



## Full wwPDB EM Validation Report ⓘ

May 13, 2024 – 08:16 pm BST

PDB ID : 6YUF  
EMDB ID : EMD-10930  
Title : Cohesin complex with loader gripping DNA  
Authors : Higashi, T.L.; Eickhoff, P.; Sousa, J.S.; Costa, A.; Uhlmann, F.  
Deposited on : 2020-04-27  
Resolution : 3.94 Å (reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev92  
Mogul : 1.8.4, 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 : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

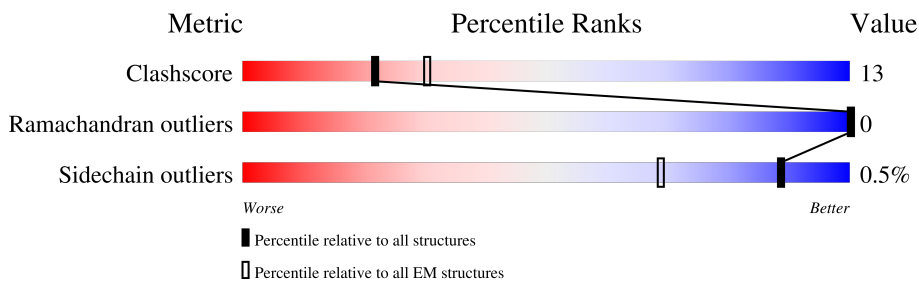
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.94 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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . 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	B	628	
2	D	1587	
3	A	1228	
4	C	1194	
5	X	32	
6	Y	32	

## 2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 19528 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 Cohesin subunit rad21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	B	152	1195	758	206	225	6	0	0

- Molecule 2 is a protein called Sister chromatid cohesion protein mis4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	D	1272	10247	6604	1687	1910	46	0	0

- Molecule 3 is a protein called Structural maintenance of chromosomes protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	A	384	3047	1932	521	587	7	0	0

- Molecule 4 is a protein called Structural maintenance of chromosomes protein 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	C	456	3665	2294	644	714	13	0	0

- Molecule 5 is a DNA chain called DNA (32-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	X	32	658	312	129	185	32	0	0

- Molecule 6 is a DNA chain called DNA (32-MER).

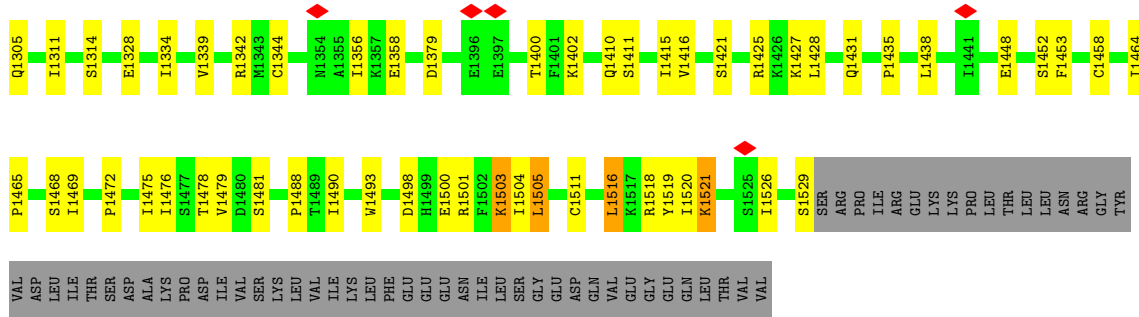
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	Y	32	654	313	110	199	32	0	0



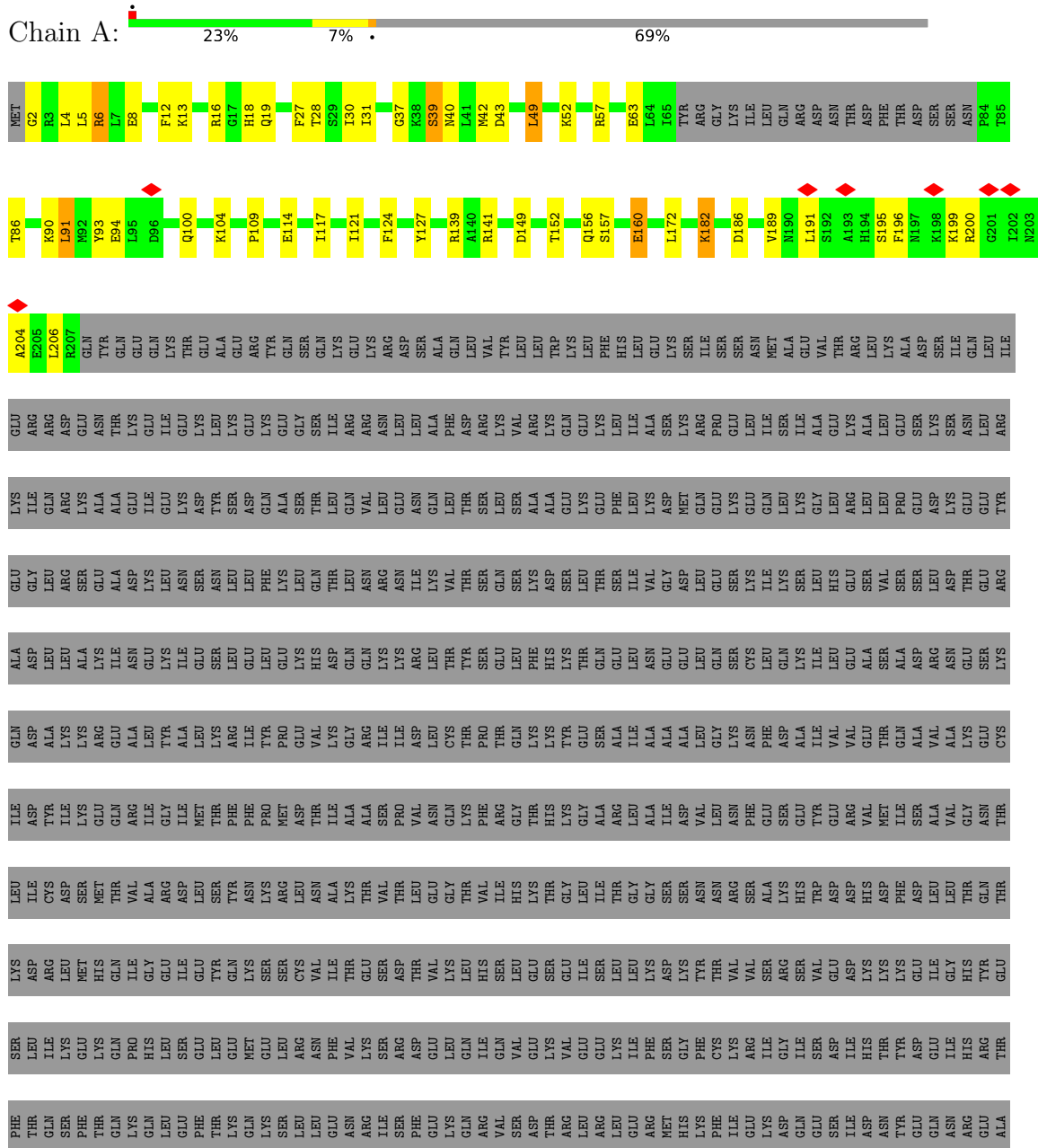
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
8	A	1	27	10	5	10	2	0
8	C	1	27	10	5	10	2	0



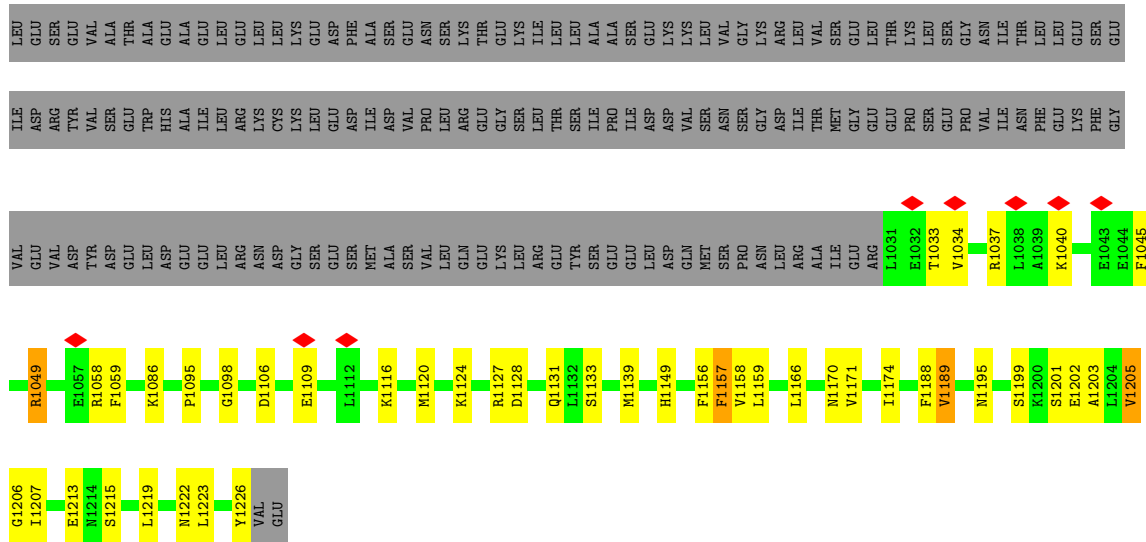




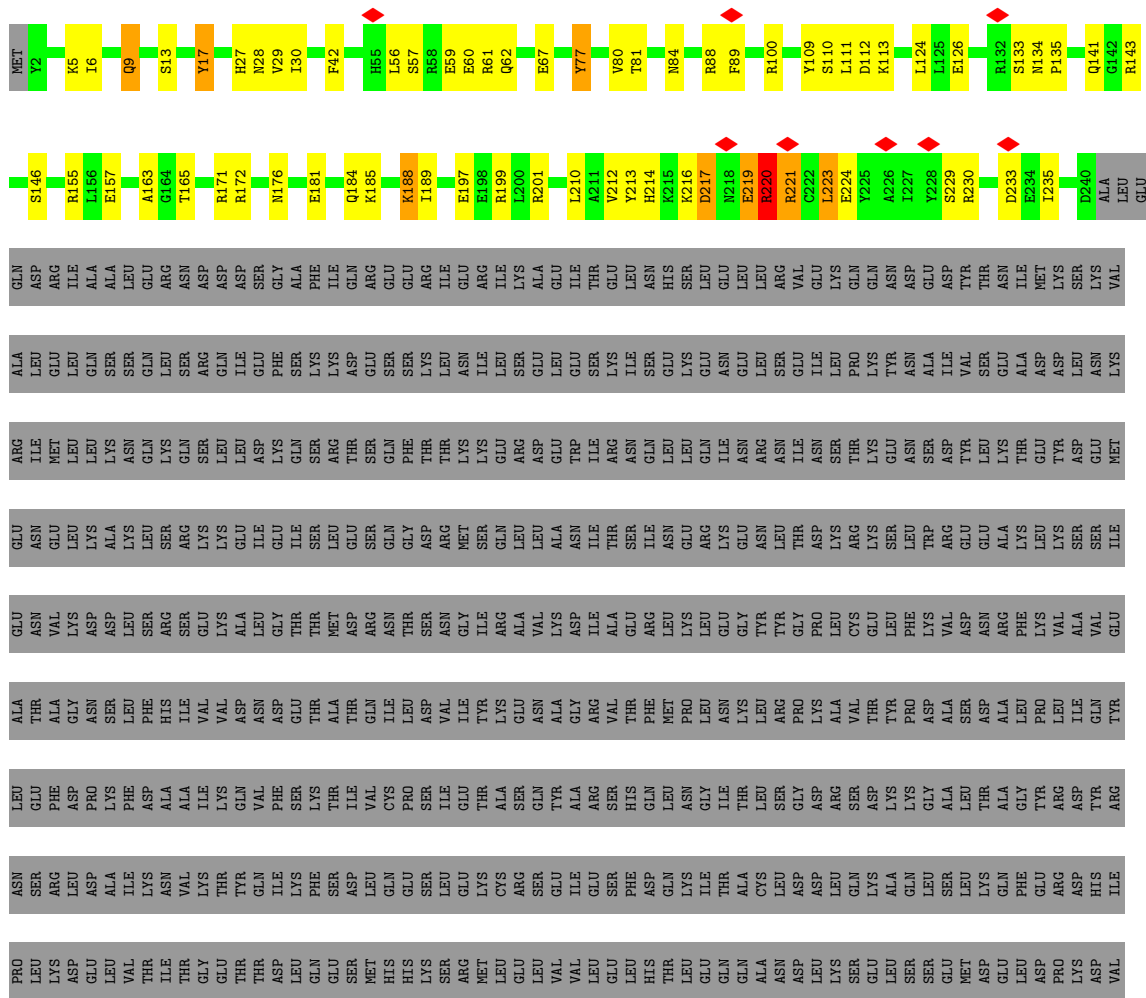
• Molecule 3: Structural maintenance of chromosomes protein 1







• Molecule 4: Structural maintenance of chromosomes protein 3





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	255148	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	33.8	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	4.069	Depositor
Minimum map value	-1.652	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.065	Depositor
Recommended contour level	0.5	Depositor
Map size ( $\text{\AA}$ )	392.40002, 392.40002, 392.40002	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.09, 1.09, 1.09	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

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

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	B	0.70	3/1211 (0.2%)	1.06	6/1634 (0.4%)
2	D	0.67	26/10425 (0.2%)	0.87	40/14086 (0.3%)
3	A	0.76	8/3100 (0.3%)	0.91	14/4170 (0.3%)
4	C	1.02	24/3717 (0.6%)	1.22	37/4996 (0.7%)
5	X	0.88	0/740	0.99	1/1139 (0.1%)
6	Y	0.87	0/730	1.15	1/1125 (0.1%)
All	All	0.78	61/19923 (0.3%)	0.98	99/27150 (0.4%)

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	B	0	1
2	D	0	3
4	C	0	2
All	All	0	6

All (61) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	9	GLN	CD-NE2	-20.98	0.80	1.32
4	C	9	GLN	CB-CG	-15.87	1.09	1.52
4	C	17	TYR	CE1-CZ	-14.38	1.19	1.38
2	D	325	PHE	CD2-CE2	-13.93	1.11	1.39
4	C	17	TYR	CG-CD1	13.48	1.56	1.39
4	C	17	TYR	CB-CG	13.21	1.71	1.51
3	A	160	GLU	CD-OE2	-12.61	1.11	1.25
4	C	9	GLN	CG-CD	-11.49	1.24	1.51
3	A	152	THR	CB-CG2	-11.30	1.15	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1029	VAL	CB-CG1	-11.17	1.29	1.52
4	C	77	TYR	CD1-CE1	-10.44	1.23	1.39
3	A	160	GLU	CB-CG	-9.55	1.34	1.52
2	D	325	PHE	CB-CG	-9.47	1.35	1.51
2	D	423	TYR	CD1-CE1	-9.07	1.25	1.39
4	C	220	ARG	CG-CD	8.62	1.73	1.51
4	C	220	ARG	CD-NE	-8.60	1.31	1.46
2	D	951	TYR	CD1-CE1	-8.57	1.26	1.39
2	D	998	CYS	CB-SG	-8.46	1.67	1.82
4	C	17	TYR	CD2-CE2	-8.07	1.27	1.39
4	C	1152	PHE	CB-CG	-8.03	1.37	1.51
4	C	1152	PHE	CE1-CZ	-7.43	1.23	1.37
4	C	219	GLU	CG-CD	-7.33	1.41	1.51
2	D	1520	ILE	CG1-CD1	-7.27	1.00	1.50
4	C	1152	PHE	CE2-CZ	-7.13	1.23	1.37
3	A	1205	VAL	CB-CG2	-7.10	1.38	1.52
4	C	1152	PHE	CG-CD2	-7.00	1.28	1.38
2	D	332	LEU	CG-CD2	-6.84	1.26	1.51
2	D	1511	CYS	CB-SG	-6.83	1.70	1.82
3	A	182	LYS	CE-NZ	-6.80	1.32	1.49
4	C	1154	CYS	CB-SG	-6.67	1.71	1.82
2	D	325	PHE	CD1-CE1	-6.55	1.26	1.39
4	C	17	TYR	CE2-CZ	6.44	1.47	1.38
2	D	1140	SER	CB-OG	-6.34	1.34	1.42
4	C	217	ASP	CB-CG	6.34	1.65	1.51
2	D	1050	LEU	CG-CD1	-6.11	1.29	1.51
3	A	1157	PHE	CE1-CZ	-6.09	1.25	1.37
2	D	852	THR	CB-CG2	-6.05	1.32	1.52
2	D	1088	GLU	CD-OE1	-5.92	1.19	1.25
2	D	602	SER	C-N	-5.91	1.20	1.34
2	D	969	LEU	CG-CD2	-5.89	1.30	1.51
4	C	964	LEU	CG-CD1	5.88	1.73	1.51
4	C	1152	PHE	CD2-CE2	-5.83	1.27	1.39
2	D	1503	LYS	CG-CD	-5.82	1.32	1.52
1	B	594	VAL	CB-CG1	-5.80	1.40	1.52
2	D	333	VAL	CB-CG1	-5.79	1.40	1.52
2	D	1034	PHE	CB-CG	-5.70	1.41	1.51
2	D	1503	LYS	CE-NZ	-5.68	1.34	1.49
2	D	1211	MET	CB-CG	-5.65	1.33	1.51
4	C	17	TYR	CZ-OH	-5.57	1.28	1.37
4	C	126	GLU	CG-CD	5.51	1.60	1.51
1	B	55	ARG	CG-CD	-5.45	1.38	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1034	PHE	CD1-CE1	-5.45	1.28	1.39
2	D	951	TYR	CG-CD1	-5.43	1.32	1.39
2	D	731	LYS	CD-CE	-5.40	1.37	1.51
3	A	1059	PHE	CB-CG	-5.40	1.42	1.51
2	D	860	ILE	CG1-CD1	-5.38	1.13	1.50
2	D	624	VAL	CB-CG1	-5.21	1.42	1.52
1	B	597	LEU	CG-CD1	-5.18	1.32	1.51
4	C	219	GLU	CD-OE1	-5.15	1.20	1.25
4	C	9	GLN	CD-OE1	-5.12	1.12	1.24
3	A	1157	PHE	CE2-CZ	-5.02	1.27	1.37

All (99) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	220	ARG	NE-CZ-NH1	-28.91	105.84	120.30
4	C	220	ARG	NE-CZ-NH2	27.54	134.07	120.30
2	D	1211	MET	CG-SD-CE	-19.59	68.85	100.20
2	D	332	LEU	CB-CG-CD1	-16.68	82.64	111.00
1	B	617	LEU	CA-CB-CG	15.22	150.31	115.30
3	A	149	ASP	CB-CG-OD2	15.13	131.92	118.30
4	C	17	TYR	CD1-CE1-CZ	-15.04	106.26	119.80
4	C	17	TYR	CB-CG-CD1	14.99	130.00	121.00
3	A	1120	MET	CG-SD-CE	-13.89	77.98	100.20
2	D	1189	LEU	CB-CG-CD2	13.85	134.54	111.00
2	D	1503	LYS	CD-CE-NZ	-13.31	81.09	111.70
4	C	964	LEU	CB-CG-CD1	12.61	132.44	111.00
4	C	957	LEU	CB-CG-CD2	-12.28	90.13	111.00
4	C	957	LEU	CB-CG-CD1	-12.23	90.21	111.00
4	C	17	TYR	CG-CD1-CE1	11.85	130.78	121.30
2	D	1227	MET	CG-SD-CE	-11.80	81.33	100.20
3	A	149	ASP	OD1-CG-OD2	-11.14	102.13	123.30
4	C	964	LEU	CB-CG-CD2	-10.82	92.60	111.00
4	C	9	GLN	CG-CD-OE1	10.57	142.74	121.60
3	A	1205	VAL	CG1-CB-CG2	-10.52	94.08	110.90
1	B	85	ARG	NE-CZ-NH2	9.94	125.27	120.30
4	C	217	ASP	CB-CG-OD1	9.53	126.87	118.30
4	C	9	GLN	CG-CD-NE2	-9.48	93.95	116.70
4	C	1142	MET	CG-SD-CE	-9.30	85.33	100.20
2	D	918	LEU	CB-CG-CD1	-8.92	95.84	111.00
2	D	999	LEU	CB-CG-CD2	8.78	125.93	111.00
4	C	17	TYR	N-CA-CB	8.77	126.39	110.60
3	A	149	ASP	CB-CG-OD1	8.48	125.94	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	1024	MET	CG-SD-CE	-8.25	87.00	100.20
2	D	332	LEU	CB-CG-CD2	-8.24	97.00	111.00
3	A	49	LEU	CB-CG-CD1	-8.24	97.00	111.00
4	C	1154	CYS	CA-CB-SG	-8.18	99.28	114.00
2	D	1303	LEU	CA-CB-CG	-8.17	96.50	115.30
4	C	17	TYR	CD1-CG-CD2	-8.11	108.97	117.90
4	C	188	LYS	CD-CE-NZ	-7.92	93.49	111.70
4	C	126	GLU	OE1-CD-OE2	-7.86	113.86	123.30
2	D	1516	LEU	CD1-CG-CD2	-7.73	87.31	110.50
3	A	1139	MET	CG-SD-CE	-7.64	87.97	100.20
2	D	520	LEU	CA-CB-CG	7.59	132.76	115.30
1	B	85	ARG	NE-CZ-NH1	-7.58	116.51	120.30
2	D	1046	LEU	CB-CG-CD1	7.55	123.84	111.00
2	D	1088	GLU	OE1-CD-OE2	-7.54	114.25	123.30
2	D	1520	ILE	CG1-CB-CG2	-7.54	94.82	111.40
4	C	17	TYR	CE1-CZ-OH	-7.53	99.77	120.10
2	D	836	ASP	CB-CG-OD1	7.52	125.07	118.30
4	C	217	ASP	OD1-CG-OD2	-7.48	109.08	123.30
2	D	1050	LEU	CB-CG-CD1	-7.42	98.38	111.00
2	D	999	LEU	CA-CB-CG	7.24	131.95	115.30
1	B	85	ARG	NH1-CZ-NH2	-7.23	111.45	119.40
2	D	1104	MET	CG-SD-CE	-7.18	88.72	100.20
2	D	1498	ASP	CB-CG-OD1	7.17	124.75	118.30
2	D	603	LEU	CA-CB-CG	7.08	131.59	115.30
4	C	17	TYR	CE1-CZ-CE2	7.07	131.11	119.80
2	D	999	LEU	CB-CA-C	-6.95	96.99	110.20
4	C	221	ARG	NE-CZ-NH1	6.81	123.71	120.30
2	D	1521	LYS	CD-CE-NZ	6.76	127.24	111.70
2	D	996	LEU	CB-CG-CD2	6.73	122.43	111.00
4	C	1156	THR	CB-CA-C	-6.68	93.56	111.60
4	C	157	GLU	OE1-CD-OE2	-6.66	115.31	123.30
2	D	1147	MET	CG-SD-CE	-6.55	89.71	100.20
4	C	1161	MET	CB-CG-SD	6.49	131.87	112.40
3	A	156	GLN	CB-CA-C	6.47	123.33	110.40
3	A	124	PHE	CB-CG-CD2	6.40	125.28	120.80
6	Y	36	DG	OP1-P-OP2	-6.37	110.05	119.60
2	D	951	TYR	CB-CG-CD1	-6.31	117.22	121.00
1	B	24	GLU	OE1-CD-OE2	-6.30	115.73	123.30
2	D	951	TYR	CB-CG-CD2	6.24	124.74	121.00
2	D	841	LEU	CB-CG-CD1	6.06	121.30	111.00
2	D	1211	MET	CA-CB-CG	6.02	123.53	113.30
2	D	1020	LEU	CA-CB-CG	5.86	128.76	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	1152	ASP	CB-CG-OD1	5.77	123.49	118.30
1	B	85	ARG	CD-NE-CZ	5.76	131.67	123.60
3	A	91	LEU	CB-CG-CD1	-5.71	101.29	111.00
3	A	1058	ARG	CG-CD-NE	5.70	123.78	111.80
4	C	9	GLN	CB-CA-C	-5.61	99.18	110.40
2	D	731	LYS	CG-CD-CE	5.58	128.66	111.90
4	C	1152	PHE	CG-CD1-CE1	-5.57	114.67	120.80
4	C	1152	PHE	CB-CG-CD2	-5.57	116.90	120.80
2	D	1379	ASP	CB-CG-OD1	5.54	123.28	118.30
2	D	1505	LEU	CB-CG-CD2	5.47	120.30	111.00
2	D	1260	LEU	CA-CB-CG	5.42	127.77	115.30
4	C	1132	ASP	CB-CG-OD1	5.33	123.10	118.30
2	D	1047	LYS	CD-CE-NZ	5.33	123.95	111.70
4	C	220	ARG	N-CA-CB	5.32	120.17	110.60
2	D	624	VAL	CA-CB-CG1	-5.29	102.97	110.90
4	C	223	LEU	CB-CG-CD1	-5.28	102.02	111.00
4	C	1152	PHE	CB-CG-CD1	5.26	124.49	120.80
4	C	219	GLU	CB-CA-C	5.25	120.90	110.40
3	A	39	SER	CB-CA-C	-5.23	100.16	110.10
4	C	217	ASP	CB-CG-OD2	5.21	122.99	118.30
3	A	1189	VAL	CG1-CB-CG2	-5.19	102.59	110.90
4	C	963	ALA	C-N-CA	-5.19	108.73	121.70
4	C	219	GLU	OE1-CD-OE2	5.18	129.52	123.30
4	C	77	TYR	CD1-CE1-CZ	5.17	124.45	119.80
2	D	1047	LYS	CB-CG-CD	5.13	124.93	111.60
2	D	1046	LEU	CA-CB-CG	5.07	126.96	115.30
5	X	25	DA	O4'-C1'-N9	5.05	111.53	108.00
3	A	1049	ARG	NE-CZ-NH2	-5.02	117.79	120.30
2	D	1260	LEU	CB-CG-CD2	5.00	119.50	111.00

There are no chirality outliers.

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	85	ARG	Sidechain
4	C	220	ARG	Sidechain
4	C	235	ILE	Peptide
2	D	1178	SER	Peptide
2	D	722	LYS	Peptide
2	D	744	SER	Peptide



## 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	B	1195	0	1238	47	0
2	D	10247	0	10549	303	0
3	A	3047	0	3045	64	0
4	C	3665	0	3668	90	0
5	X	658	0	358	7	0
6	Y	654	0	365	4	0
7	A	4	0	0	0	0
7	C	4	0	0	1	0
8	A	27	0	11	4	0
8	C	27	0	11	1	0
All	All	19528	0	19245	498	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 (498) 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)
2:D:290:ILE:HD11	2:D:346:LEU:CD1	1.66	1.25
2:D:268:TYR:HB2	2:D:332:LEU:CD2	1.73	1.18
2:D:290:ILE:CD1	2:D:346:LEU:HD12	1.73	1.16
2:D:290:ILE:HD11	2:D:346:LEU:HD12	1.01	1.00
2:D:268:TYR:HB2	2:D:332:LEU:HD21	0.99	0.96
2:D:268:TYR:CB	2:D:332:LEU:HD21	1.94	0.96
2:D:286:GLU:HG3	2:D:346:LEU:HD21	1.50	0.92
1:B:556:ALA:HB3	1:B:593:ASP:OD1	1.69	0.91
4:C:220:ARG:O	4:C:224:GLU:HB2	1.73	0.88
1:B:572:LYS:NZ	1:B:594:VAL:CG1	2.38	0.87
2:D:264:ILE:HG23	2:D:332:LEU:CD1	2.05	0.86
1:B:565:ASP:OD1	1:B:618:THR:HG22	1.76	0.85
2:D:280:CYS:HB2	2:D:340:VAL:HA	1.59	0.84
1:B:572:LYS:HZ3	1:B:594:VAL:CG1	1.89	0.84
1:B:556:ALA:CB	1:B:593:ASP:OD1	2.26	0.83
1:B:572:LYS:HZ3	1:B:594:VAL:HG13	1.44	0.81
2:D:280:CYS:SG	2:D:341:PRO:CD	2.69	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:296:LEU:HD13	2:D:333:VAL:HG11	1.62	0.81
2:D:1223:ILE:HG22	2:D:1303:LEU:HD11	1.63	0.79
2:D:280:CYS:SG	2:D:341:PRO:HD2	2.22	0.79
2:D:1024:MET:HG3	2:D:1027:LEU:HD12	1.66	0.78
3:A:1195:ASN:O	3:A:1199:SER:HB3	1.82	0.78
1:B:553:SER:HA	1:B:593:ASP:OD2	1.84	0.77
2:D:285:GLU:HG2	2:D:346:LEU:HG	1.65	0.77
2:D:801:ARG:NH1	2:D:804:ASN:OD1	2.18	0.77
2:D:477:LEU:O	2:D:480:PHE:HB3	1.85	0.76
2:D:272:THR:HG22	2:D:276:ARG:HH22	1.52	0.75
2:D:264:ILE:HG23	2:D:332:LEU:HD12	1.69	0.75
3:A:37:GLY:HA3	3:A:1207:ILE:HG21	1.69	0.74
2:D:1044:HIS:HA	2:D:1047:LYS:HE2	1.70	0.73
2:D:1143:ASN:HB3	2:D:1146:LYS:HB2	1.71	0.73
4:C:27:HIS:NE2	4:C:1154:CYS:SG	2.61	0.73
2:D:280:CYS:SG	2:D:341:PRO:HD3	2.29	0.73
2:D:1103:LEU:HG	2:D:1149:ARG:HH22	1.53	0.72
2:D:659:LYS:HB3	2:D:663:PRO:HB3	1.71	0.71
2:D:264:ILE:HG23	2:D:332:LEU:HD11	1.73	0.71
1:B:585:GLU:CD	1:B:585:GLU:H	1.95	0.70
2:D:1151:ILE:O	2:D:1210:ASN:ND2	2.24	0.70
2:D:264:ILE:CG2	2:D:332:LEU:HD11	2.22	0.69
4:C:56:LEU:HD13	4:C:61:ARG:HB2	1.72	0.69
2:D:290:ILE:HD11	2:D:346:LEU:HD11	1.71	0.69
2:D:251:ARG:NH1	2:D:257:LYS:O	2.25	0.69
4:C:143:ARG:O	4:C:146:SER:OG	2.11	0.69
2:D:1196:LEU:HB3	2:D:1204:ARG:HH21	1.58	0.69
2:D:987:THR:O	2:D:991:GLN:NE2	2.25	0.69
4:C:213:TYR:O	4:C:217:ASP:N	2.24	0.69
4:C:1114:GLN:OE1	4:C:1122:ASN:ND2	2.27	0.68
2:D:1134:LEU:HD22	2:D:1154:ILE:HG13	1.76	0.68
4:C:30:ILE:HB	4:C:1155:THR:HG22	1.75	0.68
1:B:553:SER:HA	1:B:593:ASP:CG	2.14	0.68
2:D:811:SER:HA	2:D:814:ARG:HD3	1.76	0.68
2:D:541:LEU:HG	2:D:544:HIS:H	1.58	0.68
4:C:213:TYR:HE1	4:C:964:LEU:HD13	1.59	0.68
1:B:87:LYS:HA	4:C:199:ARG:HH22	1.59	0.67
3:A:42:MET:HG3	3:A:1158:VAL:HG11	1.77	0.67
4:C:219:GLU:HG3	4:C:220:ARG:HH12	1.60	0.67
4:C:141:GLN:OE1	7:C:1201:BEF:F3	2.03	0.66
4:C:213:TYR:HA	4:C:216:LYS:HB3	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:1152:ASP:HA	2:D:1210:ASN:HD22	1.61	0.66
3:A:2:GLY:N	3:A:93:TYR:HH	1.94	0.66
2:D:1148:VAL:HA	2:D:1151:ILE:HG22	1.76	0.66
2:D:347:GLN:NE2	2:D:351:SER:OG	2.29	0.66
2:D:728:GLU:HA	2:D:731:LYS:HD2	1.79	0.65
2:D:790:SER:O	2:D:796:ARG:NH2	2.29	0.65
2:D:296:LEU:O	2:D:300:LEU:HG	1.96	0.65
2:D:286:GLU:CG	2:D:346:LEU:HD21	2.26	0.65
2:D:1095:LEU:HD21	2:D:1106:ILE:HG21	1.78	0.65
2:D:279:ALA:HA	2:D:282:LYS:HD3	1.78	0.65
2:D:466:PRO:HA	2:D:469:ARG:HB2	1.77	0.65
2:D:525:ILE:HG12	2:D:544:HIS:HB3	1.80	0.64
2:D:1501:ARG:HA	2:D:1504:ILE:HG12	1.79	0.64
2:D:296:LEU:CD1	2:D:333:VAL:HG11	2.28	0.64
2:D:1469:ILE:HD11	2:D:1526:ILE:HG21	1.80	0.64
3:A:16:ARG:HD3	3:A:1213:GLU:HB3	1.79	0.63
4:C:62:GLN:NE2	4:C:67:GLU:OE2	2.30	0.63
3:A:199:LYS:HB2	3:A:1045:PHE:HE2	1.64	0.63
4:C:172:ARG:O	4:C:176:ASN:ND2	2.29	0.63
2:D:1167:ASN:ND2	2:D:1182:ASP:OD1	2.32	0.62
2:D:261:SER:HA	2:D:264:ILE:HD12	1.80	0.62
3:A:16:ARG:O	3:A:19:GLN:NE2	2.31	0.62
2:D:1130:CYS:HA	2:D:1133:SER:HB2	1.81	0.62
2:D:213:GLN:HE21	2:D:214:ARG:HH22	1.48	0.62
2:D:272:THR:O	2:D:275:SER:OG	2.16	0.62
4:C:223:LEU:HD12	4:C:957:LEU:HD22	1.82	0.62
2:D:263:ALA:HA	2:D:266:LYS:HE2	1.82	0.61
2:D:1121:GLU:HA	2:D:1124:LYS:HE3	1.82	0.61
1:B:556:ALA:HB3	1:B:593:ASP:CG	2.21	0.61
2:D:292:VAL:O	2:D:296:LEU:HG	2.00	0.61
2:D:902:ARG:NH2	2:D:905:ASP:OD2	2.33	0.61
2:D:1305:GLN:HG2	2:D:1339:VAL:HG22	1.82	0.61
2:D:226:THR:HG22	2:D:270:ALA:HB1	1.82	0.61
2:D:285:GLU:N	2:D:285:GLU:OE1	2.32	0.61
3:A:157:SER:N	3:A:160:GLU:OE2	2.34	0.61
2:D:264:ILE:CG2	2:D:332:LEU:CD1	2.77	0.61
2:D:864:ILE:O	2:D:902:ARG:NH1	2.34	0.61
1:B:578:LEU:HB2	1:B:586:GLU:HB3	1.82	0.61
2:D:398:ALA:O	2:D:402:ASN:ND2	2.34	0.61
2:D:1268:LEU:HA	2:D:1271:LYS:HB2	1.83	0.61
2:D:1516:LEU:O	2:D:1519:TYR:N	2.34	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:1128:ASP:OD1	4:C:1128:ASP:N	2.29	0.60
3:A:1086:LYS:NZ	3:A:1098:GLY:O	2.34	0.60
2:D:1164:ASN:O	2:D:1165:ARG:NH2	2.30	0.60
2:D:1073:LEU:HD13	2:D:1113:LEU:HD21	1.82	0.60
3:A:206:LEU:HD13	3:A:1034:VAL:HG21	1.83	0.60
1:B:584:ARG:HH21	1:B:584:ARG:HG3	1.67	0.60
1:B:62:LEU:HD21	1:B:66:ARG:HH21	1.67	0.60
2:D:249:ILE:O	2:D:257:LYS:HA	2.01	0.60
1:B:16:LYS:NZ	1:B:32:THR:OG1	2.33	0.59
2:D:1295:TRP:HE1	3:A:1095:PRO:HD2	1.66	0.59
3:A:43:ASP:OD2	3:A:57:ARG:NH2	2.35	0.59
4:C:993:GLU:OE1	4:C:996:ARG:NH1	2.35	0.59
3:A:1157:PHE:HE2	3:A:1159:LEU:HD21	1.67	0.59
3:A:1201:SER:OG	3:A:1202:GLU:N	2.34	0.59
1:B:585:GLU:CD	1:B:585:GLU:N	2.56	0.59
2:D:1047:LYS:HA	2:D:1050:LEU:HD13	1.85	0.59
3:A:2:GLY:N	3:A:94:GLU:O	2.35	0.59
2:D:1342:ARG:HH22	3:A:1116:LYS:HD2	1.67	0.58
2:D:603:LEU:HB3	2:D:605:GLU:OE1	2.03	0.58
1:B:25:LYS:O	1:B:70:ARG:NH2	2.37	0.58
2:D:492:THR:HG22	2:D:493:TYR:H	1.69	0.58
3:A:49:LEU:HD11	3:A:1156:PHE:HZ	1.68	0.58
2:D:1114:PHE:O	2:D:1118:ASN:N	2.37	0.58
2:D:524:GLU:HG3	2:D:525:ILE:HG13	1.86	0.58
3:A:4:LEU:HD12	3:A:91:LEU:HD11	1.86	0.58
4:C:13:SER:O	4:C:1178:SER:OG	2.21	0.58
2:D:300:LEU:CD2	2:D:326:ILE:HD11	2.33	0.58
2:D:529:GLU:OE2	2:D:742:GLN:N	2.37	0.58
2:D:681:LEU:HA	2:D:684:LEU:HD12	1.85	0.57
2:D:300:LEU:HD23	2:D:326:ILE:HD11	1.85	0.57
2:D:218:VAL:O	2:D:222:GLN:HG2	2.05	0.57
2:D:634:LYS:HD2	2:D:795:LEU:HD21	1.86	0.57
2:D:397:VAL:HA	2:D:400:VAL:HG22	1.86	0.57
2:D:225:ASP:O	2:D:229:LEU:HG	2.05	0.57
2:D:471:PHE:O	2:D:474:GLU:HB3	2.05	0.57
2:D:836:ASP:HB2	2:D:874:ARG:HD2	1.87	0.56
4:C:1036:VAL:HG12	4:C:1038:ALA:H	1.70	0.56
2:D:290:ILE:HA	2:D:293:LYS:HE2	1.86	0.56
2:D:897:SER:OG	2:D:965:ARG:NH1	2.38	0.56
2:D:942:LEU:HB2	2:D:946:LYS:HE3	1.86	0.56
2:D:1016:THR:HG23	2:D:1019:ILE:HD13	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:139:ARG:NH1	5:X:6:DC:OP1	2.37	0.56
1:B:603:ILE:HG23	1:B:618:THR:H	1.70	0.56
2:D:274:LEU:HD13	2:D:277:LEU:HD11	1.88	0.56
2:D:324:ASP:O	2:D:328:LYS:NZ	2.33	0.56
3:A:52:LYS:HE2	5:X:6:DC:H5''	1.86	0.56
4:C:1159:PRO:HB3	4:C:1192:VAL:HG11	1.87	0.56
1:B:86:LEU:O	4:C:199:ARG:NH1	2.38	0.56
3:A:28:THR:HG22	3:A:1203:ALA:HB3	1.88	0.56
2:D:635:ASN:HD22	2:D:798:LYS:HG3	1.71	0.56
3:A:1158:VAL:HG13	3:A:1189:VAL:HG23	1.88	0.56
4:C:112:ASP:OD1	4:C:113:LYS:NZ	2.38	0.56
2:D:502:GLN:O	2:D:505:SER:OG	2.16	0.56
2:D:846:ILE:HD11	2:D:856:ILE:HG21	1.87	0.56
2:D:867:PRO:O	2:D:872:ARG:NH2	2.39	0.56
2:D:1500:GLU:HG2	2:D:1503:LYS:HE3	1.88	0.56
1:B:572:LYS:NZ	1:B:594:VAL:HG12	2.21	0.55
2:D:544:HIS:O	2:D:547:THR:OG1	2.23	0.55
2:D:1246:LEU:O	2:D:1249:SER:OG	2.20	0.55
4:C:28:ASN:ND2	4:C:1167:ASN:OD1	2.39	0.55
2:D:1193:GLN:NE2	2:D:1226:LEU:O	2.39	0.55
2:D:224:GLN:N	2:D:227:ARG:HH11	2.04	0.55
2:D:286:GLU:HG3	2:D:346:LEU:HD11	1.88	0.55
1:B:553:SER:HA	1:B:593:ASP:OD1	2.07	0.55
2:D:264:ILE:O	2:D:332:LEU:HD11	2.06	0.55
2:D:284:LEU:HD12	2:D:286:GLU:OE1	2.07	0.55
3:A:8:GLU:OE1	3:A:18:HIS:NE2	2.40	0.55
4:C:1136:ARG:NH1	4:C:1160:GLU:OE2	2.40	0.55
2:D:264:ILE:HD11	2:D:325:PHE:CZ	2.41	0.55
4:C:163:ALA:HB2	4:C:1020:THR:HG21	1.87	0.55
2:D:285:GLU:CG	2:D:346:LEU:HG	2.36	0.55
2:D:675:ILE:HD13	2:D:678:ILE:HD13	1.86	0.55
4:C:1040:ARG:NH1	4:C:1086:SER:OG	2.40	0.55
2:D:366:THR:O	2:D:369:GLU:HG3	2.07	0.55
3:A:8:GLU:HB2	3:A:18:HIS:HE2	1.72	0.55
2:D:324:ASP:HA	2:D:327:LEU:HD12	1.89	0.55
2:D:601:LEU:HA	2:D:609:THR:HG21	1.89	0.55
2:D:1167:ASN:O	2:D:1171:LYS:N	2.31	0.55
4:C:133:SER:OG	4:C:134:ASN:N	2.39	0.54
2:D:351:SER:O	2:D:355:LEU:HD12	2.07	0.54
2:D:1034:PHE:HZ	2:D:1037:LEU:HD22	1.72	0.54
2:D:1143:ASN:O	2:D:1147:MET:N	2.30	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:9:GLN:NE2	4:C:17:TYR:HA	2.22	0.54
1:B:582:CYS:O	1:B:586:GLU:HG2	2.05	0.54
2:D:979:SER:OG	2:D:984:ASN:OD1	2.22	0.54
2:D:1159:ARG:HD2	2:D:1213:ARG:HB3	1.89	0.54
4:C:9:GLN:HE21	4:C:17:TYR:HA	1.73	0.54
2:D:297:GLU:O	2:D:301:LYS:HG3	2.08	0.54
2:D:1490:ILE:HA	2:D:1493:TRP:CD2	2.43	0.54
4:C:229:SER:O	4:C:233:ASP:HB2	2.08	0.53
3:A:1128:ASP:OD1	3:A:1128:ASP:N	2.41	0.53
3:A:39:SER:OG	8:A:1302:ADP:O1B	2.25	0.53
3:A:6:ARG:NH1	3:A:100:GLN:OE1	2.42	0.53
2:D:850:ARG:NH1	2:D:851:GLU:OE2	2.41	0.53
2:D:874:ARG:NH2	5:X:25:DA:OP1	2.42	0.53
3:A:63:GLU:N	3:A:63:GLU:OE1	2.42	0.53
1:B:578:LEU:CB	1:B:586:GLU:HB3	2.38	0.53
2:D:813:LEU:HD22	2:D:820:LEU:HB2	1.91	0.53
2:D:360:HIS:CG	2:D:420:ARG:HH22	2.27	0.53
2:D:483:LEU:HB2	2:D:589:LEU:HD13	1.91	0.52
3:A:12:PHE:HE2	3:A:40:ASN:HB3	1.74	0.52
3:A:182:LYS:HE3	3:A:182:LYS:HA	1.91	0.52
4:C:210:LEU:HA	4:C:213:TYR:HB3	1.90	0.52
2:D:235:GLU:O	2:D:239:SER:OG	2.21	0.52
2:D:950:GLN:HE22	2:D:995:LEU:HB2	1.73	0.52
2:D:251:ARG:HH11	2:D:257:LYS:H	1.55	0.52
2:D:1034:PHE:HE1	2:D:1037:LEU:HD13	1.75	0.52
4:C:57:SER:H	4:C:60:GLU:HB2	1.74	0.52
2:D:470:ASP:OD1	2:D:470:ASP:N	2.42	0.52
2:D:630:ALA:O	2:D:634:LYS:NZ	2.43	0.52
1:B:585:GLU:HA	1:B:588:VAL:HG12	1.91	0.52
2:D:347:GLN:HE22	2:D:351:SER:HG	1.54	0.52
2:D:250:LYS:HD2	2:D:254:ASP:HB3	1.92	0.52
2:D:873:LYS:O	2:D:877:LYS:NZ	2.41	0.52
4:C:214:HIS:O	4:C:221:ARG:NH1	2.43	0.52
2:D:534:GLU:OE1	2:D:735:ASN:ND2	2.42	0.51
4:C:197:GLU:OE1	4:C:201:ARG:NH2	2.37	0.51
2:D:524:GLU:OE1	2:D:547:THR:OG1	2.29	0.51
3:A:27:PHE:HA	3:A:1188:PHE:O	2.10	0.51
3:A:1149:HIS:CE1	3:A:1157:PHE:HE1	2.28	0.51
2:D:271:LEU:HD13	2:D:335:PHE:HB3	1.91	0.51
2:D:868:SER:O	2:D:872:ARG:NE	2.39	0.51
2:D:918:LEU:O	2:D:922:TRP:HD1	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:565:ASP:OD1	1:B:618:THR:CG2	2.55	0.51
2:D:582:SER:HA	2:D:586:PHE:HB3	1.91	0.51
4:C:213:TYR:CE1	4:C:964:LEU:HD13	2.42	0.51
4:C:957:LEU:O	4:C:961:ASN:HB2	2.11	0.51
2:D:296:LEU:HA	2:D:299:GLU:OE1	2.11	0.51
2:D:792:GLN:O	2:D:796:ARG:NH1	2.43	0.50
2:D:1468:SER:OG	2:D:1469:ILE:N	2.44	0.50
1:B:19:LEU:HG	1:B:23:TRP:CD1	2.45	0.50
4:C:230:ARG:NH2	4:C:950:SER:OG	2.44	0.50
2:D:943:GLU:HA	2:D:947:LEU:HD21	1.93	0.50
2:D:1162:ASP:OD2	2:D:1165:ARG:NH2	2.45	0.50
1:B:556:ALA:HB2	1:B:593:ASP:OD1	2.07	0.50
2:D:1168:ASP:O	2:D:1172:HIS:N	2.45	0.50
2:D:733:ILE:HD12	2:D:736:CYS:HB2	1.92	0.50
2:D:1295:TRP:NE1	3:A:1095:PRO:HD2	2.27	0.50
2:D:518:GLN:HE21	2:D:520:LEU:H	1.58	0.50
2:D:1077:LYS:HG2	2:D:1079:ILE:H	1.76	0.50
2:D:836:ASP:OD1	2:D:837:THR:N	2.45	0.50
1:B:75:LEU:HD13	4:C:991:ARG:HD2	1.92	0.50
1:B:572:LYS:HZ2	1:B:594:VAL:CG1	2.24	0.50
4:C:1035:LEU:HD13	4:C:1104:LEU:HD11	1.94	0.50
2:D:371:ILE:O	2:D:375:VAL:HG22	2.12	0.49
2:D:605:GLU:OE1	2:D:605:GLU:N	2.44	0.49
3:A:5:LEU:HD11	3:A:94:GLU:HB2	1.94	0.49
1:B:44:ILE:HD13	1:B:60:LEU:HD12	1.94	0.49
2:D:459:GLN:HE21	2:D:514:SER:HB3	1.77	0.49
1:B:583:ASN:HB3	3:A:1226:TYR:HB3	1.95	0.49
2:D:268:TYR:O	2:D:271:LEU:HG	2.12	0.49
2:D:634:LYS:O	2:D:638:LEU:HD23	2.12	0.49
4:C:27:HIS:HB3	4:C:1165:ALA:HA	1.93	0.49
2:D:726:ASP:HB3	2:D:729:ALA:HB3	1.94	0.49
2:D:596:ASP:O	2:D:600:MET:HG2	2.11	0.49
4:C:1124:LEU:O	4:C:1154:CYS:HA	2.13	0.49
2:D:1027:LEU:O	2:D:1031:SER:OG	2.22	0.49
2:D:1421:SER:O	2:D:1425:ARG:NE	2.46	0.49
3:A:16:ARG:HG2	3:A:1215:SER:HB3	1.93	0.49
3:A:1124:LYS:HE3	3:A:1127:ARG:HE	1.77	0.49
3:A:1222:ASN:OD1	3:A:1223:LEU:N	2.46	0.49
2:D:651:LEU:HD23	2:D:774:PHE:HZ	1.76	0.49
3:A:90:LYS:HE2	3:A:104:LYS:HB2	1.93	0.49
1:B:582:CYS:C	1:B:584:ARG:H	2.16	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:1033:THR:HB	3:A:1037:ARG:HH21	1.76	0.49
2:D:675:ILE:HB	2:D:678:ILE:HB	1.94	0.49
4:C:1095:ASN:OD1	4:C:1102:LYS:NZ	2.28	0.49
2:D:235:GLU:HA	2:D:238:ASN:HD22	1.78	0.48
2:D:513:GLN:HE22	2:D:704:ASN:HB2	1.77	0.48
2:D:513:GLN:NE2	2:D:704:ASN:HB2	2.28	0.48
6:Y:10:DT:H2''	6:Y:11:DC:H5''	1.95	0.48
3:A:195:SER:HB2	3:A:1045:PHE:CE1	2.49	0.48
2:D:268:TYR:CB	2:D:332:LEU:CD2	2.67	0.48
2:D:271:LEU:CD1	2:D:335:PHE:HB3	2.42	0.48
2:D:633:SER:OG	2:D:634:LYS:N	2.46	0.48
2:D:760:ASP:HA	2:D:763:ILE:HD13	1.96	0.48
4:C:100:ARG:NH1	4:C:109:TYR:OH	2.46	0.48
1:B:14:LEU:HD11	1:B:60:LEU:HD13	1.96	0.48
2:D:374:ILE:HG22	2:D:386:GLU:HB3	1.95	0.48
2:D:634:LYS:HE2	2:D:795:LEU:HD11	1.95	0.48
2:D:1311:ILE:O	2:D:1314:SER:OG	2.31	0.48
2:D:1427:LYS:HD2	2:D:1431:GLN:HE22	1.79	0.48
2:D:1112:SER:O	2:D:1116:ARG:NH1	2.47	0.48
2:D:1079:ILE:HG23	2:D:1083:PHE:HD2	1.77	0.48
4:C:1048:ARG:HH11	4:C:1078:ILE:HG21	1.79	0.48
2:D:1034:PHE:CE1	2:D:1037:LEU:HD13	2.49	0.47
2:D:1529:SER:O	2:D:1529:SER:OG	2.32	0.47
4:C:993:GLU:HG3	4:C:997:ARG:HH21	1.78	0.47
2:D:330:THR:O	2:D:334:LEU:HD23	2.15	0.47
2:D:251:ARG:NH1	2:D:257:LYS:H	2.13	0.47
2:D:301:LYS:HB2	2:D:302:GLU:OE2	2.14	0.47
2:D:1501:ARG:HB3	2:D:1505:LEU:HD23	1.95	0.47
3:A:1124:LYS:CE	3:A:1127:ARG:HE	2.27	0.47
2:D:394:LEU:HA	2:D:397:VAL:HG22	1.96	0.47
3:A:31:ILE:O	3:A:1206:GLY:HA2	2.15	0.47
4:C:27:HIS:HE2	4:C:1154:CYS:HG	1.59	0.47
1:B:560:LEU:HD22	1:B:567:TYR:CE2	2.50	0.47
2:D:264:ILE:CD1	2:D:325:PHE:CZ	2.97	0.47
2:D:1159:ARG:NH1	2:D:1252:GLU:OE2	2.47	0.47
2:D:1476:ILE:HA	2:D:1479:VAL:HG22	1.97	0.47
2:D:294:GLN:HA	2:D:297:GLU:OE1	2.14	0.47
2:D:386:GLU:OE2	2:D:389:HIS:ND1	2.35	0.47
2:D:509:VAL:HG11	2:D:600:MET:HE1	1.97	0.47
2:D:1169:ASP:OD1	2:D:1169:ASP:N	2.47	0.47
2:D:1464:ILE:HD12	2:D:1465:PRO:HD2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:1106:ASP:OD1	3:A:1109:GLU:N	2.40	0.47
4:C:217:ASP:O	4:C:220:ARG:N	2.45	0.47
2:D:1268:LEU:HD12	2:D:1271:LYS:HB2	1.96	0.47
2:D:1410:GLN:HA	2:D:1464:ILE:HD13	1.97	0.47
1:B:590:LEU:HA	1:B:590:LEU:HD23	1.77	0.47
2:D:268:TYR:HE2	2:D:335:PHE:CE1	2.32	0.47
2:D:1435:PRO:HG3	2:D:1453:PHE:HE2	1.80	0.47
1:B:585:GLU:N	1:B:585:GLU:OE2	2.48	0.47
2:D:476:SER:O	2:D:504:TYR:OH	2.33	0.47
2:D:211:LYS:HB2	2:D:214:ARG:O	2.15	0.46
2:D:790:SER:OG	2:D:792:GLN:O	2.30	0.46
2:D:1143:ASN:O	2:D:1146:LYS:N	2.44	0.46
4:C:220:ARG:O	4:C:224:GLU:CB	2.54	0.46
2:D:869:THR:HG23	2:D:910:ILE:HD11	1.97	0.46
3:A:1166:LEU:HD22	3:A:1170:ASN:HD21	1.80	0.46
8:A:1302:ADP:H5'1	4:C:1097:LEU:O	2.14	0.46
2:D:374:ILE:HG13	2:D:375:VAL:HG13	1.97	0.46
2:D:626:ASN:HD21	2:D:629:GLN:HE22	1.64	0.46
1:B:19:LEU:HG	1:B:23:TRP:HD1	1.81	0.46
2:D:285:GLU:HA	2:D:288:SER:HB3	1.97	0.46
2:D:1104:MET:SD	2:D:1104:MET:N	2.88	0.46
1:B:572:LYS:NZ	1:B:594:VAL:HG13	2.14	0.46
4:C:220:ARG:NH1	4:C:957:LEU:HD21	2.30	0.46
3:A:49:LEU:HD11	3:A:1156:PHE:CZ	2.49	0.46
4:C:212:VAL:O	4:C:216:LYS:N	2.49	0.46
2:D:607:CYS:HB2	2:D:708:TYR:HD2	1.81	0.46
2:D:951:TYR:HD1	2:D:995:LEU:HD11	1.81	0.46
2:D:1039:ASP:OD1	2:D:1041:SER:N	2.44	0.46
1:B:55:ARG:HG3	1:B:56:LEU:HD12	1.97	0.45
2:D:216:GLN:O	2:D:220:LEU:HG	2.16	0.45
2:D:270:ALA:O	2:D:274:LEU:HD23	2.15	0.45
2:D:509:VAL:O	2:D:513:GLN:N	2.48	0.45
2:D:1182:ASP:O	2:D:1184:ALA:N	2.49	0.45
2:D:1267:LYS:HG3	2:D:1271:LYS:HG3	1.98	0.45
4:C:978:PHE:O	4:C:982:THR:OG1	2.21	0.45
2:D:280:CYS:SG	2:D:281:ASP:N	2.89	0.45
2:D:518:GLN:NE2	2:D:520:LEU:HB3	2.31	0.45
1:B:75:LEU:HD23	4:C:189:ILE:HD13	1.98	0.45
1:B:552:SER:O	1:B:593:ASP:OD1	2.35	0.45
2:D:259:ILE:HG22	2:D:260:SER:O	2.17	0.45
2:D:1209:ASP:OD1	2:D:1209:ASP:N	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:42:PHE:CD1	4:C:1123:ILE:HD11	2.52	0.45
2:D:446:SER:HA	2:D:449:PHE:CD2	2.51	0.45
2:D:905:ASP:OD1	2:D:906:GLU:N	2.48	0.45
2:D:1193:GLN:NE2	2:D:1230:THR:OG1	2.50	0.45
4:C:29:VAL:HG12	4:C:1161:MET:HE3	1.98	0.45
2:D:856:ILE:HD13	2:D:856:ILE:HA	1.86	0.45
4:C:181:GLU:O	4:C:184:GLN:HG3	2.16	0.45
1:B:560:LEU:HD11	1:B:572:LYS:NZ	2.32	0.45
2:D:487:ARG:HB2	6:Y:10:DT:H3'	1.99	0.45
2:D:1144:PHE:HA	2:D:1147:MET:HG3	1.99	0.45
2:D:291:LEU:HD12	2:D:292:VAL:N	2.33	0.44
2:D:1448:GLU:O	2:D:1452:SER:OG	2.21	0.44
4:C:89:PHE:HE1	4:C:124:LEU:HA	1.82	0.44
4:C:957:LEU:C	4:C:957:LEU:HD23	2.38	0.44
2:D:794:SER:O	2:D:797:THR:OG1	2.26	0.44
2:D:1411:SER:O	2:D:1415:ILE:HG12	2.18	0.44
2:D:1488:PRO:HB2	3:A:1049:ARG:HH12	1.81	0.44
2:D:1518:ARG:HD3	2:D:1521:LYS:HD2	1.98	0.44
4:C:9:GLN:OE1	4:C:77:TYR:CE1	2.71	0.44
4:C:1187:GLU:OE2	4:C:1187:GLU:N	2.48	0.44
2:D:1478:THR:O	2:D:1481:SER:OG	2.21	0.44
3:A:186:ASP:HA	3:A:189:VAL:HG12	1.98	0.44
4:C:1124:LEU:HB3	4:C:1127:CYS:SG	2.58	0.44
6:Y:13:DC:H2''	6:Y:14:DA:H8	1.83	0.44
2:D:969:LEU:O	2:D:972:SER:OG	2.23	0.44
2:D:988:LEU:O	2:D:992:ILE:HG12	2.17	0.44
8:A:1302:ADP:O2B	4:C:1098:SER:HB2	2.17	0.44
4:C:110:SER:OG	4:C:111:LEU:N	2.50	0.44
4:C:165:THR:O	4:C:165:THR:OG1	2.33	0.44
2:D:423:TYR:OH	4:C:973:LYS:HG2	2.17	0.44
2:D:779:PHE:O	2:D:782:SER:OG	2.34	0.44
2:D:1334:ILE:HD11	2:D:1344:CYS:SG	2.57	0.44
3:A:114:GLU:HB3	3:A:121:ILE:HD11	1.99	0.44
4:C:110:SER:OG	4:C:111:LEU:O	2.33	0.44
2:D:532:SER:O	2:D:532:SER:OG	2.36	0.44
2:D:601:LEU:HD12	2:D:613:ILE:HD12	1.99	0.44
2:D:958:CYS:O	2:D:1025:SER:OG	2.35	0.44
2:D:1046:LEU:HD13	2:D:1050:LEU:HD11	1.98	0.44
4:C:217:ASP:OD1	4:C:220:ARG:HB2	2.17	0.44
2:D:1239:ASN:OD1	2:D:1242:GLU:N	2.48	0.44
2:D:280:CYS:HB2	2:D:340:VAL:CA	2.39	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:285:GLU:HA	2:D:289:ILE:HG13	2.00	0.44
2:D:1251:LEU:HD21	2:D:1328:GLU:HG2	1.99	0.44
4:C:1107:LEU:HD12	4:C:1111:PHE:CZ	2.53	0.44
2:D:328:LYS:HZ2	2:D:396:LYS:HE3	1.83	0.43
2:D:511:LEU:O	2:D:514:SER:OG	2.30	0.43
2:D:652:PHE:CZ	2:D:656:LEU:HB3	2.53	0.43
3:A:13:LYS:HB2	8:A:1302:ADP:C5	2.53	0.43
3:A:86:THR:HG21	3:A:109:PRO:HD3	1.99	0.43
4:C:1146:MET:HA	4:C:1149:THR:HG22	2.00	0.43
2:D:735:ASN:HA	2:D:738:ASP:HB3	2.00	0.43
2:D:1138:ARG:HH22	2:D:1194:LYS:HZ3	1.64	0.43
3:A:191:LEU:O	3:A:195:SER:HB3	2.18	0.43
4:C:134:ASN:HA	4:C:135:PRO:HD3	1.87	0.43
4:C:1045:MET:HA	4:C:1078:ILE:HG12	2.00	0.43
1:B:583:ASN:N	1:B:583:ASN:HD22	2.16	0.43
2:D:293:LYS:HA	2:D:296:LEU:HD12	1.98	0.43
3:A:172:LEU:HD23	3:A:172:LEU:HA	1.90	0.43
2:D:213:GLN:HE21	2:D:214:ARG:NH2	2.14	0.43
4:C:1013:LYS:O	4:C:1017:ILE:HG12	2.18	0.43
4:C:1094:ILE:HD12	4:C:1097:LEU:HD12	2.00	0.43
2:D:332:LEU:HA	2:D:332:LEU:HD23	1.64	0.43
2:D:470:ASP:HA	2:D:473:ILE:HD12	2.00	0.43
2:D:604:PRO:HB2	2:D:692:PHE:HZ	1.83	0.43
3:A:1159:LEU:HD23	3:A:1159:LEU:HA	1.73	0.43
2:D:234:ILE:O	2:D:238:ASN:ND2	2.52	0.43
2:D:568:ALA:O	2:D:572:SER:HB3	2.19	0.43
3:A:117:ILE:HD11	3:A:127:TYR:HA	2.01	0.43
4:C:59:GLU:HG2	4:C:60:GLU:OE2	2.19	0.43
1:B:569:GLU:HB2	1:B:615:ILE:HD11	2.01	0.43
2:D:549:GLU:HA	2:D:552:LEU:HD12	2.01	0.43
2:D:280:CYS:CB	2:D:340:VAL:HA	2.41	0.43
2:D:282:LYS:HD2	2:D:282:LYS:N	2.34	0.43
3:A:30:ILE:HA	3:A:1205:VAL:HG23	2.01	0.43
4:C:165:THR:OG1	4:C:1013:LYS:HE3	2.19	0.43
4:C:185:LYS:HA	4:C:188:LYS:HE2	2.01	0.43
6:Y:36:DG:H8	6:Y:36:DG:OP2	2.02	0.43
2:D:987:THR:HG23	2:D:988:LEU:HD22	2.01	0.42
2:D:517:ILE:HG12	2:D:708:TYR:HD1	1.84	0.42
2:D:543:GLU:HA	2:D:546:LYS:HB2	2.01	0.42
2:D:1472:PRO:HA	2:D:1475:ILE:HG12	2.01	0.42
4:C:84:ASN:HD22	4:C:88:ARG:HB3	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:541:LEU:HD23	2:D:544:HIS:CD2	2.54	0.42
2:D:886:THR:O	2:D:892:ARG:NH2	2.53	0.42
4:C:1171:VAL:HG12	4:C:1180:VAL:HG12	1.99	0.42
1:B:59:GLN:HE22	4:C:171:ARG:NH1	2.18	0.42
2:D:370:ALA:HB1	2:D:390:LEU:HD11	2.01	0.42
3:A:1133:SER:HB3	8:C:1202:ADP:H5'1	2.02	0.42
1:B:605:VAL:HG21	3:A:1219:LEU:HD11	2.02	0.42
2:D:418:VAL:HA	2:D:421:ILE:HG12	2.02	0.42
2:D:1438:LEU:HD12	2:D:1438:LEU:HA	1.83	0.42
3:A:42:MET:HG3	3:A:1158:VAL:CG1	2.48	0.42
1:B:584:ARG:HH21	1:B:584:ARG:CG	2.30	0.42
2:D:229:LEU:HA	2:D:232:GLN:OE1	2.20	0.42
2:D:1143:ASN:O	2:D:1147:MET:HG3	2.19	0.42
4:C:29:VAL:HG13	4:C:1165:ALA:HB2	2.01	0.42
5:X:30:DC:H2'	5:X:31:DA:C8	2.55	0.42
2:D:1356:ILE:HG13	2:D:1358:GLU:H	1.83	0.42
2:D:518:GLN:HE21	2:D:520:LEU:HB3	1.83	0.42
4:C:1156:THR:HB	4:C:1157:PHE:H	1.34	0.42
2:D:426:PRO:HB3	2:D:479:ASN:HD21	1.85	0.42
2:D:1208:ILE:HD12	2:D:1208:ILE:HA	1.90	0.42
4:C:6:ILE:HG23	4:C:80:VAL:HG12	2.02	0.42
4:C:155:ARG:CD	4:C:1080:ILE:HD11	2.50	0.42
2:D:1004:ILE:HD13	2:D:1004:ILE:HG21	1.87	0.41
2:D:1221:LEU:O	2:D:1224:SER:N	2.43	0.41
4:C:1135:TYR:O	4:C:1139:ILE:HG12	2.20	0.41
2:D:281:ASP:OD1	2:D:342:SER:OG	2.37	0.41
2:D:1458:CYS:HB3	2:D:1516:LEU:HD12	2.02	0.41
5:X:10:DG:H5'	5:X:10:DG:C8	2.55	0.41
2:D:265:GLU:OE2	2:D:268:TYR:HD1	2.03	0.41
2:D:240:GLU:OE2	2:D:257:LYS:HD2	2.21	0.41
3:A:1127:ARG:HB3	3:A:1131:GLN:HE21	1.86	0.41
4:C:134:ASN:N	4:C:134:ASN:OD1	2.52	0.41
2:D:264:ILE:HA	2:D:267:LEU:HD12	2.03	0.41
2:D:803:ILE:HA	2:D:806:MET:HB3	2.01	0.41
2:D:225:ASP:O	2:D:228:LEU:HB3	2.21	0.41
2:D:227:ARG:O	2:D:230:ILE:HB	2.21	0.41
2:D:948:ARG:HD3	2:D:948:ARG:HA	1.84	0.41
2:D:1221:LEU:O	2:D:1223:ILE:N	2.54	0.41
4:C:958:HIS:O	4:C:961:ASN:HB3	2.20	0.41
5:X:2:DA:H2''	5:X:3:DG:C8	2.56	0.41
2:D:223:LEU:HG	2:D:227:ARG:CZ	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:405:SER:HA	2:D:457:THR:HG22	2.03	0.41
2:D:570:LEU:O	2:D:574:SER:OG	2.24	0.41
4:C:1004:GLU:O	4:C:1007:THR:OG1	2.34	0.41
2:D:297:GLU:HA	2:D:300:LEU:HD12	2.03	0.41
2:D:451:LYS:HE3	2:D:451:LYS:HB2	1.80	0.41
2:D:494:ARG:HH22	5:X:32:DC:H4'	1.85	0.41
2:D:499:LYS:HA	2:D:499:LYS:HD3	1.89	0.41
2:D:575:LEU:HD21	2:D:637:ALA:HB2	2.02	0.41
2:D:588:ILE:O	2:D:591:LYS:HG2	2.20	0.41
4:C:956:LYS:O	4:C:960:ILE:HG12	2.19	0.41
2:D:1165:ARG:HD3	2:D:1165:ARG:HA	1.82	0.41
3:A:195:SER:OG	3:A:196:PHE:N	2.53	0.41
4:C:995:LEU:O	4:C:998:SER:OG	2.31	0.41
2:D:286:GLU:HG3	2:D:346:LEU:CD2	2.35	0.40
2:D:645:VAL:HA	2:D:648:VAL:HG12	2.01	0.40
2:D:705:ILE:HD12	2:D:705:ILE:HA	1.89	0.40
2:D:800:LEU:HD23	2:D:800:LEU:HA	1.83	0.40
4:C:5:LYS:O	4:C:81:THR:OG1	2.32	0.40
2:D:941:PHE:O	2:D:945:GLN:HB2	2.21	0.40
2:D:298:LYS:HA	2:D:301:LYS:HE3	2.03	0.40
2:D:920:LYS:HD3	2:D:920:LYS:HA	1.94	0.40
2:D:1416:VAL:HG21	2:D:1428:LEU:HD21	2.03	0.40
3:A:200:ARG:O	3:A:204:ALA:HB2	2.21	0.40
2:D:286:GLU:OE1	2:D:286:GLU:N	2.41	0.40
2:D:402:ASN:O	2:D:405:SER:OG	2.28	0.40
2:D:739:LYS:HD3	2:D:739:LYS:HA	1.89	0.40
2:D:993:ARG:HD3	2:D:1037:LEU:HD23	2.04	0.40
2:D:1400:THR:O	2:D:1402:LYS:N	2.52	0.40
3:A:31:ILE:HD12	3:A:31:ILE:HA	1.86	0.40
3:A:1171:VAL:HA	3:A:1174:ILE:HG22	2.03	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	B	148/628 (24%)	137 (93%)	11 (7%)	0	100	100
2	D	1262/1587 (80%)	1148 (91%)	114 (9%)	0	100	100
3	A	378/1228 (31%)	351 (93%)	27 (7%)	0	100	100
4	C	450/1194 (38%)	402 (89%)	48 (11%)	0	100	100
All	All	2238/4637 (48%)	2038 (91%)	200 (9%)	0	100	100

There are no Ramachandran outliers to report.

### 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	B	132/539 (24%)	126 (96%)	6 (4%)	27	54
2	D	1186/1480 (80%)	1184 (100%)	2 (0%)	93	96
3	A	330/1102 (30%)	327 (99%)	3 (1%)	78	87
4	C	407/1082 (38%)	407 (100%)	0	100	100
All	All	2055/4203 (49%)	2044 (100%)	11 (0%)	89	93

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	11	LYS
1	B	73	ARG
1	B	582	CYS
1	B	583	ASN
1	B	584	ARG
1	B	585	GLU
2	D	299	GLU
2	D	740	ASN
3	A	6	ARG
3	A	141	ARG

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Mol	Chain	Res	Type
3	A	1040	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	583	ASN
2	D	238	ASN
2	D	258	HIS
2	D	402	ASN
2	D	459	GLN
2	D	513	GLN
2	D	518	GLN
2	D	626	ASN
2	D	682	ASN
2	D	1167	ASN
4	C	28	ASN
4	C	34	ASN
4	C	1114	GLN
4	C	1122	ASN
4	C	1167	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](#)

4 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
8	ADP	C	1202	7	24,29,29	2.04	4 (16%)	29,45,45	1.90	8 (27%)
8	ADP	A	1302	7	24,29,29	2.03	4 (16%)	29,45,45	1.91	8 (27%)
7	BEF	C	1201	8	0,3,3	-	-	-	-	-
7	BEF	A	1301	8	0,3,3	-	-	-	-	-

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
8	ADP	C	1202	7	-	7/12/32/32	0/3/3/3
8	ADP	A	1302	7	-	7/12/32/32	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	C	1202	ADP	PA-O5'	7.57	1.89	1.59
8	A	1302	ADP	PA-O5'	7.54	1.89	1.59
8	A	1302	ADP	O2'-C2'	-3.42	1.34	1.43
8	C	1202	ADP	O2'-C2'	-3.41	1.34	1.43
8	C	1202	ADP	O5'-C5'	-2.37	1.35	1.44
8	A	1302	ADP	O5'-C5'	-2.34	1.35	1.44
8	C	1202	ADP	O4'-C1'	-2.32	1.37	1.41
8	A	1302	ADP	O4'-C1'	-2.20	1.38	1.41

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	C	1202	ADP	PA-O3A-PB	-5.80	112.92	132.83
8	A	1302	ADP	PA-O3A-PB	-5.79	112.97	132.83
8	C	1202	ADP	O5'-PA-O1A	-4.11	93.02	109.07
8	A	1302	ADP	O2A-PA-O5'	-3.16	93.06	107.75
8	A	1302	ADP	O4'-C1'-C2'	-3.04	102.48	106.93
8	C	1202	ADP	O4'-C1'-C2'	-3.00	102.54	106.93

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	A	1302	ADP	O5'-PA-O1A	-2.89	97.77	109.07
8	C	1202	ADP	O3B-PB-O3A	-2.76	95.38	104.64
8	A	1302	ADP	O3B-PB-O3A	-2.75	95.40	104.64
8	A	1302	ADP	O2B-PB-O1B	2.37	119.97	110.68
8	C	1202	ADP	O2B-PB-O1B	2.37	119.97	110.68
8	C	1202	ADP	C3'-C2'-C1'	-2.30	97.52	100.98
8	C	1202	ADP	C2-N1-C6	-2.28	114.85	118.75
8	A	1302	ADP	C2-N1-C6	-2.27	114.88	118.75
8	A	1302	ADP	C3'-C2'-C1'	-2.26	97.58	100.98
8	C	1202	ADP	O2A-PA-O5'	-2.14	97.80	107.75

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	A	1302	ADP	PA-O3A-PB-O2B
8	A	1302	ADP	C5'-O5'-PA-O1A
8	A	1302	ADP	C5'-O5'-PA-O2A
8	A	1302	ADP	C3'-C4'-C5'-O5'
8	C	1202	ADP	PA-O3A-PB-O2B
8	C	1202	ADP	C5'-O5'-PA-O1A
8	C	1202	ADP	C3'-C4'-C5'-O5'
8	A	1302	ADP	O4'-C4'-C5'-O5'
8	C	1202	ADP	O4'-C4'-C5'-O5'
8	A	1302	ADP	PA-O3A-PB-O1B
8	A	1302	ADP	C5'-O5'-PA-O3A
8	C	1202	ADP	C5'-O5'-PA-O3A
8	C	1202	ADP	C5'-O5'-PA-O2A
8	C	1202	ADP	PA-O3A-PB-O1B

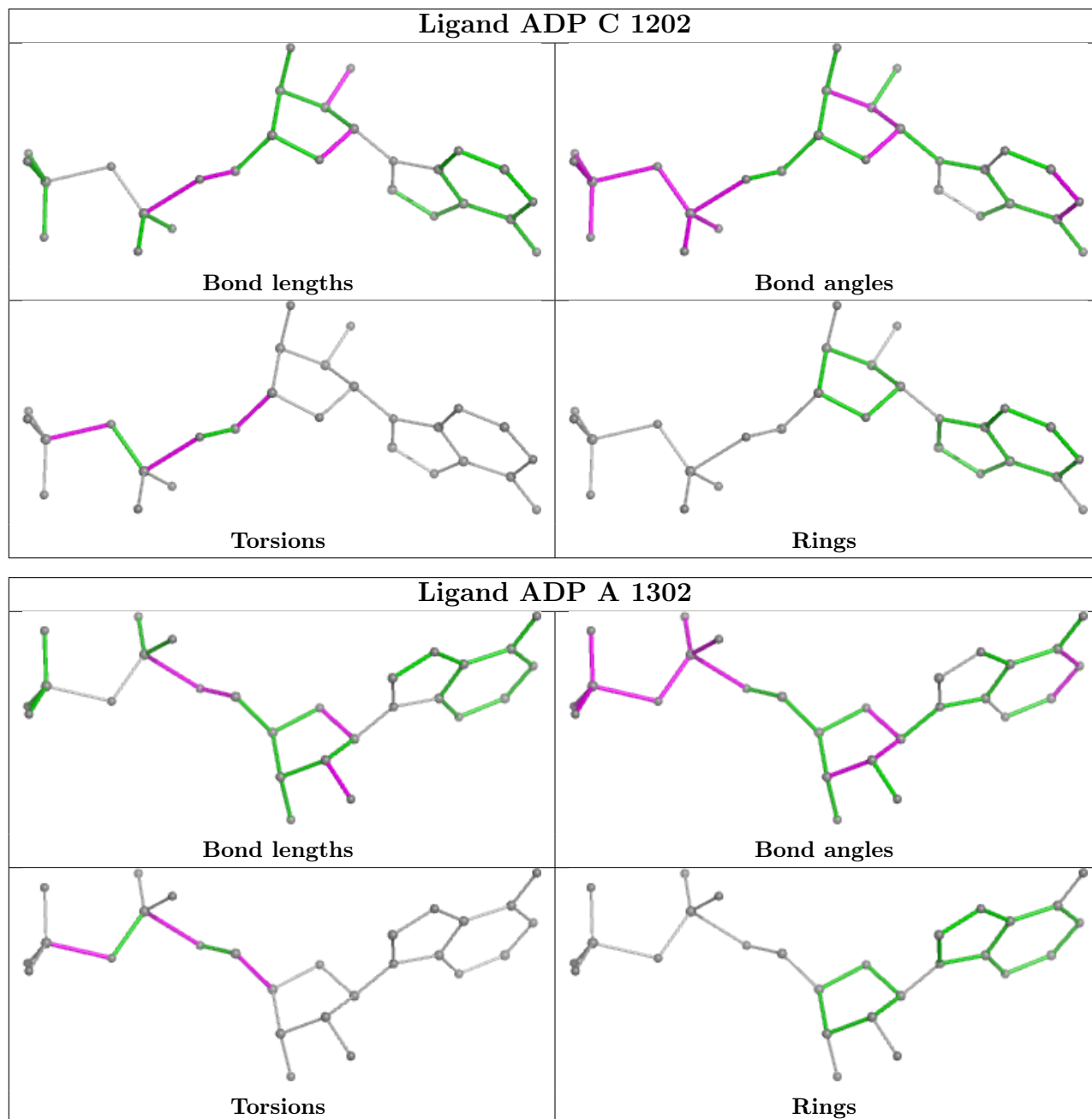
There are no ring outliers.

3 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	C	1202	ADP	1	0
8	A	1302	ADP	4	0
7	C	1201	BEF	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 than 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.



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	D	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	D	602:SER	C	603:LEU	N	1.20

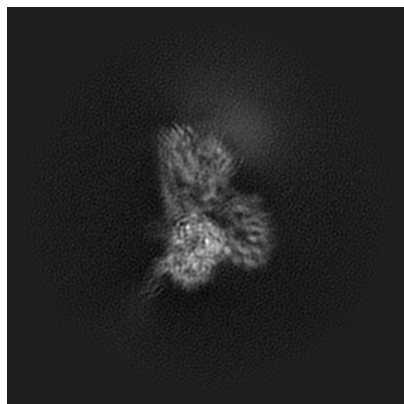
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-10930. These allow visual inspection of the internal detail of the map and identification of artifacts.

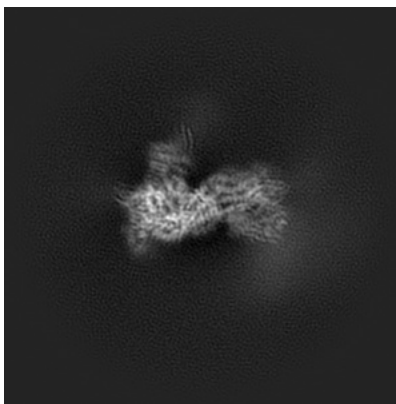
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

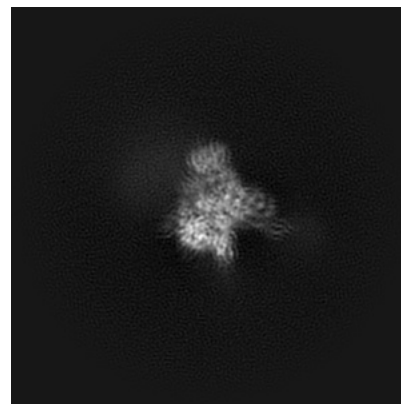
#### 6.1.1 Primary map



X

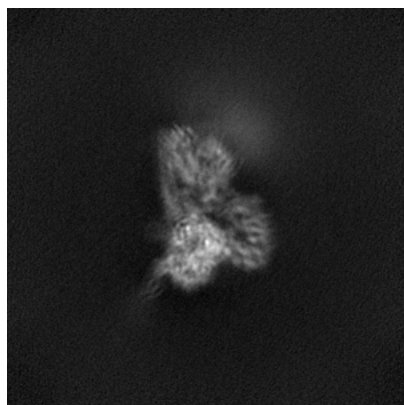


Y

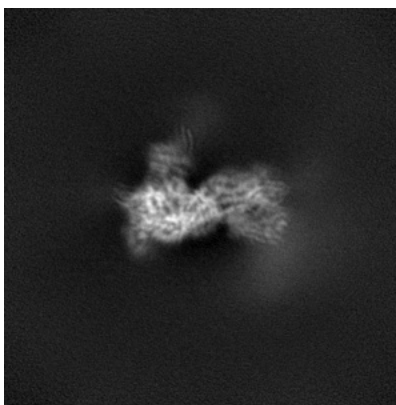


Z

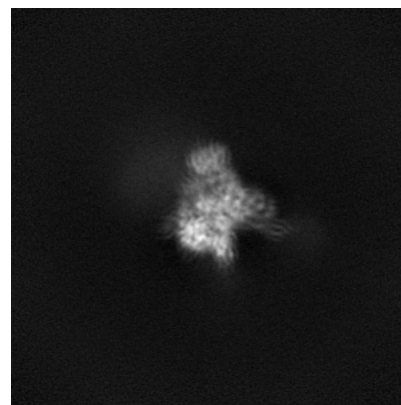
#### 6.1.2 Raw map



X



Y

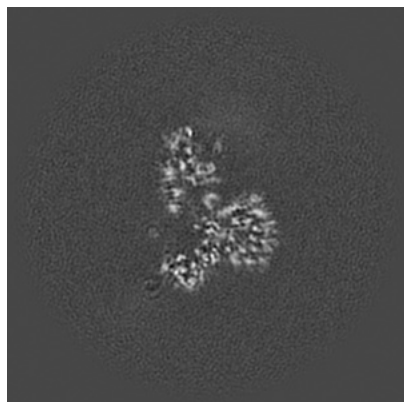


Z

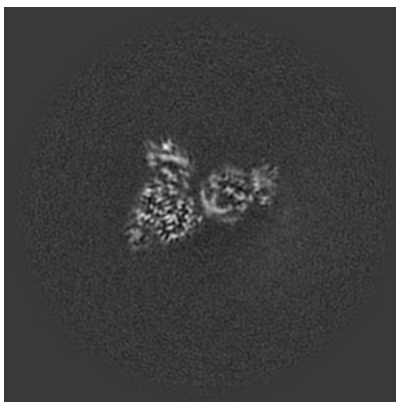
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

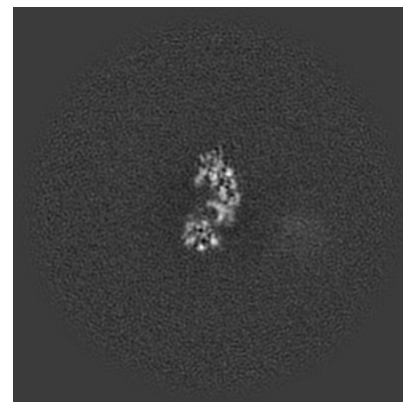
### 6.2.1 Primary map



X Index: 180

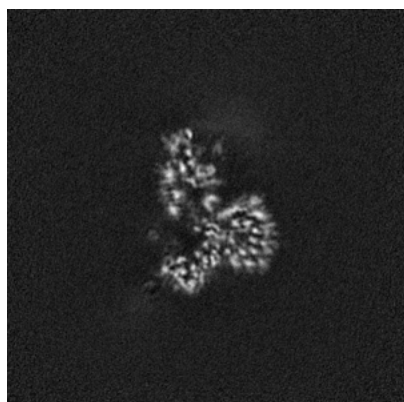


Y Index: 180

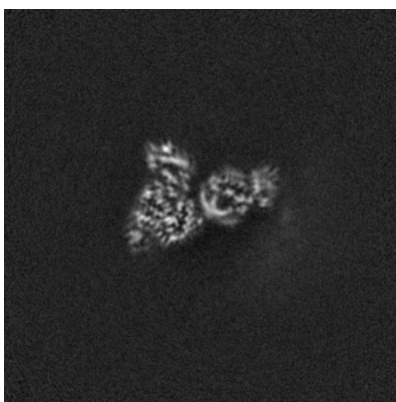


Z Index: 180

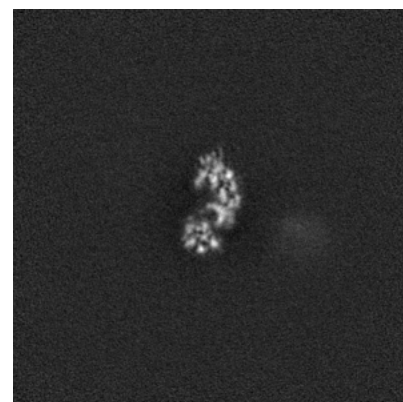
### 6.2.2 Raw map



X Index: 180



Y Index: 180

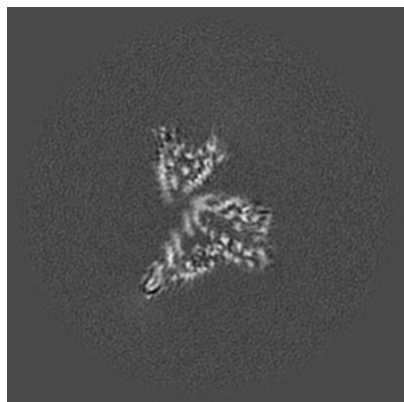


Z Index: 180

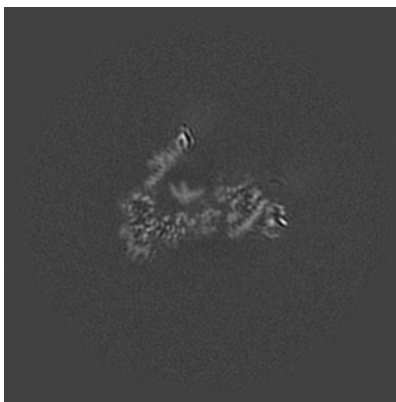
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

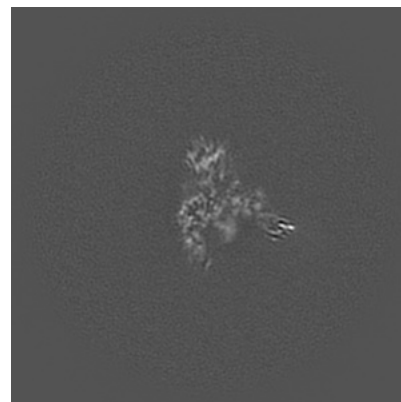
### 6.3.1 Primary map



X Index: 188

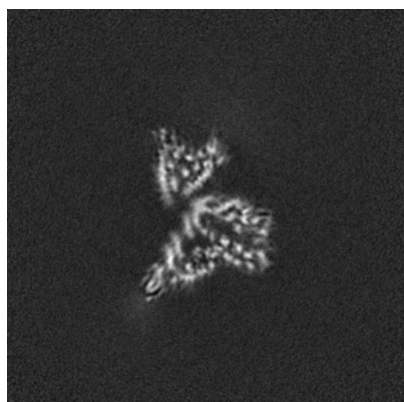


Y Index: 163

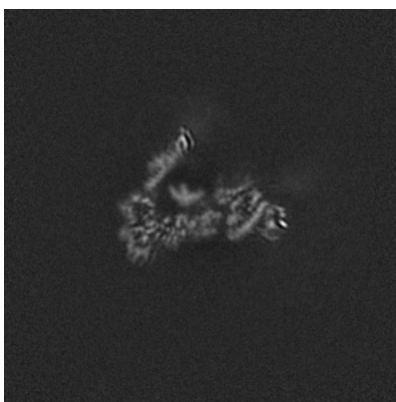


Z Index: 160

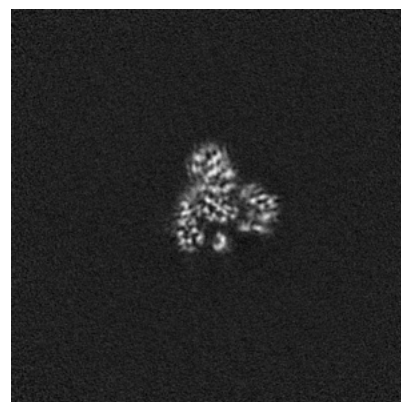
### 6.3.2 Raw map



X Index: 188



Y Index: 163



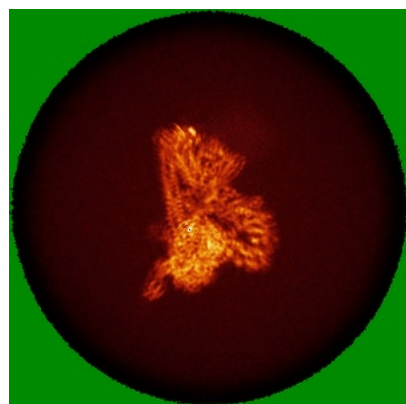
Z Index: 140

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

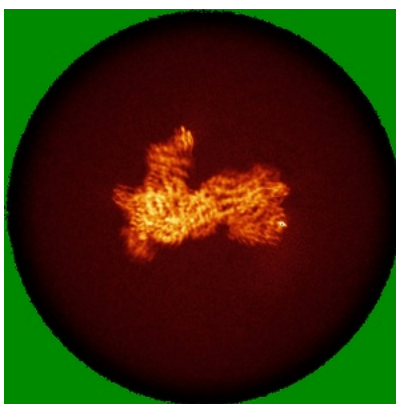


## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

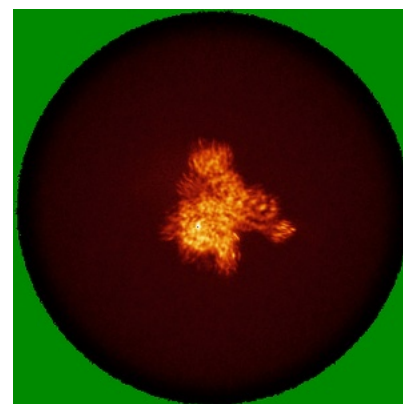
### 6.4.1 Primary map



X

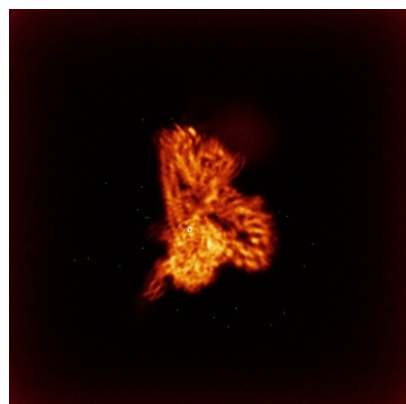


Y

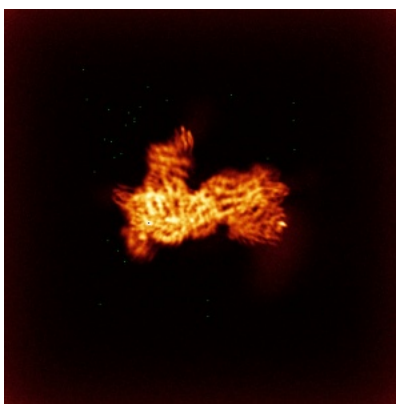


Z

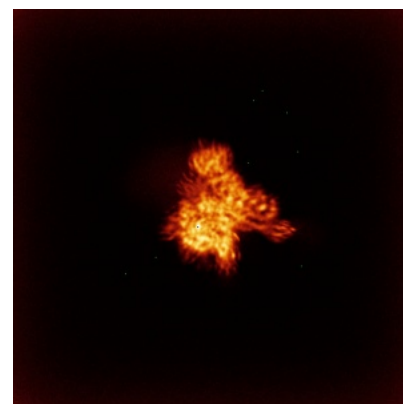
### 6.4.2 Raw map



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



The images above show the 3D surface view of the map at the recommended contour level 0.5. 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



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](#)

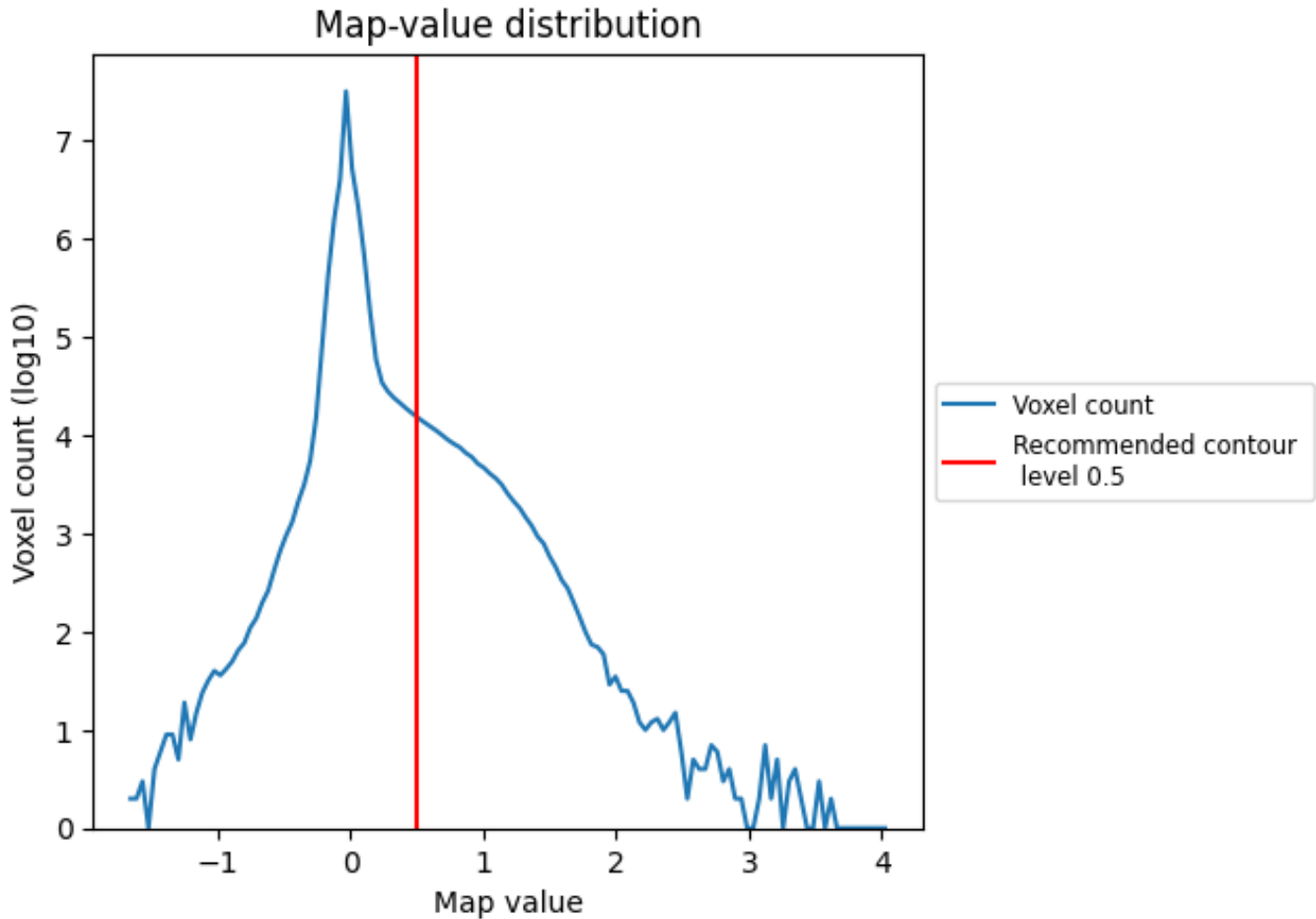
This section was not generated. No masks/segmentation were deposited.



## 7 Map analysis [i](#)

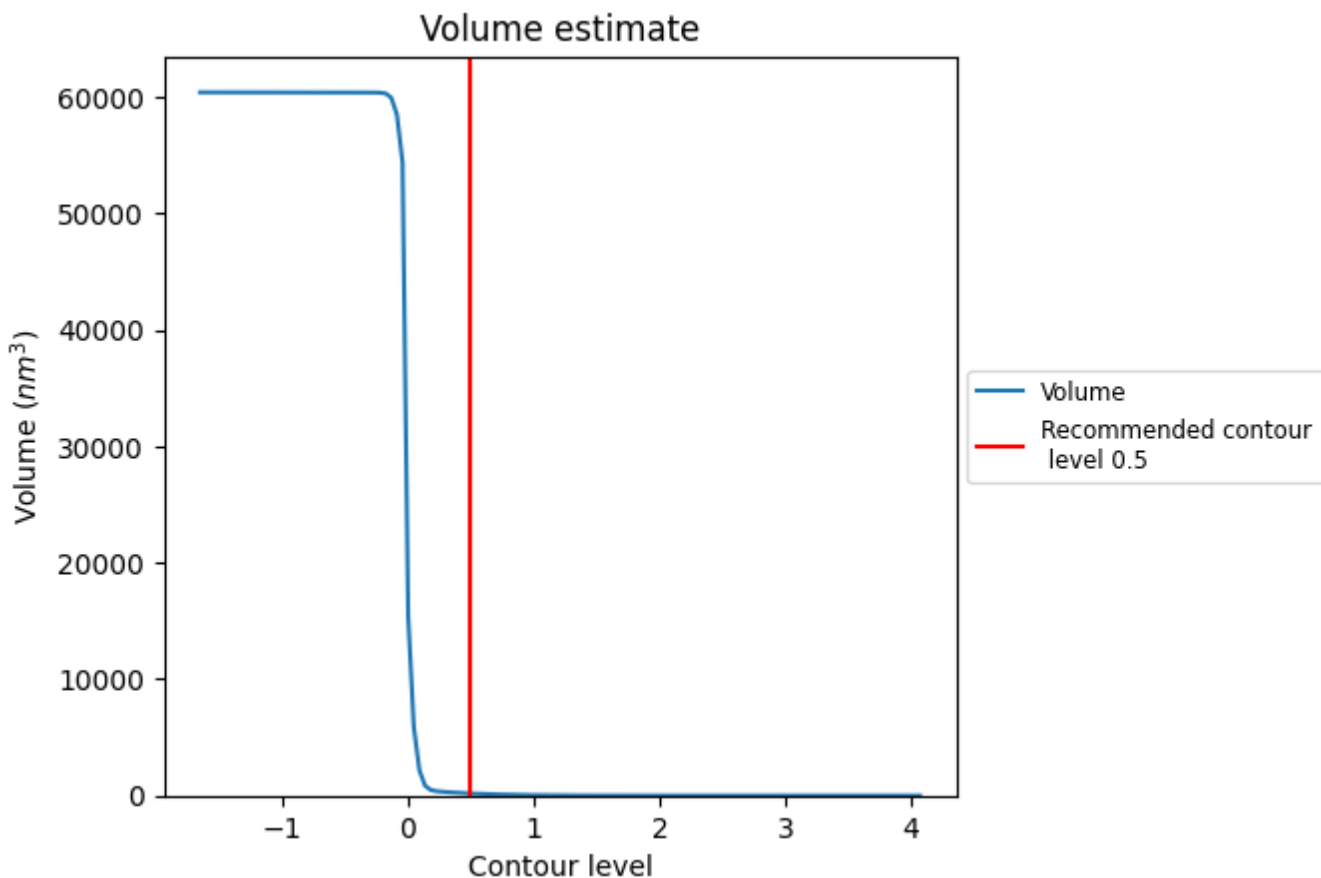
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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.

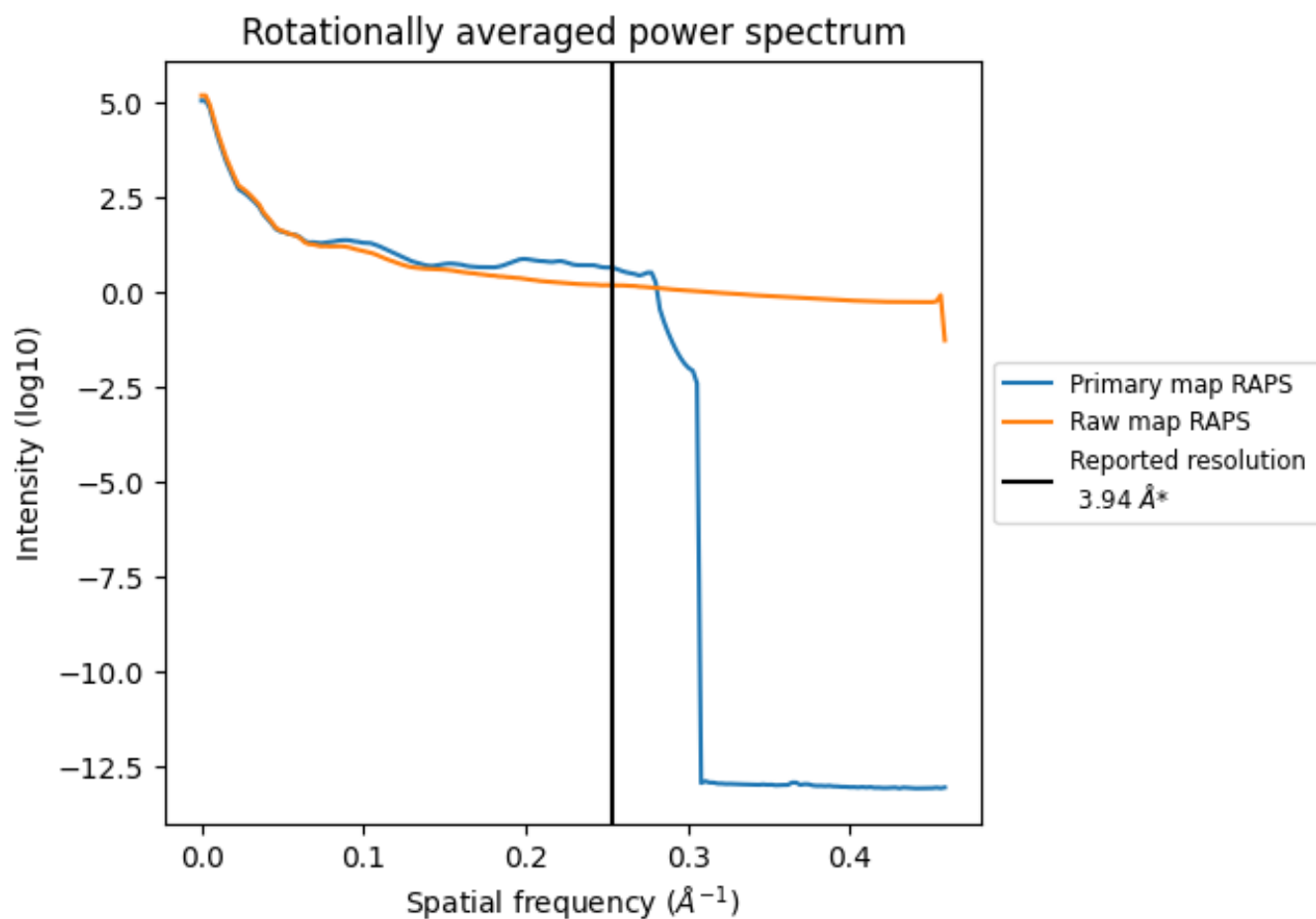
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 179 nm<sup>3</sup>; this corresponds to an approximate mass of 161 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](#)

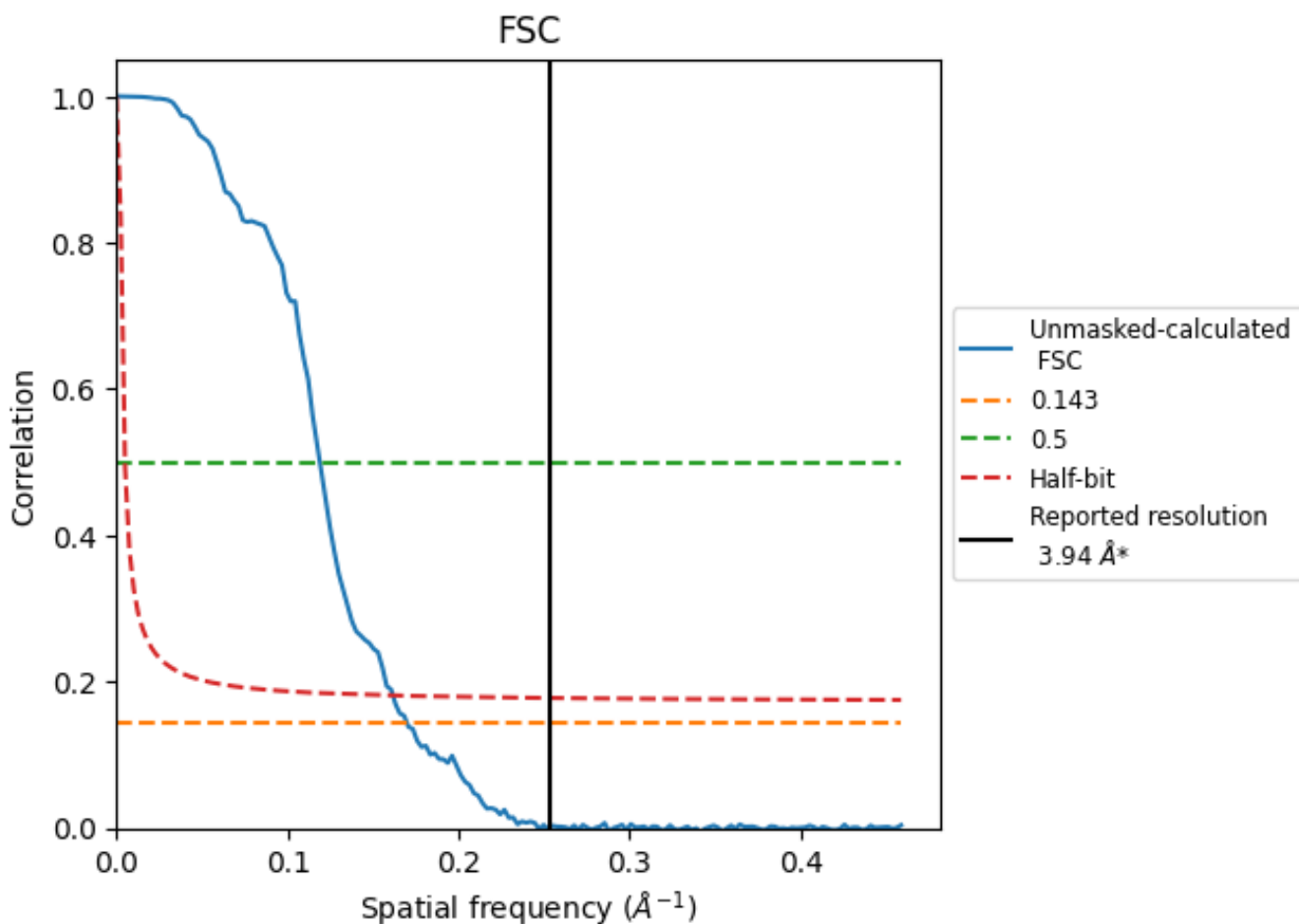


\*Reported resolution corresponds to spatial frequency of 0.254 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

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 [i](#)



\*Reported resolution corresponds to spatial frequency of 0.254 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

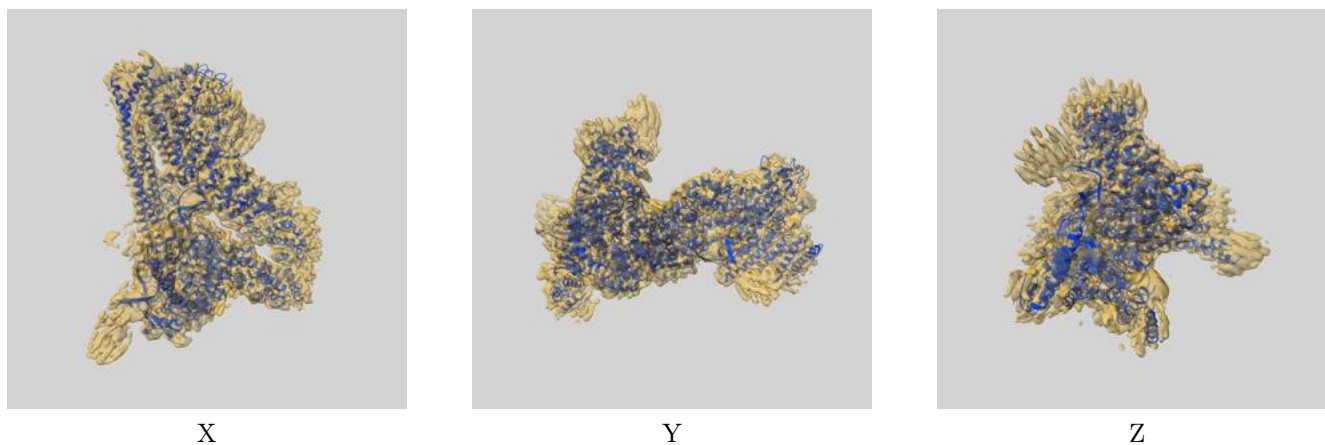
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.94	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	5.89	8.41	6.19

\*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 5.89 differs from the reported value 3.94 by more than 10 %

## 9 Map-model fit [i](#)

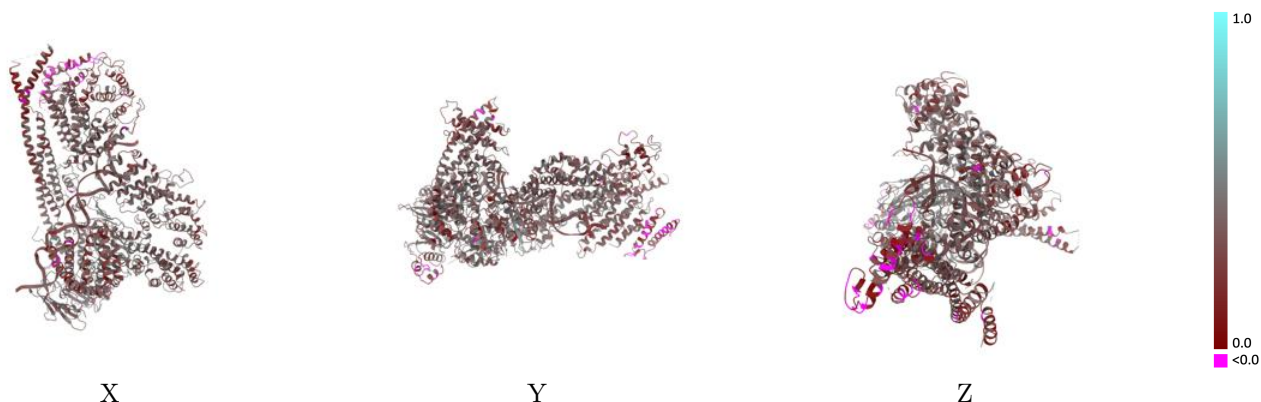
This section contains information regarding the fit between EMDB map EMD-10930 and PDB model 6YUF. Per-residue inclusion information can be found in section 3 on page 6.

### 9.1 Map-model overlay [i](#)



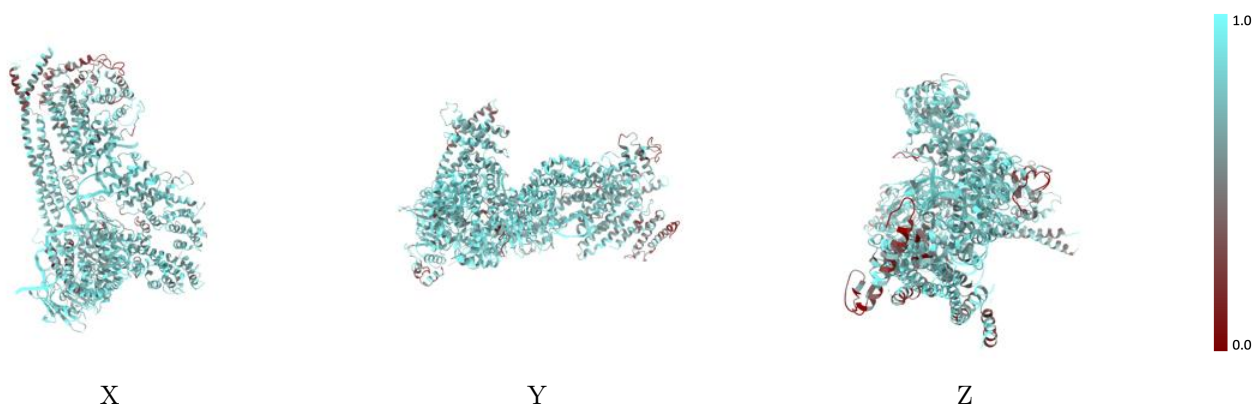
The images above show the 3D surface view of the map at the recommended contour level 0.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



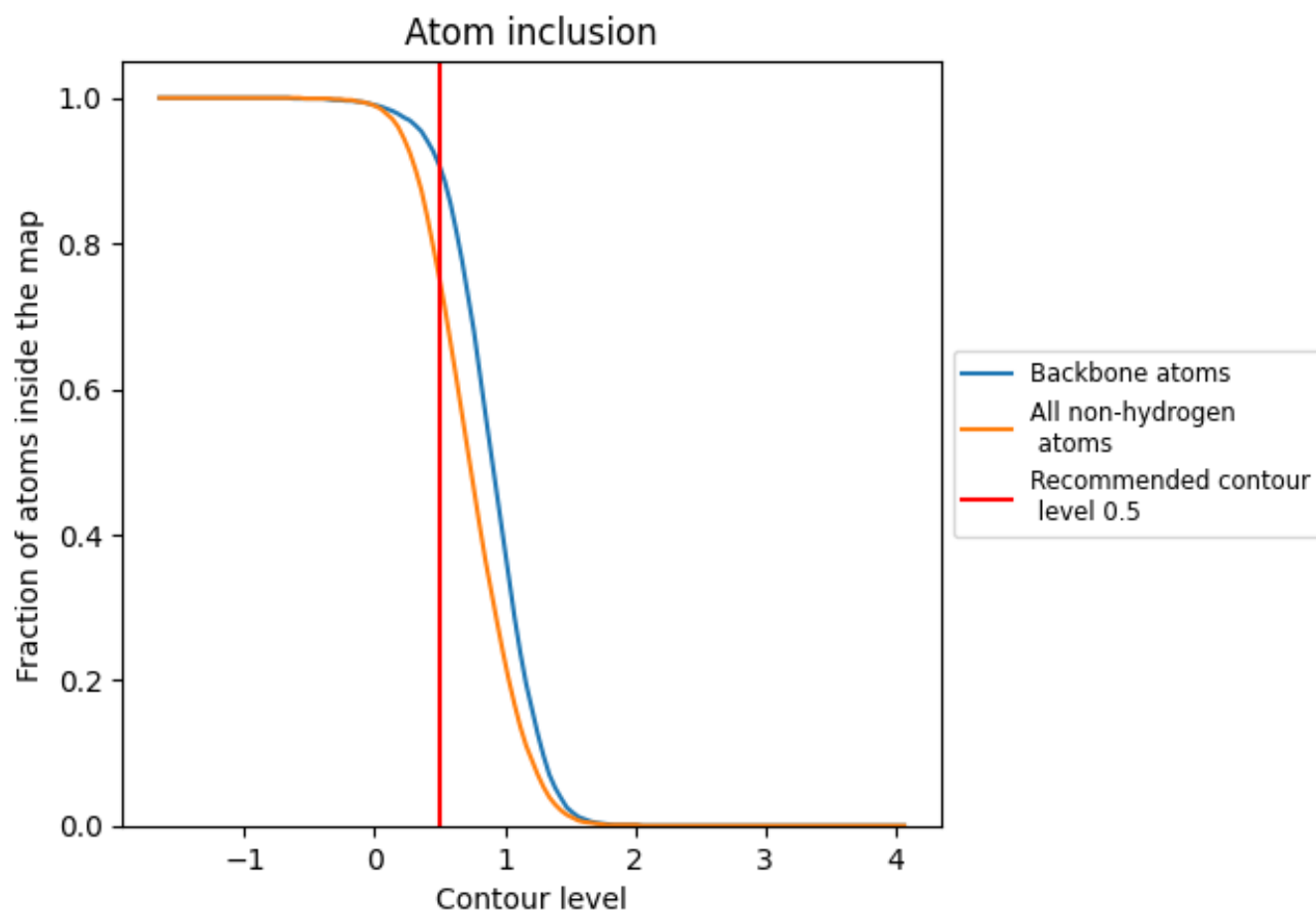
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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](#)



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 (0.5).

## 9.4 Atom inclusion [i](#)

















At the recommended contour level, 91% of all backbone atoms, 75% 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 (0.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7500	 0.3480
A	 0.8000	 0.3990
B	 0.6830	 0.3130
C	 0.7820	 0.3820
D	 0.7100	 0.3290
X	 0.9090	 0.3100
Y	 0.9220	 0.3230

