP
1	E	3	ARG
1	E	57	PHE
1	E	78	GLN
1	E	151	MET
1	E	175	ARG
1	E	178	PHE
1	E	237	LEU
1	E	290	LEU
1	E	343	ASN
1	E	344	LYS
1	E	374	CYS
1	E	406	GLN
1	E	424	LYS
1	E	433	HIS
1	E	441	CYS
1	E	452	ASN
1	E	454	ASP
1	E	496	CYS
1	E	498	TYR
1	E	516	TYR
1	E	586	PHE
1	E	597	SER
1	E	599	LYS
1	F	20	PHE
1	F	40	PHE
1	F	56	ARG
1	F	86	LEU
1	F	106	MET
1	F	123	PHE
1	F	137	MET
1	F	147	HIS
1	F	151	MET
1	F	181	LEU
1	F	208	PHE
1	F	230	ASP
1	F	294	MET
1	F	295	GLU
1	F	310	CYS
1	F	325	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	F	333	ARG
1	F	374	CYS
1	F	389	ASP
1	F	430	TYR
1	F	500	ASN
1	F	515	LEU
1	F	516	TYR

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	220	GLN
1	B	258	GLN
1	B	406	GLN
1	B	500	ASN
1	C	129	ASN
1	C	204	ASN
1	D	204	ASN
1	D	205	GLN
1	E	145	GLN
1	F	204	ASN
1	F	531	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

Of 9 ligands modelled in this entry, 6 are monoatomic - leaving 3 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	$\#\|Z\| > 2$
3	ATP	F	701	-	28,33,33	4.06	9 (32%)	34,52,52	1.61	2 (5%)
3	ATP	D	701	-	28,33,33	4.06	9 (32%)	34,52,52	1.59	2 (5%)
3	ATP	B	701	-	28,33,33	4.06	9 (32%)	34,52,52	1.59	2 (5%)

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	ATP	F	701	-	-	3/18/38/38	0/3/3/3
3	ATP	D	701	-	-	3/18/38/38	0/3/3/3
3	ATP	B	701	-	-	5/18/38/38	0/3/3/3

All (27) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	701	ATP	O4'-C1'	16.46	1.62	1.40
3	D	701	ATP	O4'-C1'	16.45	1.62	1.40
3	F	701	ATP	O4'-C1'	16.42	1.62	1.40
3	F	701	ATP	O4'-C4'	-7.73	1.27	1.45
3	D	701	ATP	O4'-C4'	-7.73	1.27	1.45
3	B	701	ATP	O4'-C4'	-7.71	1.27	1.45
3	F	701	ATP	PB-O3A	5.34	1.65	1.59
3	D	701	ATP	PB-O3A	5.26	1.65	1.59
3	B	701	ATP	PB-O3A	5.24	1.65	1.59
3	B	701	ATP	PA-O3A	5.23	1.65	1.59
3	B	701	ATP	PB-O3B	5.21	1.65	1.59
3	F	701	ATP	PA-O3A	5.20	1.65	1.59
3	D	701	ATP	PA-O3A	5.18	1.65	1.59
3	F	701	ATP	PB-O3B	5.14	1.65	1.59
3	D	701	ATP	PB-O3B	5.13	1.65	1.59
3	B	701	ATP	O2'-C2'	3.31	1.51	1.43

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	701	ATP	O2'-C2'	3.30	1.51	1.43
3	D	701	ATP	O2'-C2'	3.30	1.51	1.43
3	F	701	ATP	C6-N6	3.21	1.45	1.34
3	D	701	ATP	C6-N6	3.19	1.45	1.34
3	B	701	ATP	C6-N6	3.19	1.45	1.34
3	F	701	ATP	O3'-C3'	-2.62	1.36	1.43
3	D	701	ATP	O3'-C3'	-2.61	1.36	1.43
3	B	701	ATP	O3'-C3'	-2.60	1.36	1.43
3	B	701	ATP	C1'-N9	-2.23	1.44	1.49
3	D	701	ATP	C1'-N9	-2.21	1.44	1.49
3	F	701	ATP	C1'-N9	-2.18	1.44	1.49

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	F	701	ATP	C4'-O4'-C1'	-6.10	104.34	109.92
3	B	701	ATP	C4'-O4'-C1'	-5.94	104.48	109.92
3	D	701	ATP	C4'-O4'-C1'	-5.94	104.49	109.92
3	F	701	ATP	N3-C2-N1	-5.70	120.94	128.67
3	B	701	ATP	N3-C2-N1	-5.68	120.96	128.67
3	D	701	ATP	N3-C2-N1	-5.68	120.96	128.67

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	701	ATP	C5'-O5'-PA-O3A
3	D	701	ATP	C5'-O5'-PA-O2A
3	D	701	ATP	C5'-O5'-PA-O3A
3	F	701	ATP	C5'-O5'-PA-O3A
3	B	701	ATP	C5'-O5'-PA-O1A
3	D	701	ATP	C5'-O5'-PA-O1A
3	F	701	ATP	C5'-O5'-PA-O1A
3	F	701	ATP	C5'-O5'-PA-O2A
3	B	701	ATP	PA-O3A-PB-O1B
3	B	701	ATP	O4'-C4'-C5'-O5'
3	B	701	ATP	PA-O3A-PB-O2B

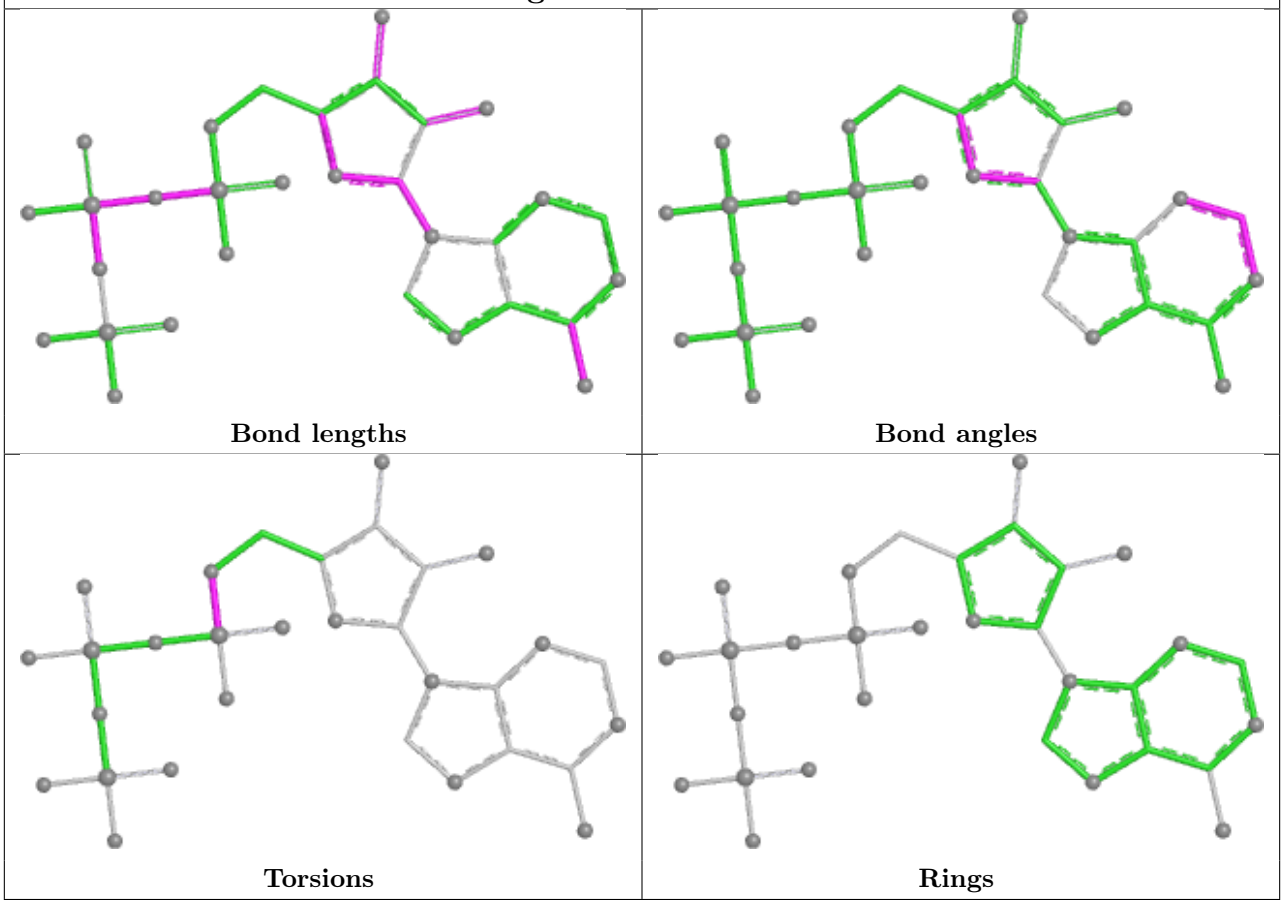
There are no ring outliers.

3 monomers are involved in 4 short contacts:

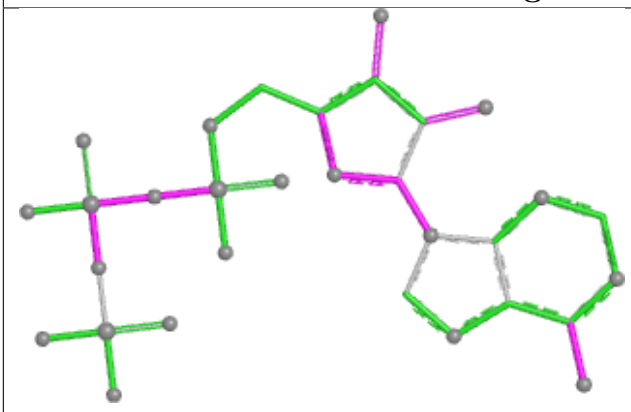
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	F	701	ATP	2	0
3	D	701	ATP	1	0
3	B	701	ATP	1	0

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.

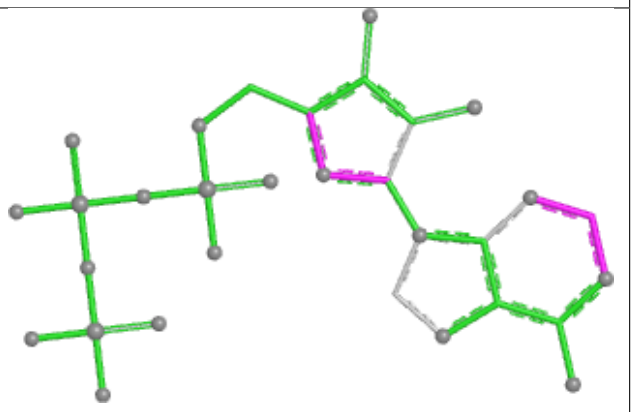
Ligand ATP F 701



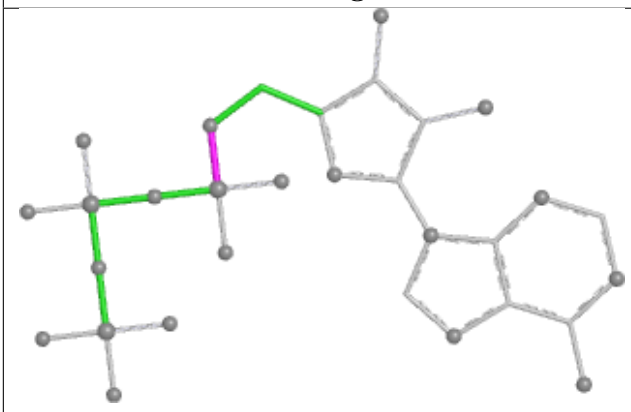
Ligand ATP D 701



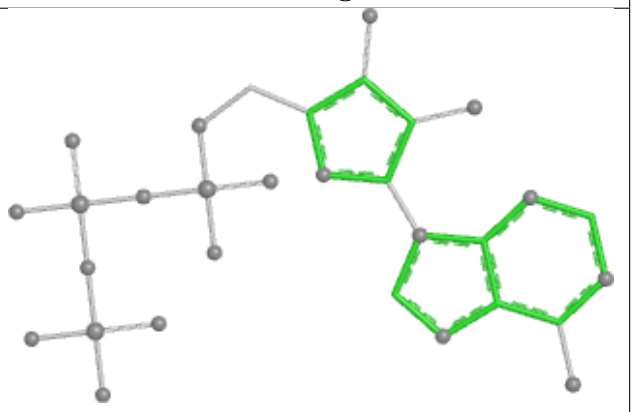
Bond lengths



Bond angles

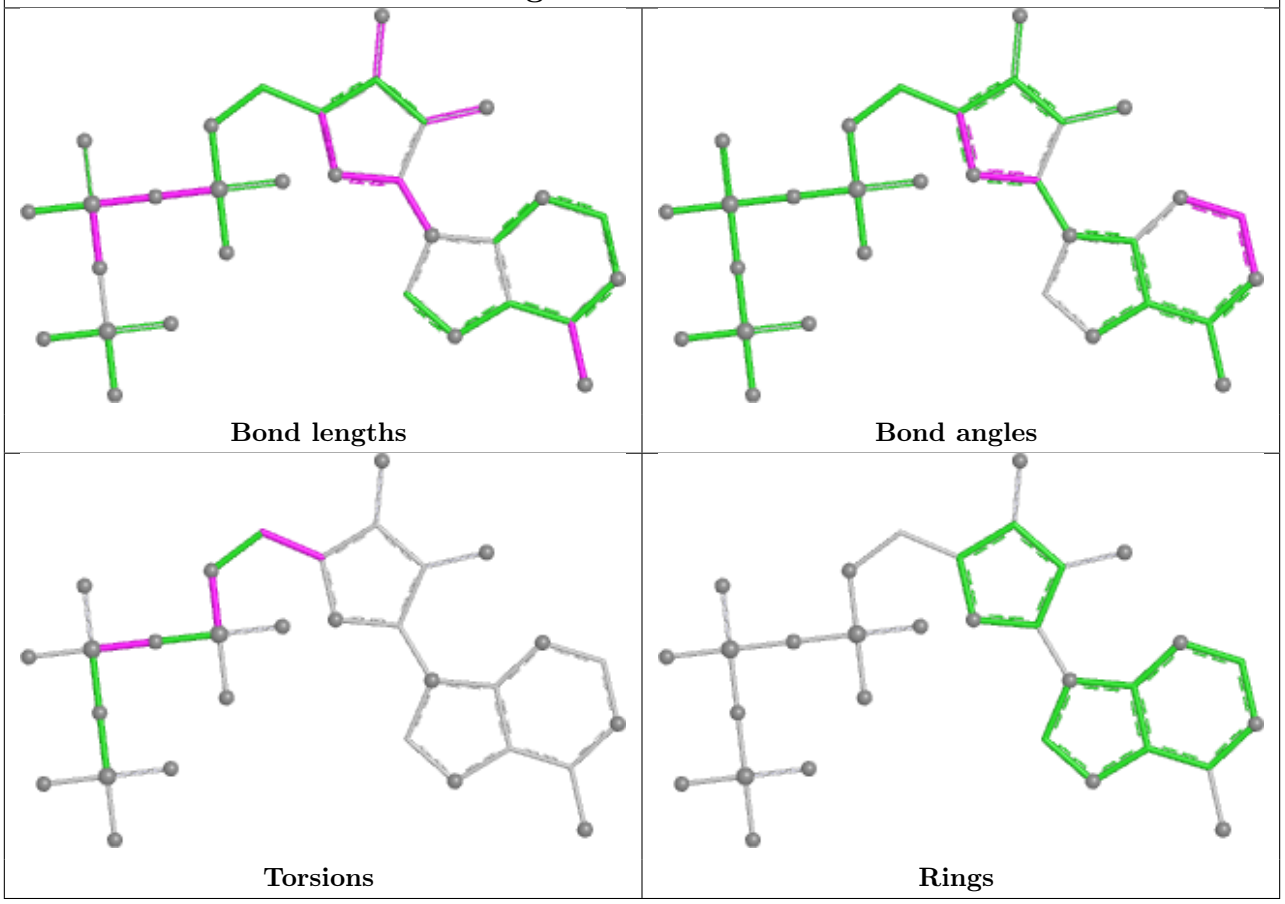


Torsions



Rings

Ligand ATP B 701



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.

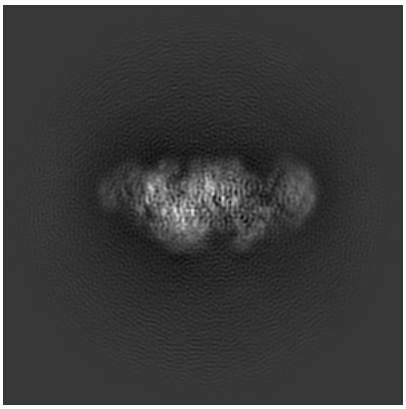
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-45244. These allow visual inspection of the internal detail of the map and identification of artifacts.

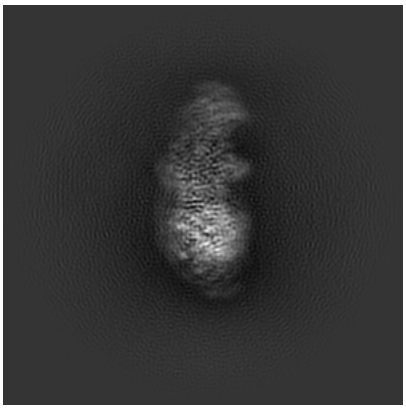
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

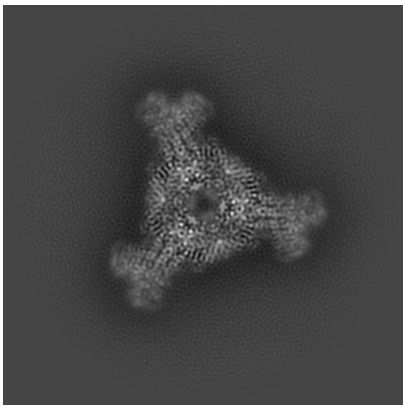
6.1.1 Primary map



X

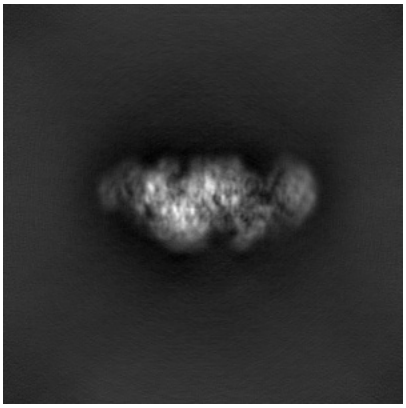


Y

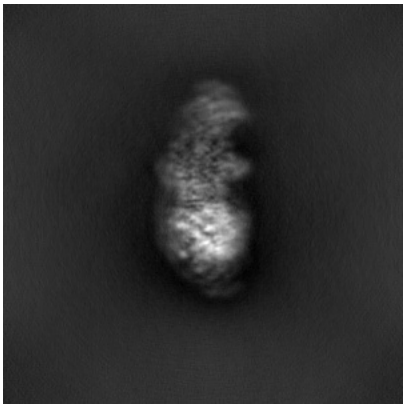


Z

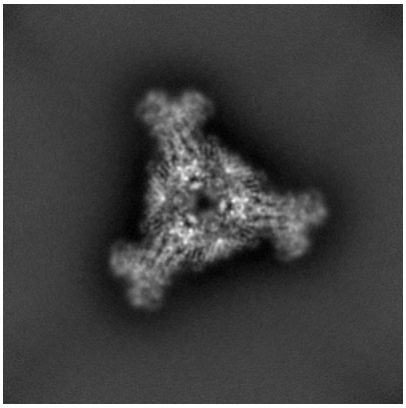
6.1.2 Raw map



X



Y

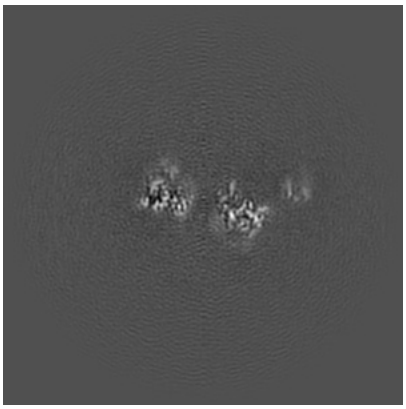


Z

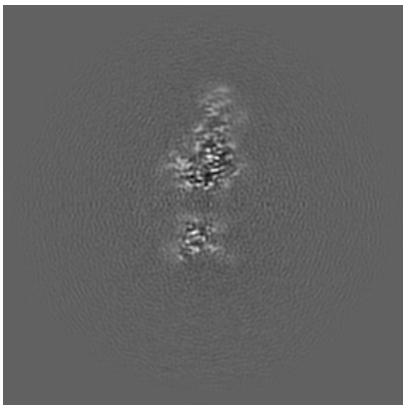
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

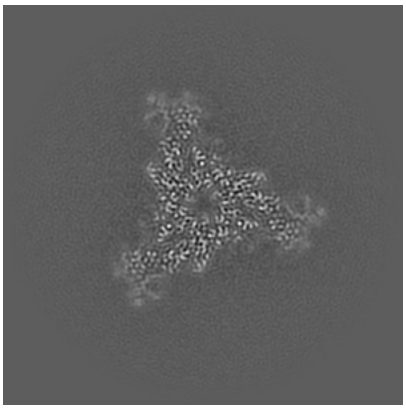
6.2.1 Primary map



X Index: 160

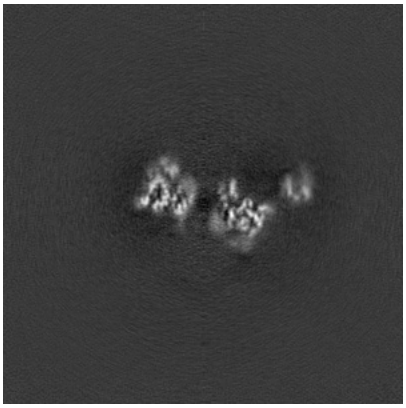


Y Index: 160

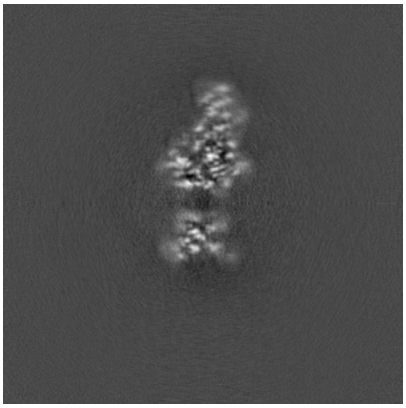


Z Index: 160

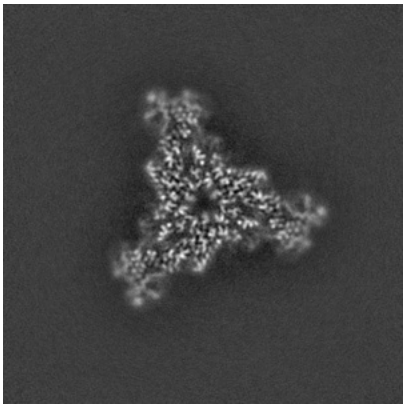
6.2.2 Raw map



X Index: 160



Y Index: 160

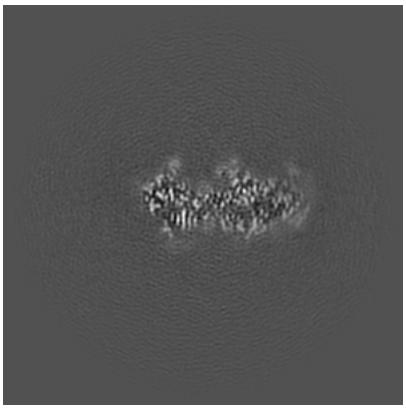


Z Index: 160

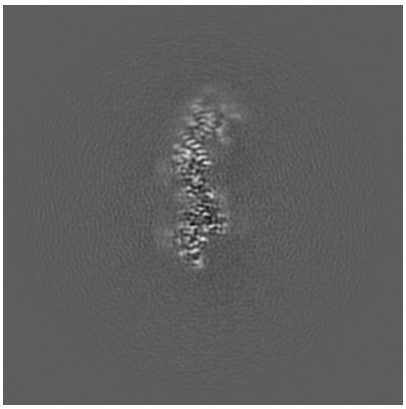
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

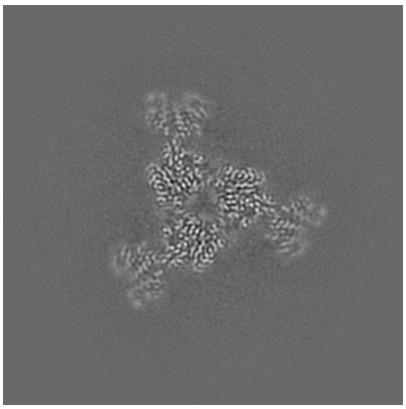
6.3.1 Primary map



X Index: 142

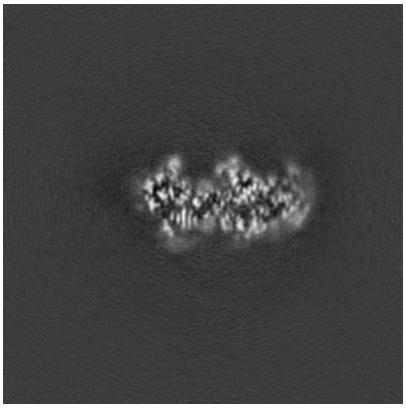


Y Index: 143

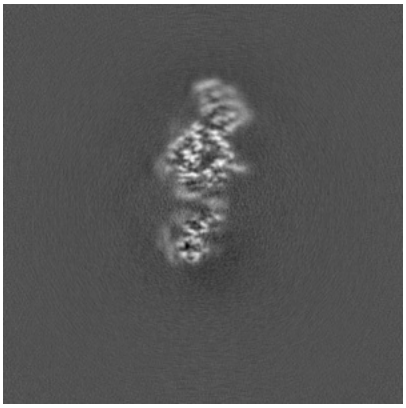


Z Index: 164

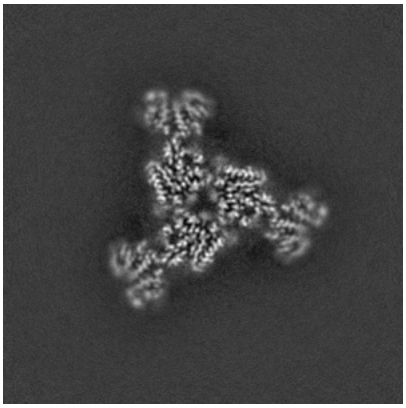
6.3.2 Raw map



X Index: 142



Y Index: 152

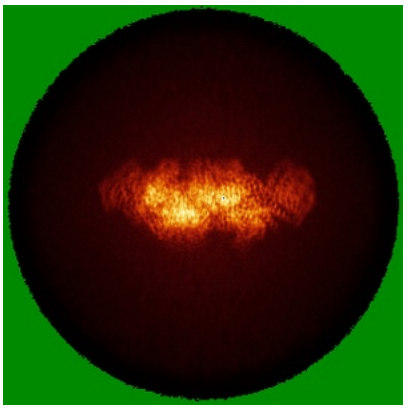


Z Index: 164

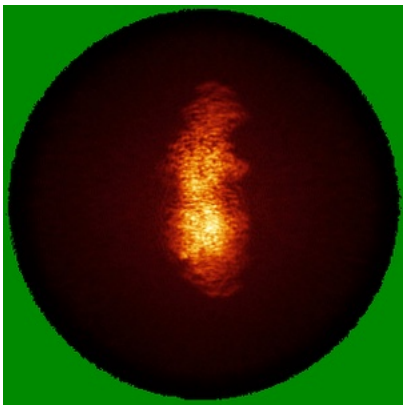
The images above show the largest variance slices of the map in three orthogonal directions.

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

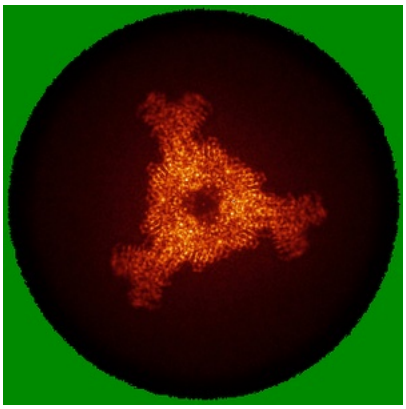
6.4.1 Primary map



X

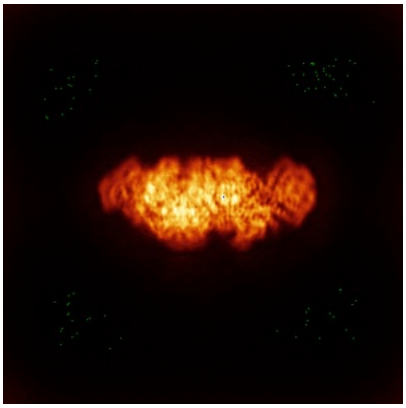


Y

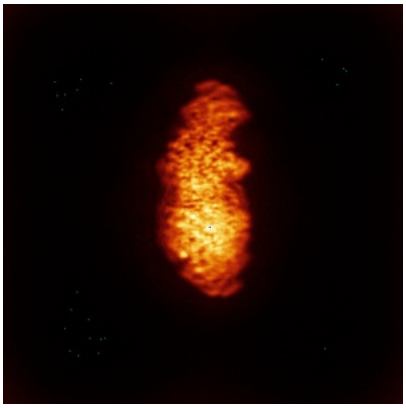


Z

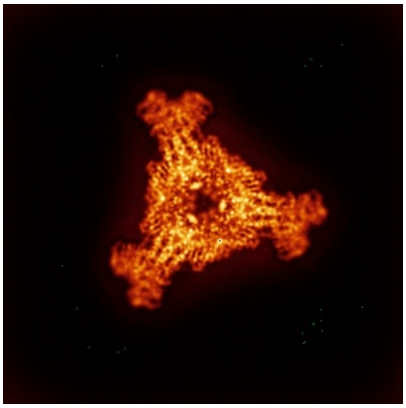
6.4.2 Raw map



X



Y

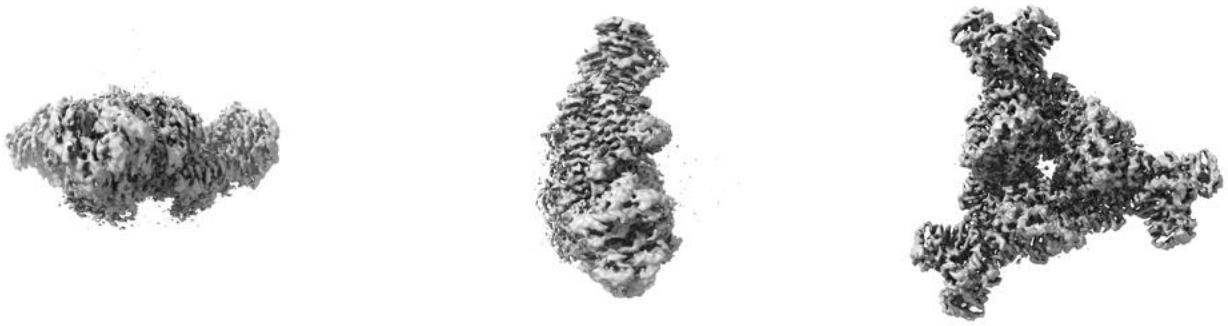


Z

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 0.237. 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.

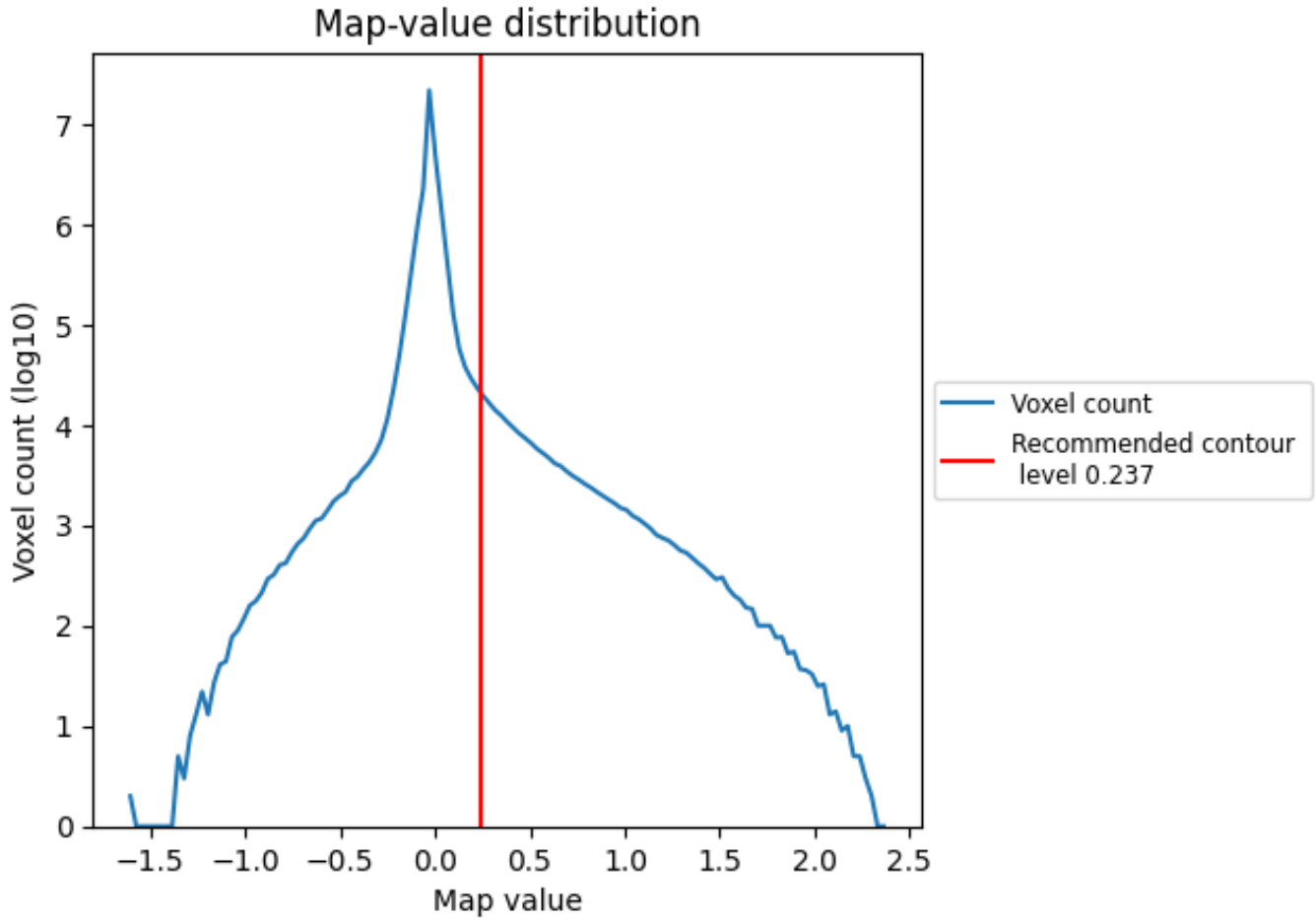
6.6 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

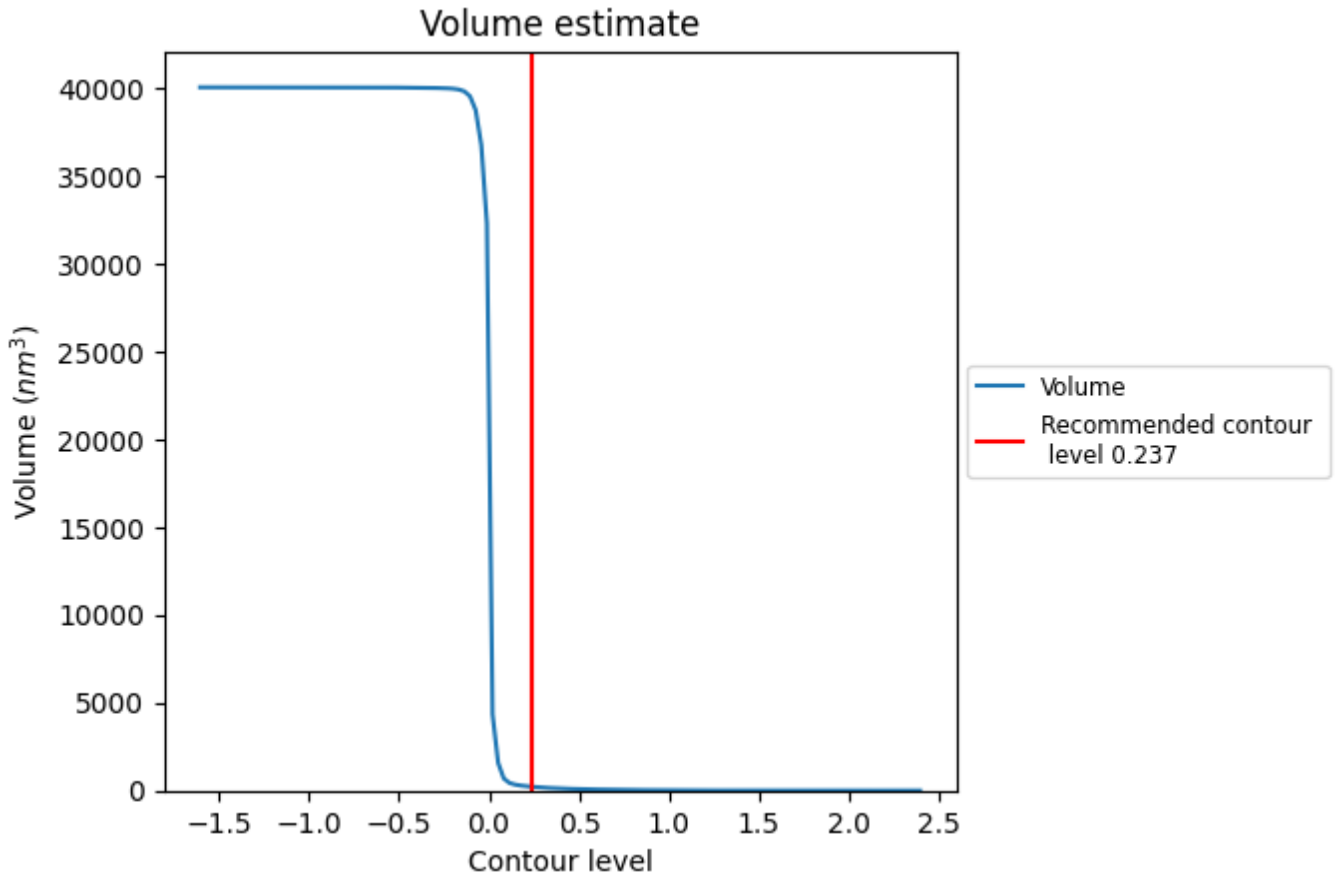
This section contains the results of statistical analysis of the map.

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.

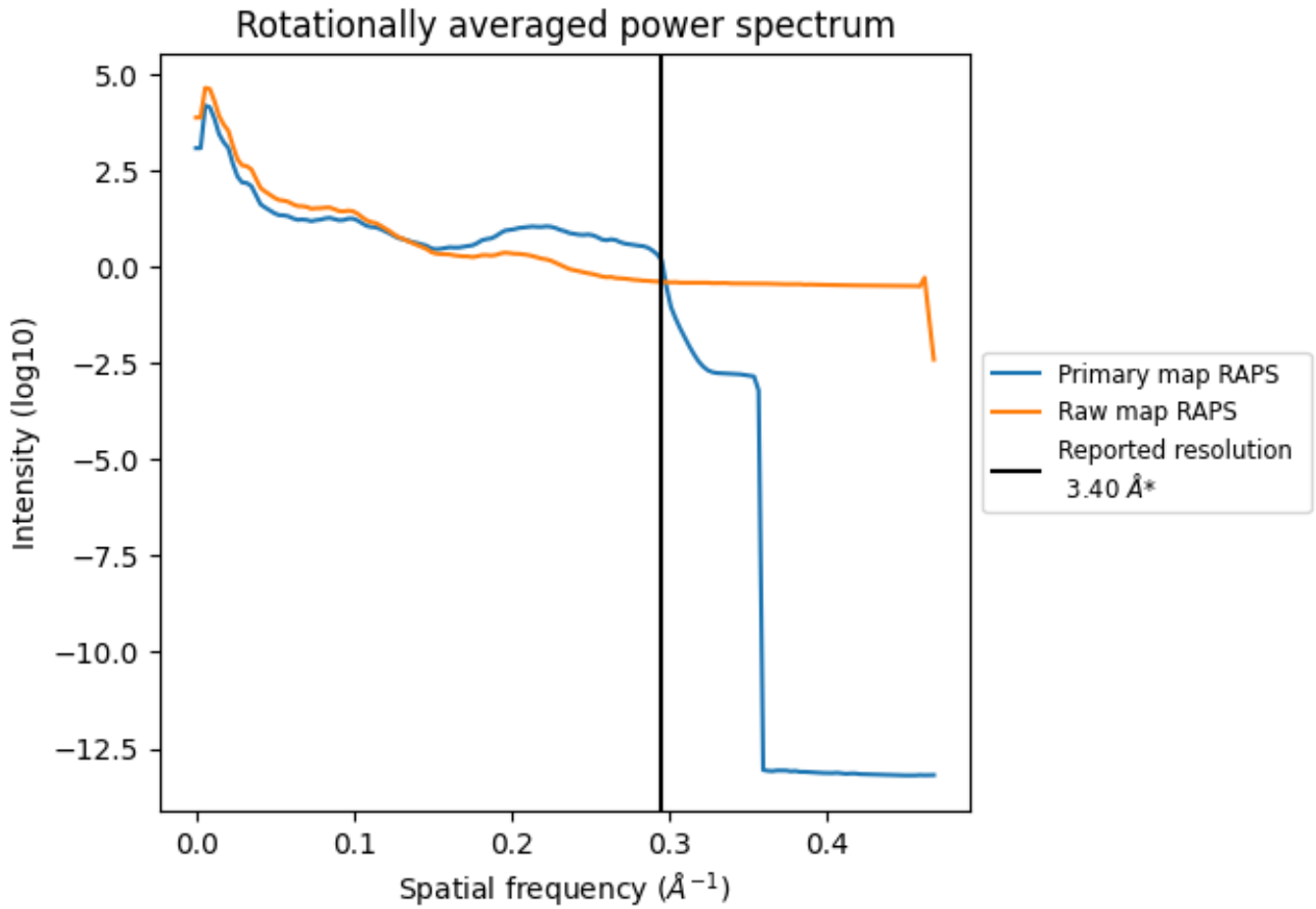
7.2 Volume estimate



The volume at the recommended contour level is 217 nm^3; this corresponds to an approximate mass of 196 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)

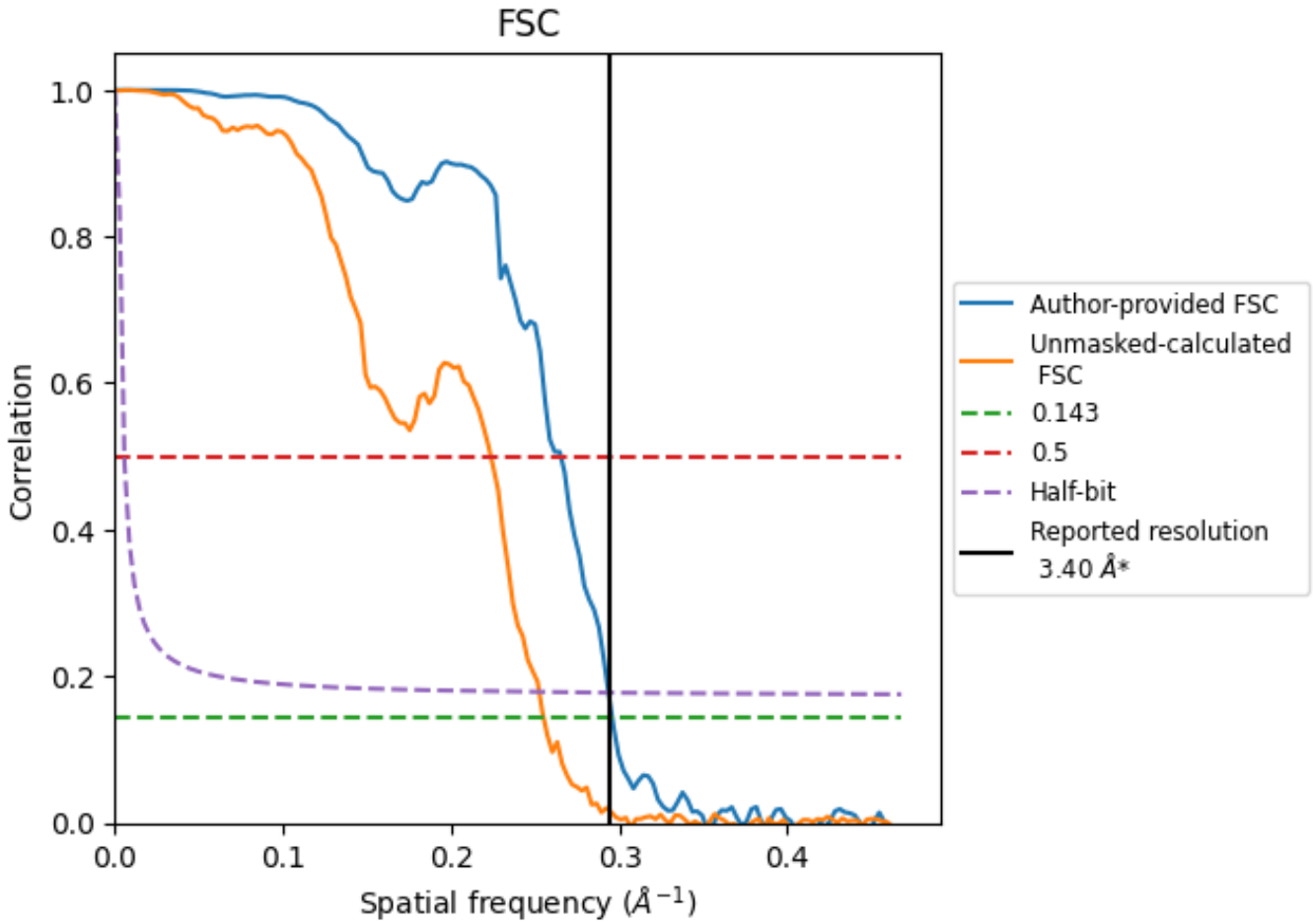


*Reported resolution corresponds to spatial frequency of 0.294 $Å^{-1}$

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 0.294 Å^{-1}

8.2 Resolution estimates (i)

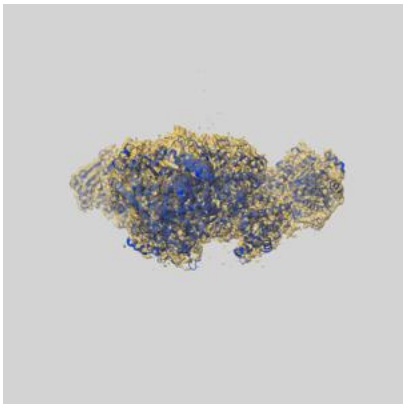
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.40	-	-
Author-provided FSC curve	3.38	3.77	3.41
Unmasked-calculated*	3.92	4.47	3.96

*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 3.92 differs from the reported value 3.4 by more than 10 %

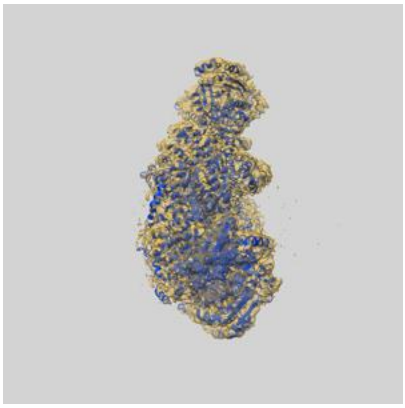
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-45244 and PDB model 9C6C. Per-residue inclusion information can be found in section 3 on page 5.

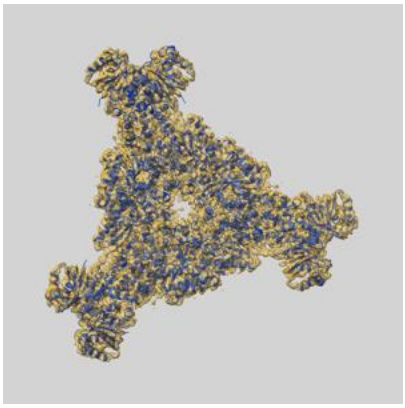
9.1 Map-model overlay



X



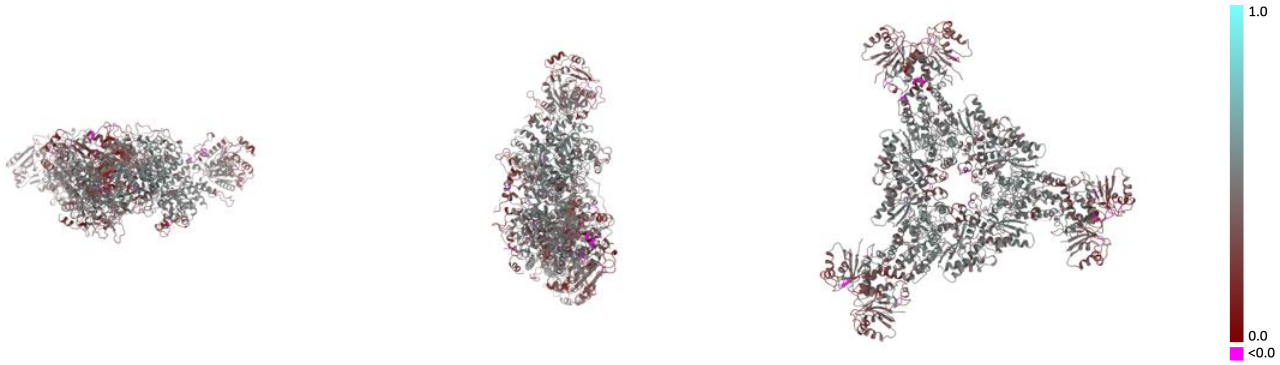
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.237 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.

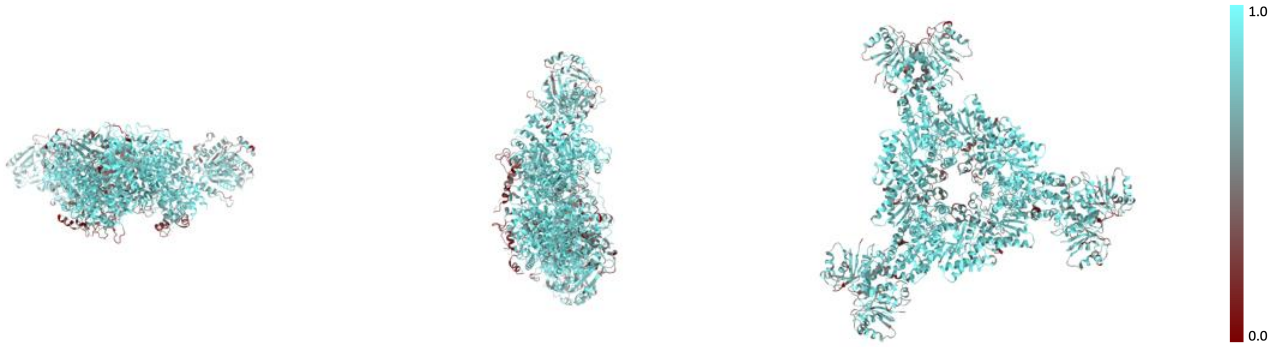
9.2 Q-score mapped to coordinate model (i)



X Y Z

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.

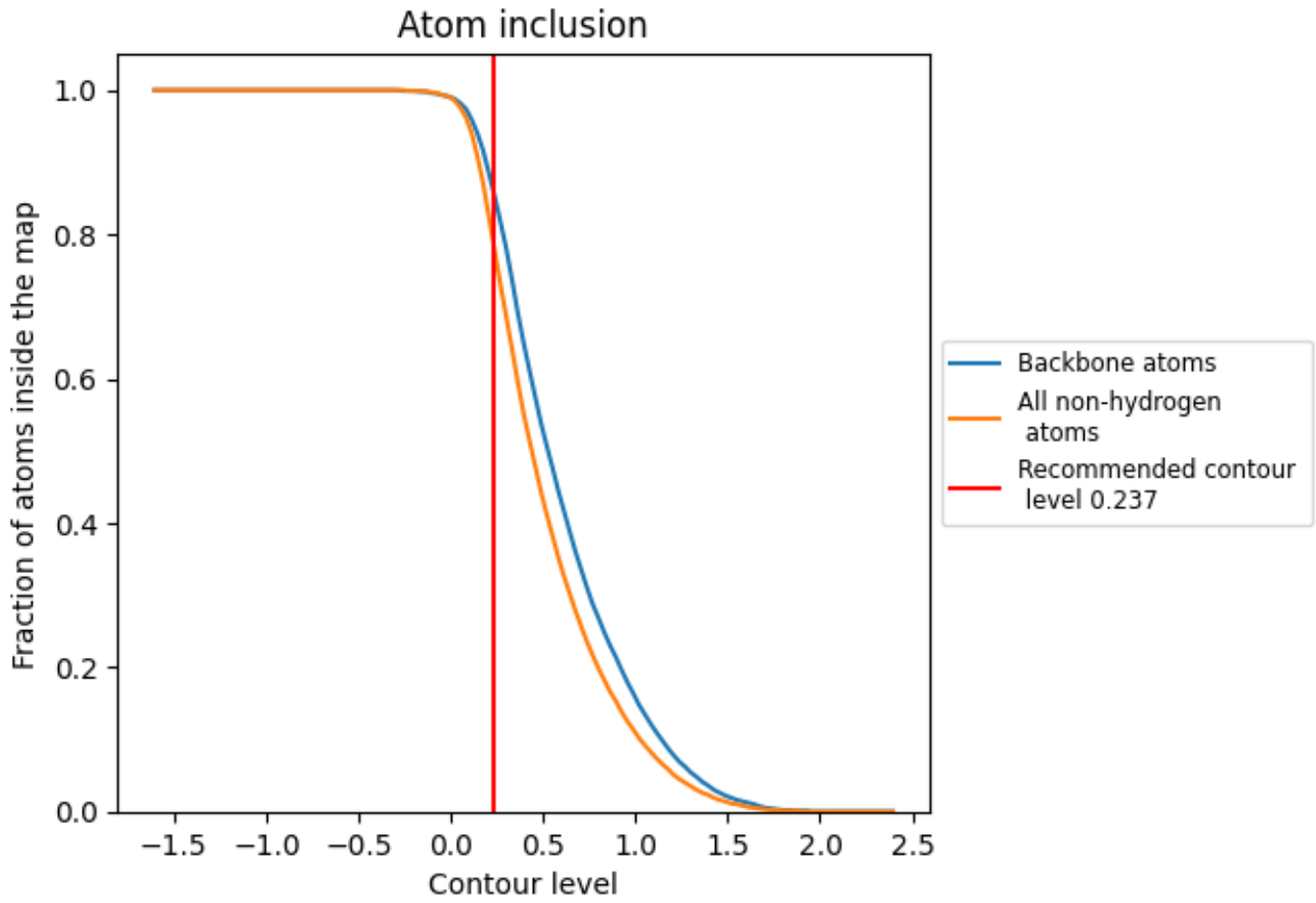
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (0.237).

9.4 Atom inclusion (i)



At the recommended contour level, 85% of all backbone atoms, 78% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.237) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7790	0.4070
A	0.8080	0.4180
B	0.7590	0.4060
C	0.7990	0.4090
D	0.7550	0.4040
E	0.8060	0.4150
F	0.7490	0.3910