



Full wwPDB EM Validation Report ⓘ

Mar 25, 2026 – 07:13 PM UTC

PDB ID : 7K1K / pdb_00007k1k
EMDB ID : EMD-22625
Title : CryoEM structure of inactivated-form DNA-PK (Complex IV)
Authors : Chen, X.; Gellert, M.; Yang, W.
Deposited on : 2020-09-07
Resolution : 4.10 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

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:

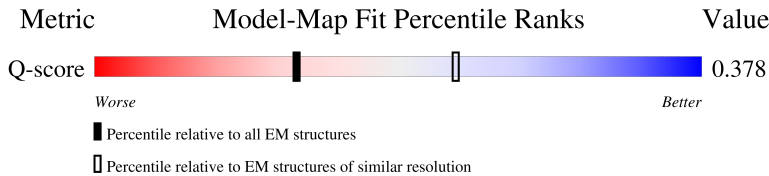
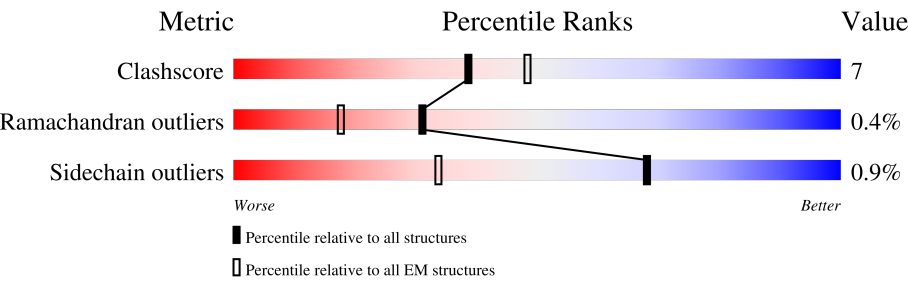
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 4.10 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.



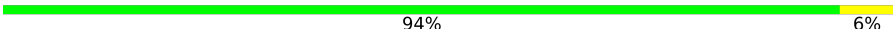
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	6458 (3.60 - 4.60)

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 $\leq 5\%$. 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	A	4128	
2	B	609	
3	C	732	
4	D	24	

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Mol	Chain	Length	Quality of chain
4	F	24	 88% 12%
5	E	16	 19% 81% 19%
5	G	16	 94% 6%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 38243 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 DNA-dependent protein kinase catalytic subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	3604	Total	C	N	O	S	0	0
			28577	18342	4862	5189	184		

- Molecule 2 is a protein called X-ray repair cross-complementing protein 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	490	Total	C	N	O	S	0	0
			3954	2533	671	733	17		

- Molecule 3 is a protein called X-ray repair cross-complementing protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	526	Total	C	N	O	S	0	0
			4204	2693	704	784	23		

- Molecule 4 is a DNA chain called DNA (5'-D(*GP*CP*AP*TP*GP*CP*TP*CP*TP*AP*CP*TP*GP*CP*TP*TP*CP*GP*AP*TP*AP*TP*CP*G)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	24	Total	C	N	O	P	0	0
			484	233	82	146	23		
4	F	21	Total	C	N	O	P	0	0
			425	204	69	131	21		

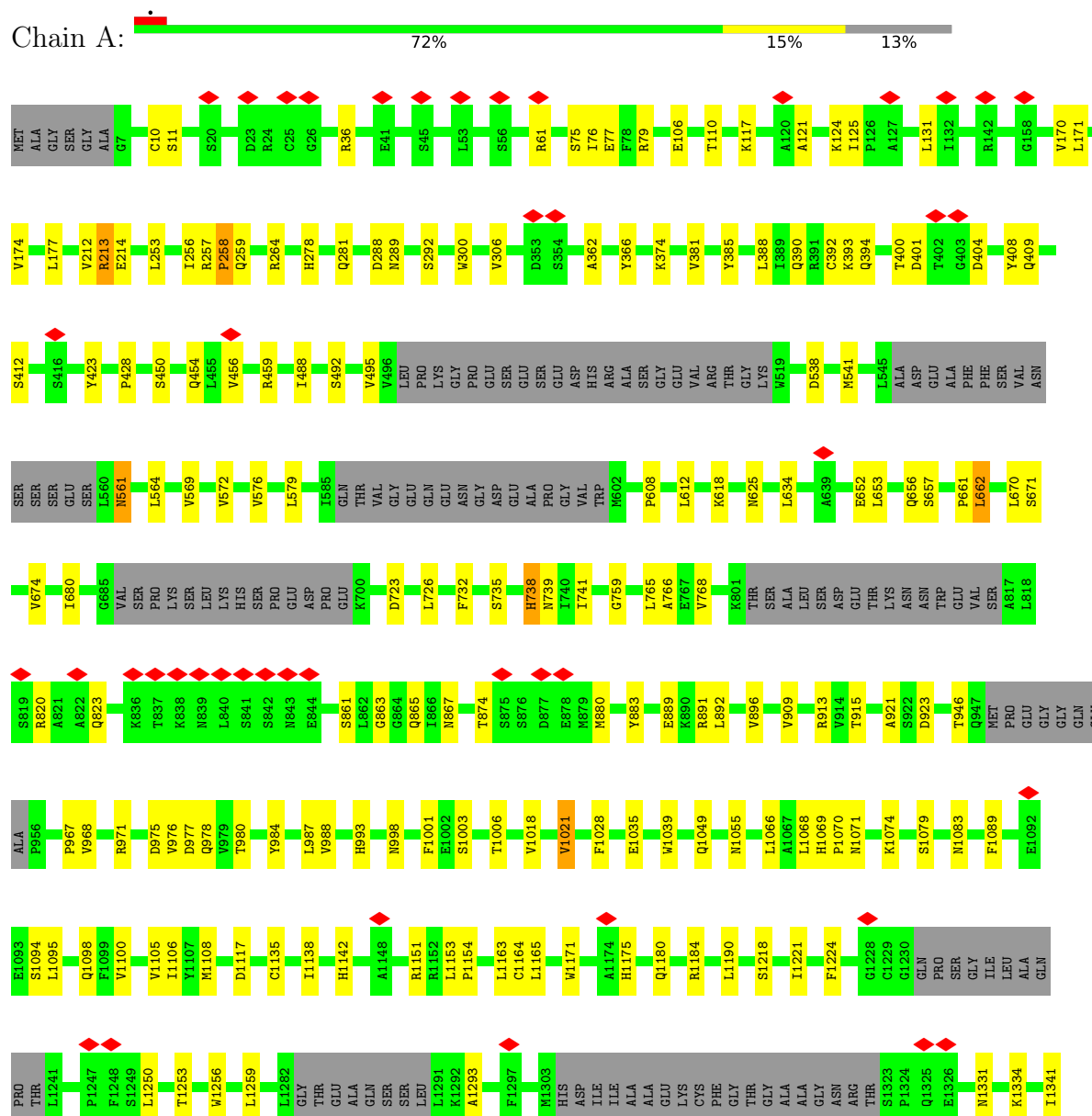
- Molecule 5 is a DNA chain called DNA (5'-D(*AP*AP*GP*CP*AP*GP*TP*AP*GP*AP*GP*CP*A)-3').

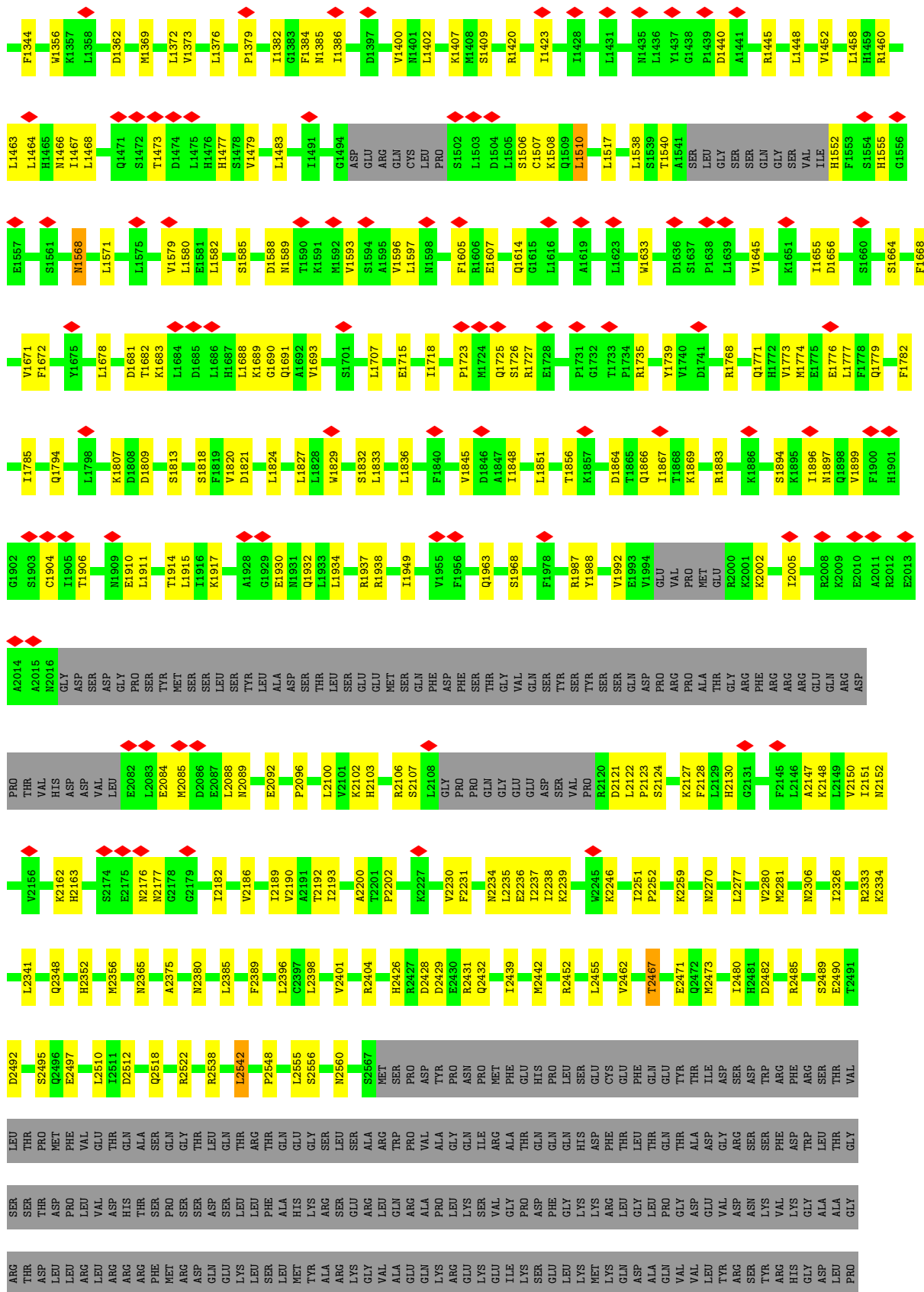
Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	13	Total	C	N	O	P	0	0
			269	128	58	71	12		
5	G	16	Total	C	N	O	P	0	0
			330	157	68	90	15		

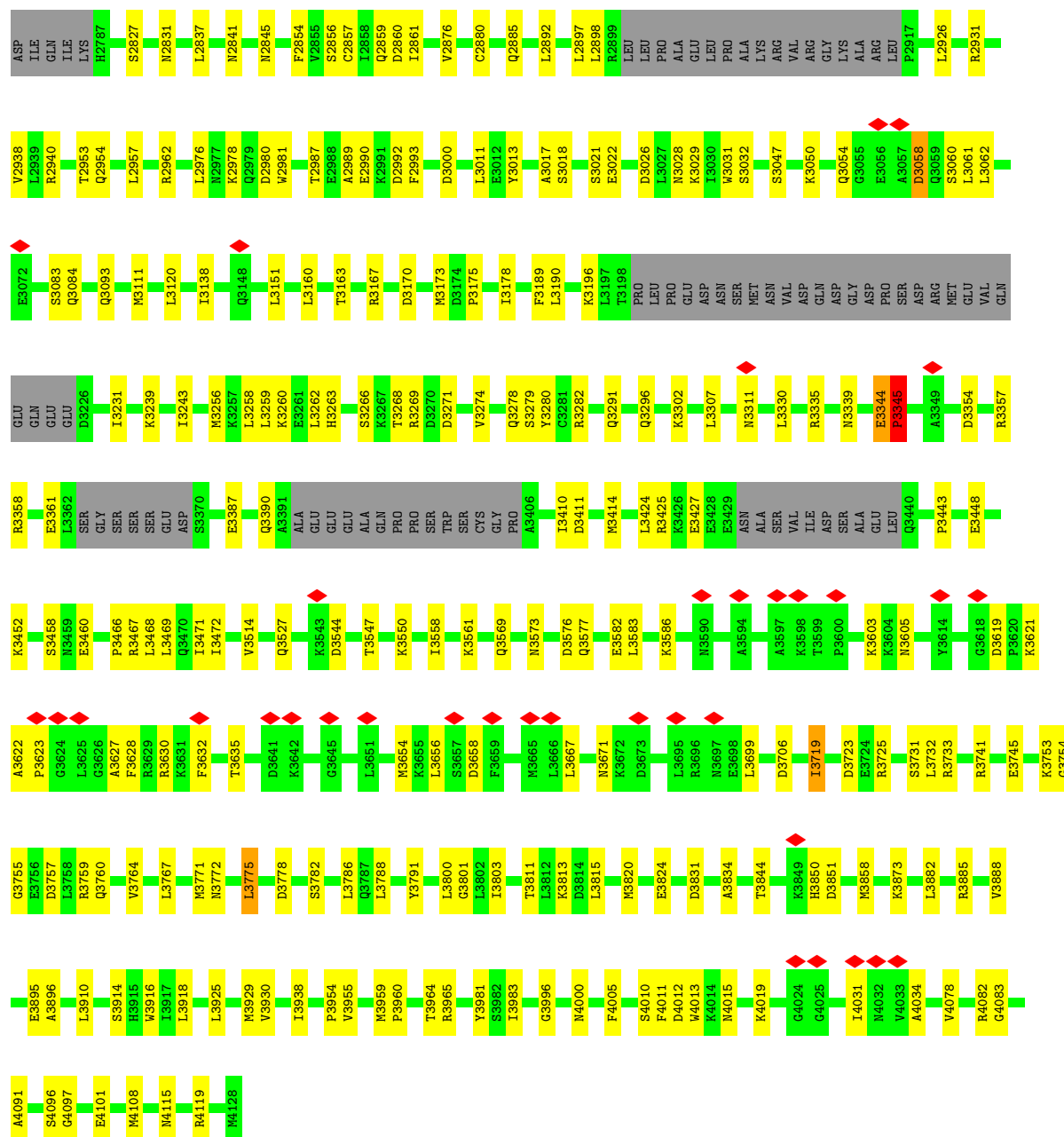
3 Residue-property plots

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.

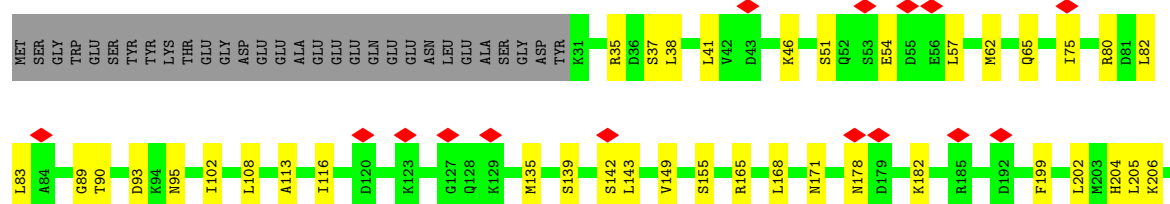
- Molecule 1: DNA-dependent protein kinase catalytic subunit

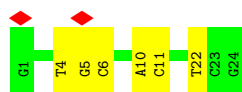






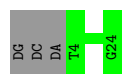
• Molecule 2: X-ray repair cross-complementing protein 6





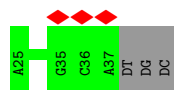
- Molecule 4: DNA (5'-D(*GP*CP*AP*TP*GP*CP*TP*CP*TP*AP*CP*TP*GP*CP*TP*TP*CP*GP*AP*TP*AP*TP*CP*G)-3')

Chain F: 88% 12%



- Molecule 5: DNA (5'-D(*AP*AP*GP*CP*AP*GP*TP*AP*GP*AP*GP*CP*A)-3')

Chain E: 19% 81% 19%



- Molecule 5: DNA (5'-D(*AP*AP*GP*CP*AP*GP*TP*AP*GP*AP*GP*CP*A)-3')

Chain G: 94% 6%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	96299	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 ($e^-/\text{\AA}^2$)	45	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.101	Depositor
Minimum map value	-0.052	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.013	Depositor
Map size (Å)	408.31998, 408.31998, 408.31998	wwPDB
Map dimensions	352, 352, 352	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.16, 1.16, 1.16	Depositor

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.36	0/29150	0.67	11/39416 (0.0%)
2	B	0.32	0/4031	0.65	1/5429 (0.0%)
3	C	0.29	0/4291	0.61	0/5791
4	D	0.36	0/540	0.52	0/831
4	F	0.34	0/473	0.48	0/727
5	E	0.26	0/304	0.43	0/468
5	G	0.39	0/372	0.52	0/573
All	All	0.35	0/39161	0.65	12/53235 (0.0%)

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

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

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	3344	GLU	CA-C-N	12.87	135.92	119.84
1	A	3344	GLU	C-N-CA	12.87	135.92	119.84
1	A	1473	THR	N-CA-C	-6.10	97.81	110.80
2	B	475	SER	N-CA-C	-6.09	107.07	114.75
1	A	3345	PRO	CA-N-CD	-5.29	104.60	112.00
1	A	634	LEU	N-CA-C	5.23	121.36	109.81
1	A	3058	ASP	CA-C-N	5.15	131.38	121.54
1	A	3058	ASP	C-N-CA	5.15	131.38	121.54
1	A	4012	ASP	CA-C-N	5.15	131.37	121.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	4012	ASP	C-N-CA	5.15	131.37	121.54
1	A	874	THR	CA-C-N	5.05	131.19	121.54
1	A	874	THR	C-N-CA	5.05	131.19	121.54

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	213	ARG	Sidechain
2	B	244	ARG	Sidechain

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	28577	0	28854	398	0
2	B	3954	0	4042	83	0
3	C	4204	0	4239	93	0
4	D	484	0	274	4	0
4	F	425	0	240	0	0
5	E	269	0	146	0	0
5	G	330	0	180	1	0
All	All	38243	0	37975	553	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 7.

All (553) 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:A:1171:TRP:O	1:A:1175:HIS:HB2	1.71	0.91
1:A:4078:VAL:O	1:A:4082:ARG:HB2	1.74	0.88
3:C:19:THR:O	3:C:22:ASN:HB2	1.81	0.80
1:A:2538:ARG:O	1:A:2542:LEU:HB2	1.83	0.77
1:A:213:ARG:HG2	2:B:404:ARG:HH12	1.51	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3357:ARG:O	1:A:3361:GLU:HB2	1.90	0.70
3:C:277:THR:HB	3:C:286:LYS:HD3	1.77	0.66
1:A:1018:VAL:HG11	1:A:1074:LYS:HD3	1.78	0.66
1:A:977:ASP:HB3	1:A:980:THR:HG22	1.78	0.65
1:A:1727:ARG:NH1	1:A:1771:GLN:O	2.30	0.64
1:A:3586:LYS:HG2	1:A:3667:LEU:HD21	1.79	0.64
2:B:37:SER:HA	2:B:82:LEU:O	1.98	0.63
3:C:339:CYS:SG	3:C:394:ARG:NH1	2.71	0.63
2:B:165:ARG:HA	2:B:199:PHE:O	1.99	0.63
1:A:1829:TRP:O	1:A:1883:ARG:NH2	2.32	0.63
1:A:495:VAL:HG21	1:A:625:ASN:HB2	1.81	0.62
1:A:1151:ARG:HB2	1:A:1163:LEU:HD12	1.80	0.62
1:A:2085:MET:HA	1:A:2089:ASN:HB2	1.81	0.62
1:A:3239:LYS:HB3	1:A:3262:LEU:HD11	1.80	0.62
2:B:143:LEU:HD11	2:B:182:LYS:HB3	1.81	0.61
1:A:2426:HIS:O	1:A:2432:GLN:NE2	2.34	0.61
2:B:524:GLU:O	2:B:528:LEU:HB3	2.01	0.61
2:B:288:LEU:HB2	3:C:311:ILE:O	2.00	0.61
3:C:364:VAL:HG23	3:C:419:LEU:HB3	1.82	0.61
1:A:3815:LEU:HD22	1:A:3930:VAL:HG11	1.83	0.61
1:A:2482:ASP:HA	1:A:2485:ARG:HH21	1.66	0.60
1:A:3772:ASN:HA	1:A:3775:LEU:HB2	1.83	0.60
2:B:35:ARG:NH2	2:B:80:ARG:O	2.34	0.60
1:A:1664:SER:HA	1:A:1668:PHE:HB3	1.84	0.60
1:A:3011:LEU:HD23	1:A:3047:SER:HB3	1.83	0.60
1:A:3028:ASN:HA	1:A:3031:TRP:HD1	1.66	0.60
1:A:2230:VAL:O	1:A:2234:ASN:ND2	2.35	0.60
1:A:2259:LYS:O	1:A:2270:ASN:ND2	2.34	0.60
1:A:1725:GLN:NE2	1:A:1768:ARG:O	2.35	0.59
1:A:1735:ARG:O	1:A:1739:TYR:HB2	2.01	0.59
1:A:3278:GLN:OE1	1:A:3282:ARG:NH1	2.35	0.59
3:C:335:SER:OG	3:C:394:ARG:NH2	2.36	0.59
1:A:1668:PHE:HA	1:A:1671:VAL:HG12	1.84	0.59
1:A:4010:SER:O	1:A:4015:ASN:ND2	2.36	0.59
2:B:346:MET:SD	2:B:399:ARG:NH2	2.76	0.59
1:A:561:ASN:N	1:A:561:ASN:OD1	2.35	0.59
1:A:1089:PHE:HB2	1:A:1095:LEU:HD11	1.84	0.58
1:A:278:HIS:HB3	1:A:281:GLN:HE22	1.69	0.58
1:A:1079:SER:O	1:A:1083:ASN:ND2	2.37	0.58
1:A:2467:THR:O	1:A:2471:GLU:HB2	2.03	0.58
1:A:1782:PHE:HA	1:A:1785:ILE:HG22	1.84	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3733:ARG:NH2	1:A:3754:GLY:O	2.37	0.58
2:B:399:ARG:NH1	3:C:516:LEU:O	2.37	0.58
3:C:271:ARG:NH1	4:D:22:DT:OP2	2.37	0.58
1:A:3772:ASN:HD22	1:A:3788:LEU:HB2	1.69	0.58
1:A:3831:ASP:HB3	1:A:3834:ALA:HB2	1.86	0.58
2:B:368:VAL:HG13	2:B:434:LEU:HD11	1.85	0.57
3:C:285:LYS:NZ	3:C:287:GLU:OE1	2.36	0.57
1:A:3813:LYS:HB2	1:A:3925:LEU:HB3	1.86	0.57
1:A:1894:SER:HA	1:A:1897:ASN:HB3	1.87	0.57
1:A:608:PRO:HB3	1:A:662:LEU:HD13	1.87	0.57
1:A:1568:ASN:HA	1:A:1571:LEU:HB2	1.86	0.57
1:A:213:ARG:HG2	2:B:404:ARG:NH1	2.19	0.57
1:A:765:LEU:HA	1:A:768:VAL:HG12	1.86	0.57
1:A:3757:ASP:OD2	1:A:3759:ARG:NH2	2.36	0.57
1:A:3569:GLN:O	1:A:3573:ASN:ND2	2.38	0.57
2:B:446:MET:SD	2:B:446:MET:N	2.77	0.57
2:B:428:THR:HG22	3:C:354:ARG:HH22	1.70	0.56
1:A:652:GLU:OE1	1:A:656:GLN:NE2	2.37	0.56
1:A:889:GLU:OE1	1:A:891:ARG:NH1	2.36	0.56
1:A:2231:PHE:HA	1:A:2234:ASN:HD22	1.70	0.56
1:A:3243:ILE:HD13	1:A:3259:LEU:HD22	1.87	0.56
1:A:3411:ASP:N	1:A:3411:ASP:OD1	2.38	0.56
3:C:80:HIS:HD2	3:C:81:ARG:HG2	1.69	0.56
3:C:346:CYS:SG	3:C:348:SER:OG	2.63	0.56
1:A:3084:GLN:HE21	1:A:3138:ILE:HD11	1.70	0.56
2:B:338:LYS:O	2:B:405:ASN:ND2	2.38	0.56
3:C:348:SER:HB2	3:C:350:GLN:HG2	1.88	0.56
1:A:212:VAL:HG12	2:B:332:GLU:OE2	2.06	0.56
1:A:880:MET:HA	1:A:883:TYR:HB2	1.86	0.56
1:A:2084:GLU:O	1:A:2089:ASN:ND2	2.38	0.56
1:A:117:LYS:NZ	3:C:300:ASP:OD1	2.33	0.56
1:A:4115:ASN:OD1	1:A:4119:ARG:NH2	2.38	0.56
2:B:285:PRO:O	2:B:287:LYS:NZ	2.39	0.56
1:A:3760:GLN:HE21	1:A:4005:PHE:HZ	1.53	0.56
1:A:1068:LEU:HD11	1:A:1106:ILE:HD11	1.89	0.55
1:A:1988:TYR:HE2	1:A:2088:LEU:HD13	1.70	0.55
1:A:1440:ASP:OD1	1:A:1440:ASP:N	2.39	0.55
1:A:1938:ARG:NH1	1:A:2092:GLU:OE2	2.39	0.55
2:B:440:ALA:HB2	3:C:483:PRO:HA	1.88	0.55
1:A:2962:ARG:NH2	1:A:4101:GLU:OE2	2.39	0.55
1:A:3448:GLU:HG2	1:A:3452:LYS:HD2	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:28:GLU:OE2	3:C:33:GLN:NE2	2.38	0.55
1:A:820:ARG:NH2	4:D:6:DC:OP2	2.34	0.55
1:A:1094:SER:O	1:A:1098:GLN:NE2	2.37	0.55
1:A:4083:GLY:HA3	1:A:4091:ALA:HB2	1.88	0.55
1:A:1467:ILE:HG22	1:A:1468:LEU:HG	1.89	0.55
1:A:3603:LYS:O	1:A:3605:ASN:ND2	2.39	0.55
1:A:3771:MET:SD	1:A:3914:SER:OG	2.64	0.55
2:B:451:LYS:HE3	2:B:453:MET:HE1	1.87	0.55
1:A:1896:ILE:HA	1:A:1899:VAL:HG12	1.87	0.55
1:A:2270:ASN:OD1	1:A:2306:ASN:ND2	2.40	0.54
1:A:2455:LEU:HD11	1:A:2480:ILE:HD13	1.89	0.54
3:C:155:LYS:HD3	3:C:215:LEU:HA	1.89	0.54
1:A:409:GLN:O	1:A:412:SER:OG	2.25	0.54
1:A:2837:LEU:O	1:A:2841:ASN:ND2	2.32	0.54
1:A:1538:LEU:O	1:A:1552:HIS:N	2.41	0.54
1:A:3630:ARG:HG2	1:A:3632:PHE:H	1.71	0.54
1:A:3760:GLN:OE1	1:A:4019:LYS:NZ	2.40	0.54
1:A:4011:PHE:HA	1:A:4015:ASN:HD22	1.71	0.54
1:A:75:SER:OG	1:A:77:GLU:OE1	2.25	0.54
1:A:993:HIS:NE2	1:A:1035:GLU:OE2	2.31	0.54
1:A:1420:ARG:NH1	1:A:1466:ASN:O	2.40	0.54
2:B:241:ASP:OD2	2:B:241:ASP:N	2.40	0.54
1:A:1735:ARG:O	1:A:1739:TYR:CB	2.55	0.54
1:A:1864:ASP:HA	1:A:1867:ILE:HD12	1.90	0.54
1:A:2121:ASP:OD2	1:A:2130:HIS:ND1	2.41	0.54
1:A:385:TYR:H	1:A:388:LEU:HD23	1.71	0.54
1:A:2931:ARG:NH2	1:A:3000:ASP:OD2	2.41	0.54
2:B:407:PRO:HG2	3:C:486:ARG:HD2	1.89	0.54
2:B:470:ARG:HE	3:C:347:LYS:HE3	1.72	0.54
1:A:3120:LEU:HD11	1:A:3896:ALA:HA	1.90	0.53
3:C:266:SER:OG	3:C:267:ILE:N	2.38	0.53
1:A:1180:GLN:O	1:A:1184:ARG:NH2	2.41	0.53
3:C:247:TRP:HD1	3:C:263:ALA:HB3	1.74	0.53
1:A:3278:GLN:NE2	1:A:3279:SER:OG	2.41	0.53
1:A:2177:ASN:HB3	1:A:2182:ILE:HG12	1.90	0.53
1:A:2987:THR:HG23	1:A:2989:ALA:H	1.72	0.53
1:A:3387:GLU:HA	1:A:3390:GLN:HE21	1.73	0.53
1:A:723:ASP:OD1	1:A:723:ASP:N	2.39	0.53
1:A:2375:ALA:HB3	1:A:2404:ARG:HG3	1.91	0.53
1:A:865:GLN:HG3	1:A:3170:ASP:HB3	1.90	0.53
1:A:3569:GLN:OE1	1:A:3573:ASN:ND2	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3623:PRO:O	1:A:3627:ALA:C	2.52	0.53
1:A:3820:MET:HG2	1:A:3882:LEU:HD11	1.89	0.53
2:B:324:SER:OG	2:B:325:ARG:NH1	2.42	0.53
3:C:351:VAL:HG21	3:C:407:VAL:HG21	1.90	0.53
1:A:738:HIS:HA	1:A:741:ILE:HB	1.90	0.53
3:C:280:ASP:N	3:C:280:ASP:OD1	2.42	0.53
1:A:3527:GLN:NE2	1:A:3699:LEU:O	2.41	0.53
1:A:400:THR:OG1	1:A:404:ASP:OD2	2.27	0.52
1:A:3354:ASP:OD1	1:A:3354:ASP:N	2.40	0.52
2:B:206:LYS:HB3	2:B:209:GLY:HA2	1.90	0.52
2:B:413:LEU:HD23	2:B:432:PHE:HD2	1.75	0.52
1:A:2462:VAL:HG13	1:A:2473:MET:HE1	1.91	0.52
1:A:3786:LEU:HB3	1:A:3910:LEU:HD22	1.91	0.52
2:B:142:SER:OG	2:B:143:LEU:N	2.43	0.52
1:A:131:LEU:HD22	1:A:177:LEU:HD21	1.92	0.52
1:A:1445:ARG:HD3	1:A:1448:LEU:HD21	1.90	0.52
1:A:861:SER:O	1:A:3167:ARG:NH1	2.43	0.52
1:A:3425:ARG:HH21	1:A:3467:ARG:HH21	1.57	0.52
3:C:409:PHE:HB2	3:C:420:VAL:HG23	1.92	0.52
1:A:1153:LEU:HD12	1:A:1154:PRO:HD2	1.92	0.52
1:A:3271:ASP:HA	1:A:3274:VAL:HG22	1.92	0.52
2:B:204:HIS:O	2:B:237:SER:N	2.42	0.52
3:C:52:ASP:N	3:C:52:ASP:OD1	2.43	0.52
1:A:2148:LYS:O	1:A:2152:ASN:ND2	2.40	0.52
1:A:3050:LYS:O	1:A:3054:GLN:NE2	2.42	0.52
1:A:264:ARG:HA	5:G:33:DG:H5'	1.92	0.51
1:A:1066:LEU:HD23	1:A:1074:LYS:HG3	1.93	0.51
2:B:93:ASP:N	2:B:93:ASP:OD1	2.42	0.51
1:A:1334:LYS:NZ	1:A:1382:ILE:O	2.43	0.51
1:A:1423:ILE:HB	1:A:1458:LEU:HD11	1.92	0.51
1:A:2452:ARG:HH21	1:A:2497:GLU:HG2	1.75	0.51
1:A:2859:GLN:NE2	1:A:2880:CYS:SG	2.83	0.51
1:A:3576:ASP:OD2	1:A:3577:GLN:NE2	2.43	0.51
1:A:3731:SER:OG	1:A:3732:LEU:N	2.43	0.51
2:B:491:GLU:OE1	3:C:316:TYR:OH	2.26	0.51
1:A:288:ASP:OD1	1:A:288:ASP:N	2.43	0.51
1:A:998:ASN:HA	1:A:1001:PHE:HB2	1.93	0.51
1:A:1035:GLU:OE2	1:A:1039:TRP:NE1	2.43	0.51
1:A:2452:ARG:HD2	1:A:2497:GLU:HG2	1.91	0.51
1:A:1914:THR:HA	1:A:1917:LYS:HG2	1.93	0.51
2:B:83:LEU:O	2:B:108:LEU:HA	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1582:LEU:HD21	1:A:1596:VAL:HG13	1.93	0.50
1:A:1690:GLY:HA2	1:A:1693:VAL:HG12	1.93	0.50
1:A:3466:PRO:HA	1:A:3469:LEU:HB2	1.92	0.50
1:A:76:ILE:O	1:A:79:ARG:NH1	2.44	0.50
1:A:3021:SER:OG	1:A:3022:GLU:N	2.44	0.50
1:A:2978:LYS:HZ2	1:A:2981:TRP:CD1	2.29	0.50
1:A:1071:ASN:HB3	1:A:1074:LYS:HB2	1.92	0.50
1:A:2992:ASP:OD1	1:A:2992:ASP:N	2.40	0.50
2:B:263:LEU:HB2	2:B:267:ILE:HB	1.93	0.50
2:B:475:SER:O	2:B:476:ASP:CG	2.54	0.50
1:A:374:LYS:HB2	1:A:381:VAL:HG21	1.94	0.50
1:A:1407:LYS:HD3	1:A:1463:LEU:HB2	1.92	0.50
1:A:984:TYR:HA	1:A:987:LEU:HB3	1.94	0.50
1:A:1568:ASN:OD1	1:A:1568:ASN:N	2.41	0.50
1:A:3424:LEU:HD21	1:A:3443:PRO:HG3	1.93	0.50
1:A:2122:LEU:O	1:A:2127:LYS:N	2.36	0.50
1:A:2538:ARG:HG2	1:A:2542:LEU:HD12	1.93	0.50
2:B:41:LEU:HD23	2:B:168:LEU:HD13	1.93	0.50
1:A:538:ASP:HA	1:A:541:MET:HB2	1.94	0.50
2:B:298:THR:OG1	3:C:294:VAL:O	2.25	0.50
1:A:863:GLY:O	1:A:867:ASN:ND2	2.38	0.49
1:A:1668:PHE:O	1:A:1672:PHE:HB2	2.12	0.49
1:A:1681:ASP:O	1:A:1689:LYS:NZ	2.39	0.49
1:A:3916:TRP:CD1	1:A:3960:PRO:HB3	2.47	0.49
3:C:511:HIS:HA	3:C:514:ASN:HB2	1.93	0.49
1:A:1250:LEU:O	1:A:1253:THR:OG1	2.29	0.49
2:B:278:GLN:HE22	3:C:431:ARG:HB3	1.77	0.49
1:A:1794:GLN:NE2	1:A:1832:SER:O	2.42	0.49
1:A:121:ALA:HA	1:A:124:LYS:HB2	1.93	0.49
1:A:257:ARG:HD3	1:A:258:PRO:HD2	1.95	0.49
1:A:988:VAL:HG11	1:A:1028:PHE:HZ	1.78	0.49
1:A:3619:ASP:OD1	1:A:3622:ALA:N	2.45	0.49
3:C:404:GLN:HB2	3:C:423:GLN:HE21	1.77	0.49
3:C:462:SER:OG	3:C:463:LEU:N	2.44	0.49
1:A:3981:TYR:HB2	1:A:4108:MET:HE1	1.94	0.49
1:A:3996:GLY:O	1:A:4000:ASN:ND2	2.45	0.49
1:A:1117:ASP:OD1	1:A:1117:ASP:N	2.37	0.49
1:A:2182:ILE:O	1:A:2186:VAL:N	2.43	0.49
3:C:45:GLN:OE1	3:C:50:ASN:ND2	2.40	0.49
3:C:280:ASP:OD1	3:C:283:THR:OG1	2.31	0.49
1:A:1579:VAL:HG23	1:A:1580:LEU:HD12	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:259:LEU:HD21	2:B:402:PRO:HA	1.95	0.49
2:B:459:VAL:HG12	3:C:383:ALA:HA	1.94	0.49
1:A:1369:MET:HA	1:A:1372:LEU:HD12	1.95	0.49
1:A:3175:PRO:HD2	1:A:3178:ILE:HD12	1.95	0.49
1:A:3706:ASP:OD1	1:A:3706:ASP:N	2.41	0.49
2:B:51:SER:OG	2:B:51:SER:O	2.30	0.49
1:A:125:ILE:HG12	1:A:170:VAL:HG22	1.95	0.48
1:A:1151:ARG:HD2	1:A:1163:LEU:HB2	1.95	0.48
1:A:1356:TRP:HZ2	1:A:1409:SER:HB2	1.77	0.48
1:A:3410:ILE:HD11	1:A:3458:SER:HB2	1.94	0.48
1:A:3959:MET:SD	1:A:3959:MET:N	2.70	0.48
3:C:182:PRO:O	3:C:184:ARG:NH1	2.46	0.48
1:A:2439:ILE:HA	1:A:2442:MET:HG2	1.94	0.48
1:A:1218:SER:HA	1:A:1221:ILE:HG22	1.94	0.48
1:A:2380:ASN:OD1	1:A:2380:ASN:N	2.44	0.48
1:A:3358:ARG:NH1	1:A:3361:GLU:OE1	2.45	0.48
3:C:231:LEU:HD21	3:C:511:HIS:HB2	1.95	0.48
1:A:2235:LEU:HA	1:A:2238:ILE:HD12	1.94	0.48
1:A:3307:LEU:HD22	1:A:3330:LEU:HD21	1.96	0.48
3:C:32:GLU:HA	3:C:35:LYS:HG2	1.95	0.48
3:C:66:ASN:HD22	3:C:74:TYR:HB3	1.77	0.48
1:A:3764:VAL:HA	1:A:3767:LEU:HB2	1.94	0.48
3:C:249:CYS:SG	3:C:250:ARG:N	2.87	0.48
1:A:1726:SER:OG	1:A:1727:ARG:N	2.44	0.48
1:A:2841:ASN:O	1:A:2845:ASN:ND2	2.35	0.48
1:A:2827:SER:O	1:A:2831:ASN:ND2	2.46	0.48
1:A:3733:ARG:HH22	1:A:3755:GLY:HA3	1.79	0.48
1:A:3778:ASP:OD1	1:A:3778:ASP:N	2.41	0.48
1:A:4096:SER:OG	1:A:4097:GLY:N	2.47	0.48
1:A:3256:MET:HE1	1:A:3280:TYR:HE1	1.77	0.48
1:A:3885:ARG:HA	1:A:3888:VAL:HG12	1.96	0.48
2:B:116:ILE:HG13	2:B:495:LEU:HD21	1.94	0.48
1:A:488:ILE:O	1:A:492:SER:OG	2.32	0.48
1:A:3723:ASP:OD2	1:A:3741:ARG:NH2	2.43	0.48
2:B:35:ARG:HH22	2:B:80:ARG:HB2	1.79	0.48
2:B:476:ASP:HB3	3:C:427:MET:HG2	1.96	0.48
1:A:3582:GLU:OE2	1:A:3671:ASN:ND2	2.47	0.47
2:B:62:MET:SD	2:B:206:LYS:NZ	2.87	0.47
2:B:244:ARG:O	2:B:244:ARG:HG3	2.12	0.47
2:B:343:PRO:HG3	2:B:404:ARG:HG3	1.96	0.47
2:B:348:MET:HE2	3:C:518:PRO:HD3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3786:LEU:HD21	1:A:3983:ILE:HD12	1.96	0.47
1:A:2123:PRO:O	1:A:2128:PHE:N	2.47	0.47
1:A:2148:LYS:HD3	1:A:2151:ILE:HD11	1.96	0.47
1:A:3811:THR:HG22	1:A:3929:MET:HG2	1.95	0.47
2:B:89:GLY:O	2:B:139:SER:OG	2.33	0.47
1:A:1256:TRP:HA	1:A:1259:LEU:HD12	1.95	0.47
1:A:1448:LEU:HD22	1:A:1510:LEU:HD13	1.96	0.47
1:A:2189:ILE:HA	1:A:2192:THR:HG22	1.96	0.47
3:C:11:VAL:O	3:C:132:ILE:HA	2.14	0.47
1:A:106:GLU:O	1:A:110:THR:OG1	2.30	0.47
1:A:3558:ILE:HA	1:A:3561:LYS:HG2	1.96	0.47
1:A:3658:ASP:OD1	1:A:3658:ASP:N	2.46	0.47
1:A:2162:LYS:HG3	1:A:2200:ALA:HB2	1.96	0.47
1:A:3111:MET:HB2	1:A:3111:MET:HE3	1.72	0.47
1:A:1678:LEU:O	1:A:1683:LYS:NZ	2.48	0.47
1:A:1379:PRO:HB2	1:A:1384:PHE:HB2	1.96	0.47
1:A:1585:SER:OG	1:A:1589:ASN:OD1	2.27	0.47
3:C:207:ILE:HA	3:C:210:MET:HE3	1.97	0.47
1:A:401:ASP:OD1	1:A:401:ASP:N	2.48	0.46
1:A:450:SER:O	1:A:454:GLN:N	2.44	0.46
1:A:3260:LYS:HA	1:A:3260:LYS:HD3	1.69	0.46
3:C:96:SER:O	3:C:96:SER:OG	2.31	0.46
1:A:3583:LEU:HD13	1:A:3586:LYS:HD2	1.98	0.46
2:B:263:LEU:HG	2:B:347:LEU:HD22	1.97	0.46
3:C:237:PHE:HA	3:C:240:ILE:HD12	1.97	0.46
1:A:456:VAL:HG12	1:A:459:ARG:HD2	1.96	0.46
3:C:298:ASN:HA	3:C:302:GLU:HG3	1.96	0.46
2:B:168:LEU:HB3	2:B:202:LEU:HB3	1.98	0.46
3:C:347:LYS:HG3	3:C:389:MET:HG2	1.96	0.46
1:A:36:ARG:NH2	1:A:823:GLN:O	2.40	0.46
1:A:2492:ASP:HB3	1:A:2495:SER:H	1.81	0.46
3:C:58:LEU:O	3:C:78:THR:OG1	2.31	0.46
1:A:1003:SER:O	1:A:1006:THR:OG1	2.33	0.46
1:A:1688:LEU:HA	1:A:1691:GLN:HE22	1.80	0.46
1:A:2236:GLU:HA	1:A:2239:LYS:HG2	1.98	0.46
1:A:3335:ARG:O	1:A:3339:ASN:HB2	2.15	0.46
1:A:3725:ARG:HD2	1:A:3725:ARG:HA	1.72	0.46
1:A:1911:LEU:HA	1:A:1914:THR:HG22	1.97	0.46
3:C:6:ASN:HB3	3:C:7:LYS:H	1.58	0.46
3:C:371:GLU:HB3	3:C:374:ALA:HB3	1.97	0.46
1:A:2990:GLU:HA	1:A:2993:PHE:HB3	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3357:ARG:O	1:A:3361:GLU:CB	2.61	0.46
3:C:376:ALA:O	3:C:379:SER:OG	2.29	0.46
1:A:2333:ARG:HD2	1:A:2333:ARG:HA	1.74	0.46
3:C:40:MET:HA	3:C:43:GLN:HE21	1.80	0.46
1:A:374:LYS:NZ	1:A:423:TYR:O	2.38	0.46
1:A:1813:SER:OG	1:A:1864:ASP:OD2	2.33	0.46
1:A:2251:ILE:HD12	1:A:2252:PRO:HD2	1.97	0.46
1:A:3468:LEU:HA	1:A:3471:ILE:HG22	1.98	0.46
1:A:3820:MET:HB3	1:A:3824:GLU:HG3	1.98	0.46
3:C:116:ASP:OD1	3:C:119:GLN:NE2	2.48	0.46
3:C:349:SER:O	3:C:349:SER:OG	2.34	0.46
1:A:2885:GLN:NE2	1:A:3895:GLU:OE2	2.47	0.45
3:C:165:LEU:HD12	3:C:166:PRO:HD2	1.98	0.45
1:A:1538:LEU:HD12	1:A:1555:HIS:HA	1.98	0.45
1:A:1949:ILE:HG23	1:A:2100:LEU:HD22	1.98	0.45
2:B:471:PHE:HE1	3:C:344:GLY:HA3	1.80	0.45
1:A:2348:GLN:O	1:A:2352:HIS:HB2	2.16	0.45
1:A:3026:ASP:N	1:A:3026:ASP:OD1	2.47	0.45
1:A:3263:HIS:O	1:A:3266:SER:OG	2.34	0.45
1:A:3964:THR:OG1	1:A:3965:ARG:N	2.47	0.45
3:C:18:PHE:O	3:C:21:SER:OG	2.26	0.45
1:A:385:TYR:HA	1:A:388:LEU:HB2	1.97	0.45
1:A:1400:VAL:HG21	1:A:1460:ARG:HH11	1.81	0.45
1:A:1656:ASP:OD1	1:A:1656:ASP:N	2.49	0.45
1:A:1135:CYS:HA	1:A:1138:ILE:HG22	1.99	0.45
1:A:1774:MET:HB3	1:A:1777:LEU:HB2	1.99	0.45
1:A:2512:ASP:OD1	1:A:2512:ASP:N	2.49	0.45
3:C:413:LYS:HD2	3:C:413:LYS:HA	1.79	0.45
1:A:2277:LEU:HA	1:A:2280:VAL:HG22	1.98	0.45
2:B:238:LYS:HD3	2:B:238:LYS:HA	1.77	0.45
2:B:266:ASP:O	3:C:534:LYS:NZ	2.41	0.45
2:B:388:LYS:HD2	2:B:388:LYS:HA	1.72	0.45
1:A:569:VAL:HA	1:A:572:VAL:HG12	1.99	0.45
1:A:1597:LEU:HA	1:A:1597:LEU:HD23	1.84	0.45
1:A:1833:LEU:HB3	1:A:1836:LEU:HB2	1.99	0.45
1:A:3623:PRO:HA	1:A:3627:ALA:HB3	1.98	0.45
2:B:51:SER:OG	2:B:54:GLU:O	2.33	0.45
3:C:164:PHE:HA	3:C:225:TYR:O	2.16	0.45
1:A:10:CYS:SG	1:A:11:SER:N	2.90	0.45
2:B:95:ASN:OD1	2:B:95:ASN:N	2.49	0.45
3:C:127:PHE:O	3:C:130:ARG:NH1	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:576:VAL:HA	1:A:579:LEU:HD12	1.99	0.45
1:A:3173:MET:SD	1:A:3782:SER:OG	2.75	0.45
3:C:385:ASP:N	3:C:385:ASP:OD1	2.49	0.45
1:A:1588:ASP:OD1	1:A:1588:ASP:N	2.42	0.44
1:A:3873:LYS:HA	1:A:3873:LYS:HD2	1.77	0.44
1:A:977:ASP:OD1	1:A:978:GLN:N	2.50	0.44
1:A:3753:LYS:N	1:A:3801:GLY:O	2.50	0.44
1:A:4011:PHE:O	1:A:4013:TRP:N	2.47	0.44
1:A:408:TYR:N	1:A:409:GLN:OE1	2.50	0.44
1:A:2980:ASP:OD1	1:A:2980:ASP:N	2.46	0.44
1:A:1715:GLU:HA	1:A:1718:ILE:HB	2.00	0.44
1:A:1963:GLN:O	1:A:1968:SER:OG	2.24	0.44
1:A:2856:SER:O	1:A:2860:ASP:HB2	2.17	0.44
1:A:3262:LEU:HD23	1:A:3262:LEU:HA	1.85	0.44
1:A:3058:ASP:O	1:A:3060:SER:OG	2.34	0.44
1:A:3654:MET:HE3	1:A:3656:LEU:HB2	2.00	0.44
3:C:247:TRP:CD1	3:C:263:ALA:HB3	2.50	0.44
1:A:61:ARG:HD2	1:A:61:ARG:HA	1.75	0.44
1:A:2334:LYS:HD2	1:A:2334:LYS:HA	1.65	0.44
3:C:144:LYS:HB3	3:C:144:LYS:HE3	1.83	0.44
3:C:301:ASP:N	3:C:301:ASP:OD1	2.50	0.44
1:A:863:GLY:HA2	1:A:3167:ARG:HD2	2.00	0.44
1:A:1108:MET:HB2	1:A:1108:MET:HE2	1.78	0.44
1:A:2147:ALA:HA	1:A:2150:VAL:HG22	1.99	0.44
2:B:155:SER:O	2:B:155:SER:OG	2.26	0.44
4:D:10:DA:H1'	4:D:11:DC:H5'	2.00	0.44
1:A:1106:ILE:HD12	1:A:1106:ILE:HA	1.87	0.44
1:A:739:ASN:OD1	1:A:739:ASN:N	2.47	0.44
2:B:102:ILE:HG21	2:B:149:VAL:HG11	1.99	0.44
1:A:289:ASN:O	1:A:292:SER:OG	2.28	0.43
1:A:3414:MET:HE2	1:A:3460:GLU:HG3	2.00	0.43
3:C:54:ILE:HD12	3:C:86:PRO:HG3	2.00	0.43
1:A:564:LEU:HD23	1:A:564:LEU:HA	1.85	0.43
1:A:726:LEU:HD23	1:A:726:LEU:HA	1.85	0.43
1:A:1508:LYS:HD3	1:A:1508:LYS:HA	1.79	0.43
2:B:362:LEU:HA	2:B:362:LEU:HD23	1.81	0.43
1:A:1190:LEU:HD23	1:A:1190:LEU:HA	1.82	0.43
1:A:2428:ASP:OD1	1:A:2429:ASP:N	2.51	0.43
2:B:284:PRO:HA	2:B:285:PRO:HD3	1.81	0.43
3:C:43:GLN:HE22	3:C:488:GLN:HE22	1.66	0.43
3:C:114:SER:O	3:C:118:ILE:HG12	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1071:ASN:HA	1:A:3745:GLU:HG2	1.99	0.43
1:A:759:GLY:HA3	1:A:766:ALA:HB2	2.00	0.43
1:A:1477:HIS:CD2	1:A:1479:VAL:HG12	2.53	0.43
1:A:2556:SER:O	1:A:2560:ASN:HB2	2.18	0.43
1:A:3767:LEU:HD23	1:A:3767:LEU:HA	1.88	0.43
2:B:529:VAL:HG23	2:B:530:TYR:HD1	1.82	0.43
3:C:463:LEU:HD21	3:C:477:PHE:HB3	2.00	0.43
1:A:913:ARG:HD2	1:A:913:ARG:HA	1.80	0.43
1:A:1949:ILE:HD13	1:A:2096:PRO:HB2	2.00	0.43
1:A:2953:THR:OG1	1:A:2954:GLN:OE1	2.37	0.43
2:B:397:LEU:HD21	3:C:479:THR:HG21	2.01	0.43
3:C:239:LYS:HD3	3:C:239:LYS:HA	1.77	0.43
3:C:356:PHE:HD2	3:C:422:VAL:HG21	1.84	0.43
1:A:253:LEU:HA	1:A:256:ILE:HG12	2.01	0.43
1:A:653:LEU:O	1:A:657:SER:OG	2.29	0.43
1:A:1776:GLU:HA	1:A:1779:GLN:HG2	2.00	0.43
1:A:1820:VAL:HA	1:A:1824:LEU:HD11	2.01	0.43
1:A:1930:GLU:OE1	1:A:1932:GLN:N	2.49	0.43
1:A:1934:LEU:HA	1:A:1937:ARG:HB2	1.99	0.43
1:A:3018:SER:O	1:A:3018:SER:OG	2.30	0.43
1:A:3138:ILE:HG12	1:A:3189:PHE:HZ	1.84	0.43
1:A:3291:GLN:HB2	1:A:3296:GLN:HG3	2.01	0.43
2:B:353:LEU:HD23	2:B:356:LEU:HD21	2.00	0.43
2:B:495:LEU:HD23	2:B:495:LEU:HA	1.84	0.43
1:A:171:LEU:HD12	1:A:171:LEU:HA	1.82	0.43
1:A:975:ASP:OD2	1:A:975:ASP:N	2.47	0.43
1:A:1507:CYS:HA	1:A:1510:LEU:HB3	2.00	0.43
1:A:2130:HIS:HE1	1:A:2163:HIS:HB3	1.84	0.43
1:A:2190:VAL:HA	1:A:2193:ILE:HG22	2.01	0.43
1:A:2518:GLN:OE1	1:A:2522:ARG:NH2	2.40	0.43
1:A:3547:THR:HA	1:A:3550:LYS:HZ3	1.83	0.43
1:A:3844:THR:HG22	1:A:3850:HIS:HA	2.01	0.43
2:B:261:LEU:HB3	2:B:269:ILE:HG23	2.01	0.43
3:C:50:ASN:OD1	3:C:50:ASN:N	2.52	0.43
1:A:3472:ILE:HD13	1:A:3472:ILE:HA	1.88	0.43
3:C:89:ASP:OD1	3:C:89:ASP:N	2.52	0.43
4:D:4:DT:H2"	4:D:5:DG:C8	2.54	0.43
1:A:2489:SER:OG	1:A:2490:GLU:N	2.51	0.42
1:A:2857:CYS:O	1:A:2861:ILE:HG12	2.19	0.42
1:A:3013:TYR:O	1:A:3017:ALA:CB	2.67	0.42
1:A:3929:MET:HB2	1:A:3938:ILE:HD11	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:143:LEU:HD12	2:B:143:LEU:HA	1.84	0.42
2:B:247:ARG:HH21	2:B:488:ARG:HE	1.67	0.42
1:A:1089:PHE:HE2	1:A:1100:VAL:HG21	1.83	0.42
1:A:1464:LEU:HD12	1:A:1464:LEU:HA	1.89	0.42
1:A:2428:ASP:HB3	1:A:2431:ARG:HD3	2.01	0.42
1:A:4031:ILE:HD12	1:A:4034:ALA:HB3	2.00	0.42
2:B:319:SER:OG	3:C:277:THR:OG1	2.31	0.42
1:A:1221:ILE:HD12	1:A:1224:PHE:HB2	2.00	0.42
1:A:1445:ARG:HH12	1:A:1506:SER:HB2	1.83	0.42
1:A:1987:ARG:HE	1:A:1988:TYR:H	1.67	0.42
1:A:2926:LEU:HD12	1:A:2926:LEU:HA	1.83	0.42
1:A:3983:ILE:HD13	1:A:3983:ILE:HA	1.85	0.42
2:B:332:GLU:O	2:B:336:GLU:HB2	2.18	0.42
2:B:372:GLU:N	2:B:372:GLU:OE1	2.52	0.42
1:A:1607:GLU:O	1:A:1614:GLN:NE2	2.53	0.42
1:A:2100:LEU:HD12	1:A:2100:LEU:HA	1.92	0.42
1:A:3344:GLU:HA	1:A:3345:PRO:HD2	1.57	0.42
2:B:142:SER:HG	2:B:143:LEU:H	1.67	0.42
2:B:298:THR:OG1	2:B:299:LYS:N	2.52	0.42
1:A:1142:HIS:CD2	1:A:1165:LEU:HB2	2.54	0.42
1:A:1963:GLN:NE2	1:A:2124:SER:OG	2.52	0.42
1:A:2103:HIS:O	1:A:2107:SER:HB3	2.19	0.42
1:A:3029:LYS:O	1:A:3032:SER:OG	2.29	0.42
1:A:3544:ASP:OD1	1:A:3544:ASP:N	2.51	0.42
1:A:2398:LEU:HA	1:A:2401:VAL:HG12	2.02	0.42
1:A:1906:THR:OG1	1:A:1910:GLU:OE1	2.36	0.42
1:A:3754:GLY:HA2	1:A:3800:LEU:HD23	2.01	0.42
1:A:171:LEU:HA	1:A:174:VAL:HG12	2.01	0.42
1:A:1540:THR:HG1	1:A:1552:HIS:N	2.17	0.42
1:A:1682:THR:HA	1:A:1689:LYS:HE3	2.02	0.42
1:A:2356:MET:HE2	1:A:2356:MET:HB3	1.87	0.42
1:A:3788:LEU:HD13	1:A:3788:LEU:HA	1.91	0.42
2:B:57:LEU:HD21	2:B:65:GLN:HE22	1.85	0.42
2:B:113:ALA:HA	2:B:116:ILE:HG12	2.01	0.42
2:B:178:ASN:OD1	2:B:178:ASN:N	2.53	0.42
1:A:967:PRO:O	1:A:971:ARG:NH2	2.53	0.42
1:A:1069:HIS:HA	1:A:1070:PRO:HD3	1.93	0.42
1:A:1818:SER:HA	1:A:1821:ASP:HB2	2.01	0.42
1:A:1851:LEU:HD23	1:A:1851:LEU:HA	1.83	0.42
1:A:2940:ARG:HD3	1:A:2957:LEU:HD22	2.02	0.42
1:A:2976:LEU:HD12	1:A:2976:LEU:HA	1.92	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3013:TYR:O	1:A:3017:ALA:HB3	2.19	0.42
1:A:3268:THR:OG1	1:A:3269:ARG:N	2.53	0.42
2:B:75:ILE:HD11	3:C:317:GLY:HA3	2.02	0.41
1:A:680:ILE:HD12	1:A:680:ILE:HA	1.93	0.41
1:A:1068:LEU:HD23	1:A:1068:LEU:HA	1.91	0.41
1:A:2281:MET:HE2	1:A:2326:ILE:HG22	2.02	0.41
3:C:225:TYR:HB3	3:C:230:SER:HB2	2.03	0.41
3:C:484:ASN:HB3	3:C:487:PHE:CZ	2.55	0.41
1:A:2385:LEU:HD12	1:A:2385:LEU:HA	1.93	0.41
1:A:3628:PHE:HD1	1:A:3628:PHE:HA	1.78	0.41
2:B:399:ARG:HH11	3:C:516:LEU:HB3	1.86	0.41
2:B:514:MET:HE2	2:B:514:MET:HB3	1.81	0.41
3:C:62:ASP:HA	3:C:103:GLN:HG2	2.02	0.41
1:A:362:ALA:O	1:A:366:TYR:HB2	2.20	0.41
2:B:46:LYS:HA	2:B:46:LYS:HD3	1.86	0.41
2:B:510:LYS:HB3	2:B:513:ALA:HB3	2.01	0.41
3:C:381:ILE:HD12	3:C:381:ILE:HA	1.85	0.41
3:C:388:ASP:N	3:C:388:ASP:OD1	2.47	0.41
1:A:1718:ILE:HD13	1:A:1718:ILE:HA	1.96	0.41
1:A:2555:LEU:HD21	1:A:2854:PHE:HD1	1.85	0.41
1:A:3302:LYS:HB3	1:A:3302:LYS:HE2	1.88	0.41
1:A:3330:LEU:HD23	1:A:3330:LEU:HA	1.86	0.41
3:C:127:PHE:HB3	3:C:130:ARG:HD2	2.02	0.41
1:A:2510:LEU:O	1:A:2518:GLN:NE2	2.54	0.41
1:A:2876:VAL:HG11	1:A:2892:LEU:HD23	2.01	0.41
1:A:2897:LEU:HA	1:A:2897:LEU:HD23	1.88	0.41
3:C:271:ARG:HD3	3:C:271:ARG:HA	1.90	0.41
3:C:274:LYS:HA	3:C:274:LYS:HD3	1.89	0.41
1:A:390:GLN:O	1:A:394:GLN:NE2	2.43	0.41
1:A:1452:VAL:HG12	1:A:1517:LEU:HD12	2.02	0.41
1:A:1848:ILE:HD12	1:A:1848:ILE:HA	1.91	0.41
1:A:2234:ASN:HA	1:A:2237:ILE:HD12	2.01	0.41
1:A:2281:MET:HG2	1:A:2326:ILE:HG22	2.03	0.41
3:C:482:ILE:HD13	3:C:482:ILE:HA	1.93	0.41
1:A:670:LEU:HD23	1:A:670:LEU:HA	1.89	0.41
1:A:1256:TRP:HZ2	1:A:1293:ALA:HB1	1.85	0.41
1:A:1725:GLN:O	1:A:1768:ARG:NE	2.49	0.41
1:A:1824:LEU:H	1:A:1824:LEU:HG	1.75	0.41
1:A:2002:LYS:HA	1:A:2005:ILE:HG22	2.02	0.41
1:A:3800:LEU:HD23	1:A:3800:LEU:HA	1.88	0.41
1:A:3858:MET:HE3	1:A:3858:MET:HB3	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:405:VAL:HG22	3:C:426:PHE:HE1	1.86	0.41
3:C:537:PHE:HD1	3:C:538:PRO:HD2	1.85	0.41
1:A:456:VAL:HA	1:A:459:ARG:HB2	2.03	0.41
1:A:1049:GLN:HG2	1:A:1055:ASN:HD21	1.86	0.41
1:A:1341:ILE:HD12	1:A:1344:PHE:HB3	2.02	0.41
1:A:1373:VAL:HA	1:A:1376:LEU:HG	2.02	0.41
1:A:1866:GLN:HA	1:A:1869:LYS:HE3	2.01	0.41
1:A:2898:LEU:HD23	1:A:2898:LEU:HA	1.76	0.41
1:A:3062:LEU:HD21	1:A:3093:GLN:HG3	2.03	0.41
1:A:3424:LEU:HA	1:A:3427:GLU:HB2	2.02	0.41
3:C:362:LEU:O	3:C:420:VAL:HA	2.20	0.41
1:A:915:THR:HG23	1:A:968:VAL:HG11	2.02	0.41
1:A:1331:ASN:HA	1:A:1334:LYS:HE3	2.03	0.41
1:A:1605:PHE:HD1	1:A:1655:ILE:HG13	1.86	0.41
1:A:3621:LYS:HD3	1:A:3621:LYS:HA	1.92	0.41
2:B:239:LEU:HD23	2:B:243:LEU:HG	2.03	0.41
1:A:921:ALA:HB1	1:A:923:ASP:HB3	2.04	0.40
1:A:1385:ASN:OD1	1:A:1386:ILE:N	2.54	0.40
1:A:1593:VAL:HA	1:A:1596:VAL:HG12	2.03	0.40
1:A:1904:CYS:HB3	1:A:1906:THR:HG22	2.02	0.40
1:A:671:SER:HA	1:A:674:VAL:HG12	2.03	0.40
1:A:1372:LEU:HD21	1:A:1402:LEU:HD23	2.03	0.40
1:A:1633:TRP:HZ3	1:A:1645:VAL:HG11	1.87	0.40
1:A:1707:LEU:HD23	1:A:1707:LEU:HA	1.89	0.40
1:A:2365:ASN:HD22	1:A:2396:LEU:HD22	1.85	0.40
1:A:3061:LEU:HD23	1:A:3061:LEU:HA	1.96	0.40
1:A:3196:LYS:HA	1:A:3196:LYS:HD2	1.78	0.40
2:B:171:ASN:HB3	2:B:205:LEU:HD12	2.02	0.40
2:B:219:ASP:OD1	2:B:219:ASP:N	2.46	0.40
3:C:43:GLN:NE2	3:C:488:GLN:OE1	2.54	0.40
1:A:385:TYR:HE2	1:A:428:PRO:HG2	1.87	0.40
1:A:618:LYS:HA	1:A:618:LYS:HD3	1.83	0.40
1:A:892:LEU:HD23	1:A:892:LEU:HA	1.93	0.40
1:A:1483:LEU:HD23	1:A:1483:LEU:HA	1.93	0.40
1:A:3358:ARG:HD2	1:A:3358:ARG:HA	1.84	0.40
1:A:3851:ASP:OD1	1:A:3851:ASP:N	2.53	0.40
2:B:38:LEU:HA	2:B:38:LEU:HD12	1.84	0.40
3:C:153:SER:HA	3:C:156:LYS:HG2	2.02	0.40
1:A:732:PHE:O	1:A:735:SER:OG	2.38	0.40
1:A:1362:ASP:OD1	1:A:1362:ASP:N	2.54	0.40
1:A:1785:ILE:HG23	1:A:1827:LEU:HD11	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1911:LEU:O	1:A:1915:LEU:HG	2.22	0.40
1:A:3190:LEU:HD21	1:A:3231:ILE:HG23	2.03	0.40
1:A:3243:ILE:HD11	1:A:3258:LEU:HB3	2.03	0.40
1:A:3771:MET:HE3	1:A:3771:MET:HB2	1.96	0.40
2:B:90:THR:HG21	2:B:135:MET:HE3	2.02	0.40
1:A:177:LEU:HD12	1:A:177:LEU:HA	1.80	0.40
1:A:392:CYS:SG	1:A:393:LYS:N	2.94	0.40
1:A:1807:LYS:HE2	1:A:1809:ASP:HB2	2.03	0.40
1:A:2102:LYS:O	1:A:2106:ARG:HG2	2.22	0.40
1:A:2176:ASN:OD1	1:A:2176:ASN:N	2.51	0.40
1:A:3160:LEU:HA	1:A:3163:THR:HG22	2.03	0.40
1:A:3719:ILE:H	1:A:3719:ILE:HG22	1.66	0.40
1:A:3791:TYR:HE2	1:A:3803:ILE:HD11	1.86	0.40
2:B:429:PRO:HD2	3:C:354:ARG:HH12	1.86	0.40
3:C:195:LYS:HD3	3:C:195:LYS:HA	1.84	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	3562/4128 (86%)	3060 (86%)	487 (14%)	15 (0%)	30	65
2	B	486/609 (80%)	401 (82%)	85 (18%)	0	100	100
3	C	522/732 (71%)	448 (86%)	70 (13%)	4 (1%)	16	52
All	All	4570/5469 (84%)	3909 (86%)	642 (14%)	19 (0%)	31	65

All (19) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1021	VAL
1	A	3345	PRO

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Mol	Chain	Res	Type
1	A	2246	LYS
1	A	2467	THR
1	A	3083	SER
3	C	299	ASP
3	C	322	PRO
1	A	259	GLN
1	A	1164	CYS
1	A	1723	PRO
1	A	2202	PRO
1	A	3775	LEU
1	A	3954	PRO
3	C	324	SER
1	A	258	PRO
3	C	193	PRO
1	A	661	PRO
1	A	2548	PRO
1	A	976	VAL

5.3.2 Protein sidechains ⓘ

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	3142/3671 (86%)	3113 (99%)	29 (1%)	70	76
2	B	444/548 (81%)	440 (99%)	4 (1%)	70	76
3	C	473/649 (73%)	469 (99%)	4 (1%)	73	77
All	All	4059/4868 (83%)	4022 (99%)	37 (1%)	68	76

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	214	GLU
1	A	300	TRP
1	A	306	VAL
1	A	561	ASN
1	A	612	LEU

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Mol	Chain	Res	Type
1	A	662	LEU
1	A	738	HIS
1	A	896	VAL
1	A	909	VAL
1	A	946	THR
1	A	1021	VAL
1	A	1105	VAL
1	A	1510	LEU
1	A	1568	ASN
1	A	1773	VAL
1	A	1845	VAL
1	A	1856	THR
1	A	1992	VAL
1	A	2341	LEU
1	A	2389	PHE
1	A	2542	LEU
1	A	2938	VAL
1	A	3151	LEU
1	A	3311	ASN
1	A	3514	VAL
1	A	3635	THR
1	A	3719	ILE
1	A	3918	LEU
1	A	3955	VAL
2	B	239	LEU
2	B	244	ARG
2	B	246	VAL
2	B	452	ILE
3	C	351	VAL
3	C	360	GLN
3	C	468	GLU
3	C	494	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (82) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	16	GLN
1	A	109	ASN
1	A	195	ASN
1	A	322	GLN
1	A	334	HIS
1	A	336	ASN

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Mol	Chain	Res	Type
1	A	356	ASN
1	A	477	ASN
1	A	484	HIS
1	A	533	HIS
1	A	625	ASN
1	A	738	HIS
1	A	982	GLN
1	A	1083	ASN
1	A	1126	GLN
1	A	1142	HIS
1	A	1146	ASN
1	A	1205	ASN
1	A	1222	ASN
1	A	1471	GLN
1	A	1625	HIS
1	A	1654	GLN
1	A	1691	GLN
1	A	1931	ASN
1	A	1932	GLN
1	A	1957	ASN
1	A	1963	GLN
1	A	2089	ASN
1	A	2222	HIS
1	A	2234	ASN
1	A	2266	ASN
1	A	2275	GLN
1	A	2301	GLN
1	A	2305	ASN
1	A	2348	GLN
1	A	2353	GLN
1	A	2414	GLN
1	A	2464	HIS
1	A	2496	GLN
1	A	2831	ASN
1	A	3003	ASN
1	A	3084	GLN
1	A	3130	GLN
1	A	3139	GLN
1	A	3278	GLN
1	A	3327	ASN
1	A	3390	GLN
1	A	3422	GLN

Continued on next page...

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Mol	Chain	Res	Type
1	A	3516	HIS
1	A	3569	GLN
1	A	3573	ASN
1	A	3577	GLN
1	A	3671	ASN
1	A	3762	GLN
1	A	3772	ASN
1	A	3903	HIS
1	A	4000	ASN
1	A	4015	ASN
1	A	4032	ASN
1	A	4055	ASN
2	B	65	GLN
2	B	98	ASN
2	B	101	ASN
2	B	152	ASN
2	B	426	GLN
2	B	433	GLN
2	B	489	ASN
3	C	6	ASN
3	C	43	GLN
3	C	75	GLN
3	C	76	ASN
3	C	80	HIS
3	C	119	GLN
3	C	256	ASN
3	C	290	GLN
3	C	330	GLN
3	C	359	ASN
3	C	360	GLN
3	C	423	GLN
3	C	450	GLN
3	C	517	ASN
3	C	527	GLN

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 [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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.

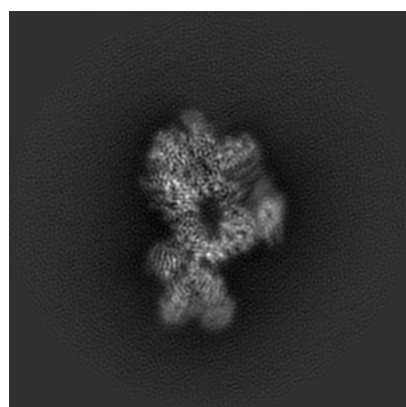
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-22625. These allow visual inspection of the internal detail of the map and identification of artifacts.

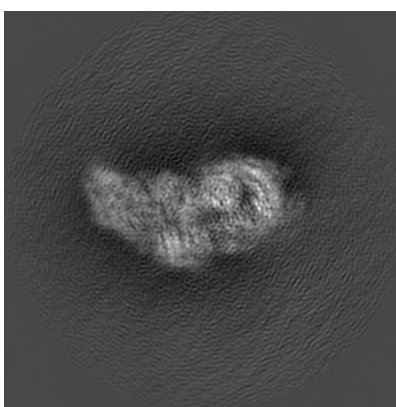
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

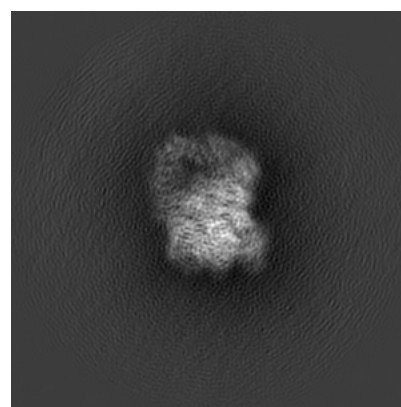
6.1.1 Primary map



X



Y

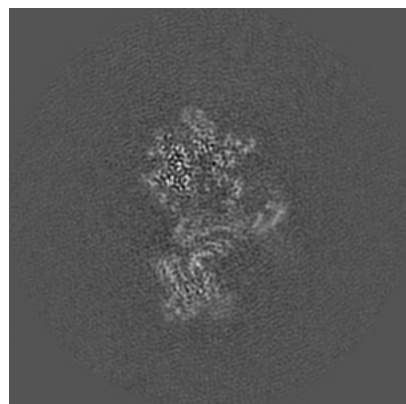


Z

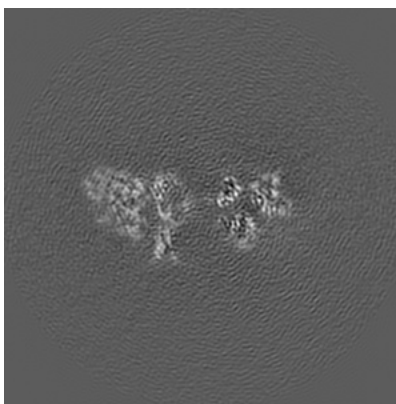
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

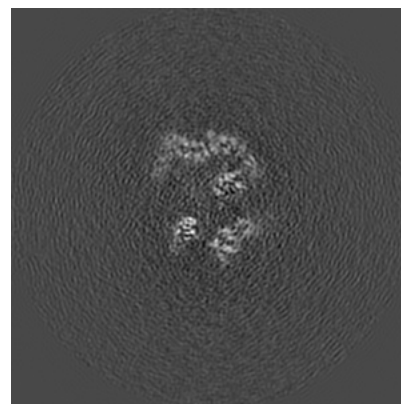
6.2.1 Primary map



X Index: 176



Y Index: 176

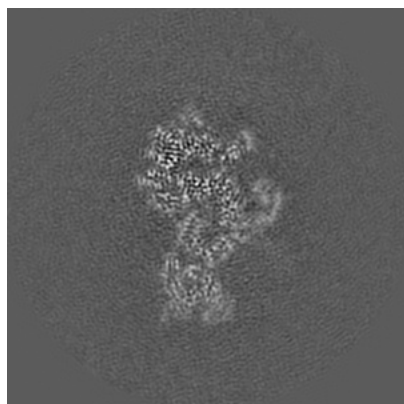


Z Index: 176

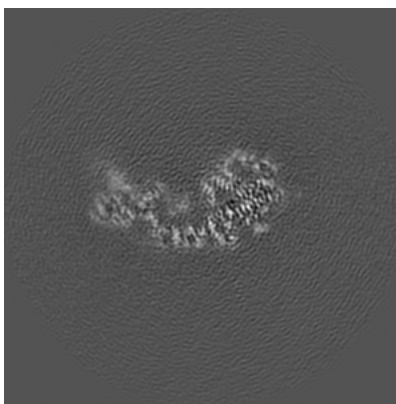
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

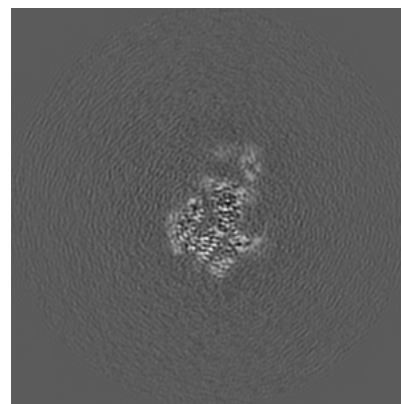
6.3.1 Primary map



X Index: 184



Y Index: 149

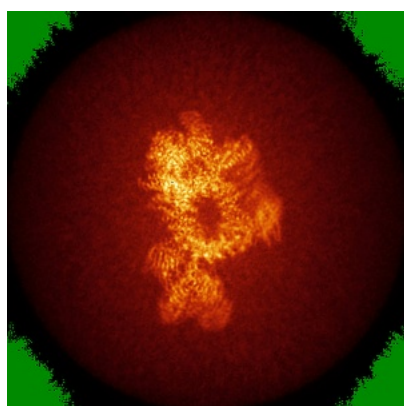


Z Index: 199

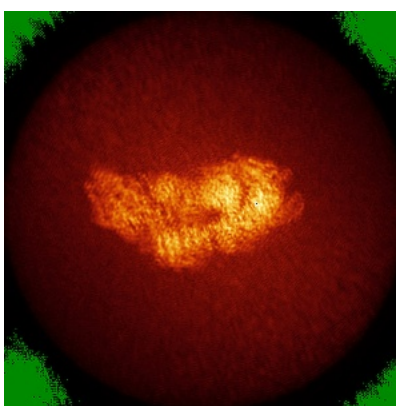
The images above show the largest variance slices of the map in three orthogonal directions.

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

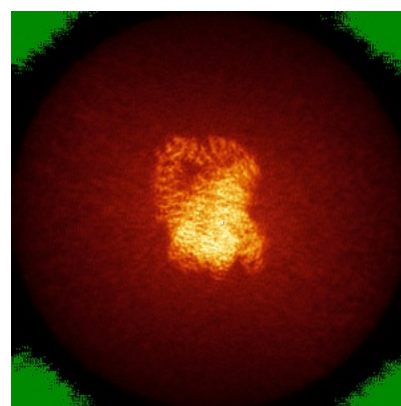
6.4.1 Primary map



X



Y

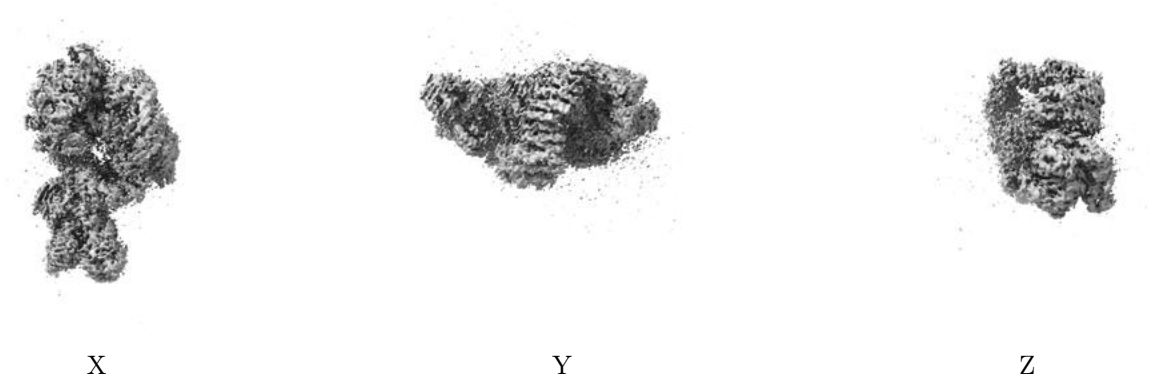


Z

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 0.013. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

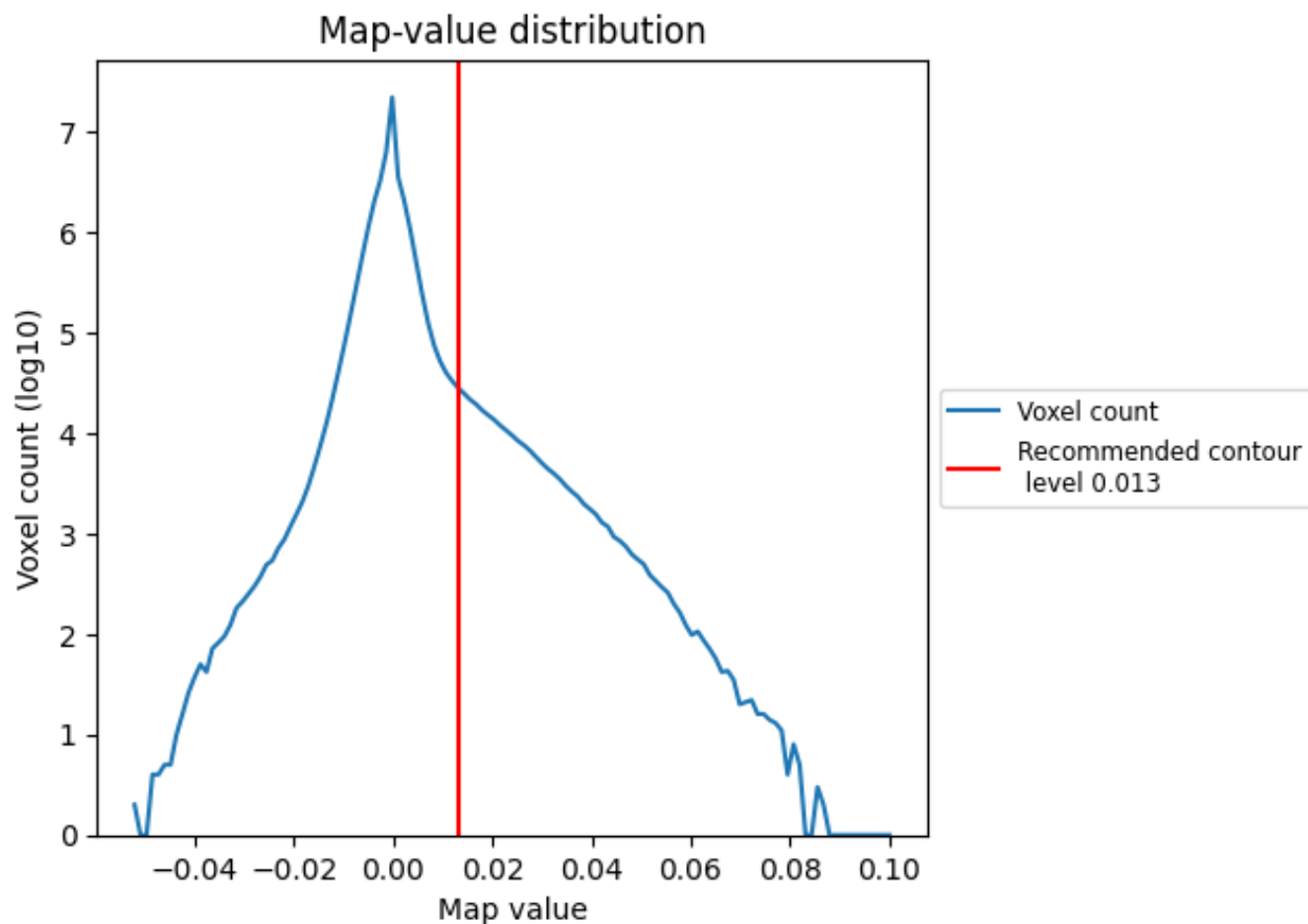
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

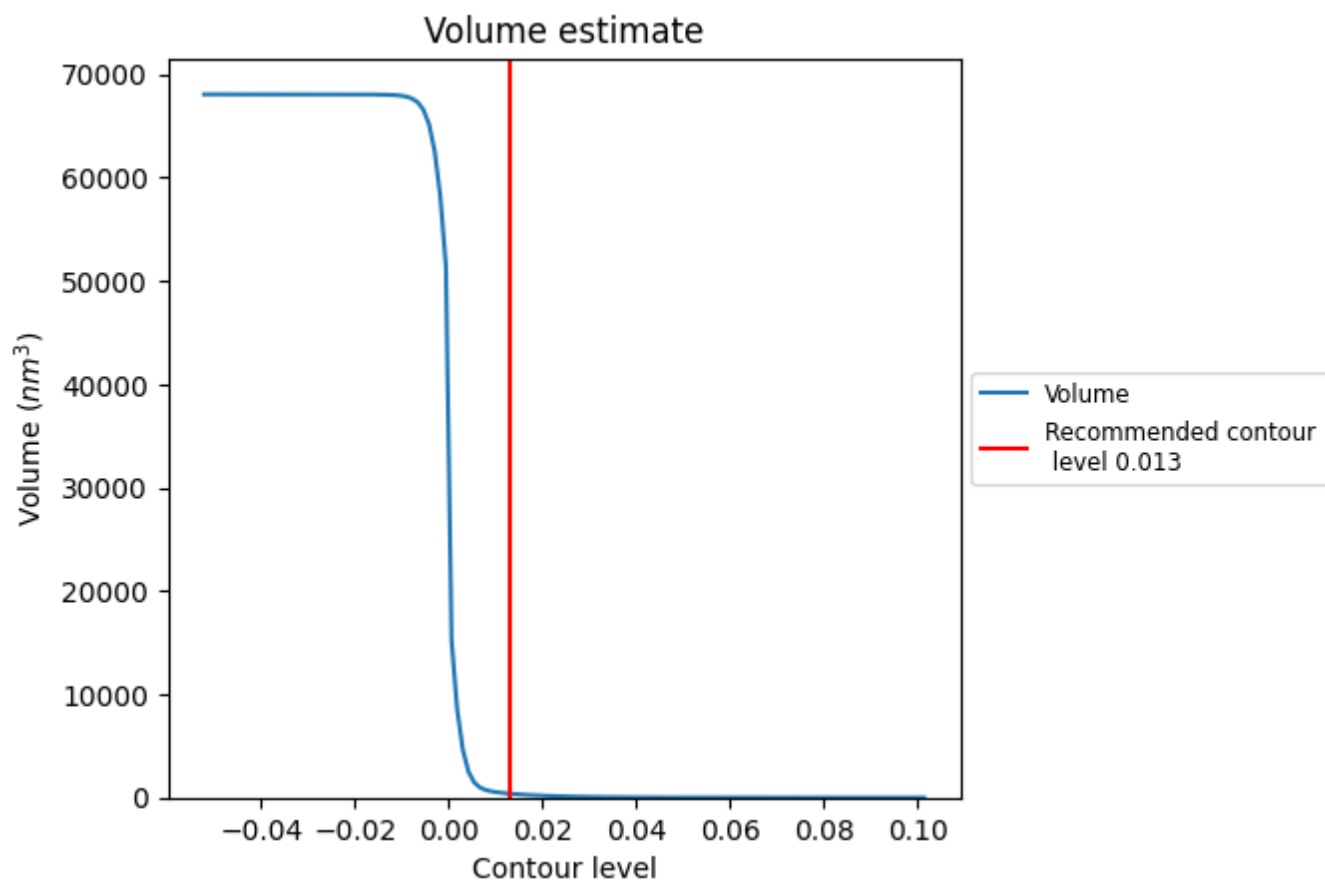
This section contains the results of statistical analysis of the map.

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.

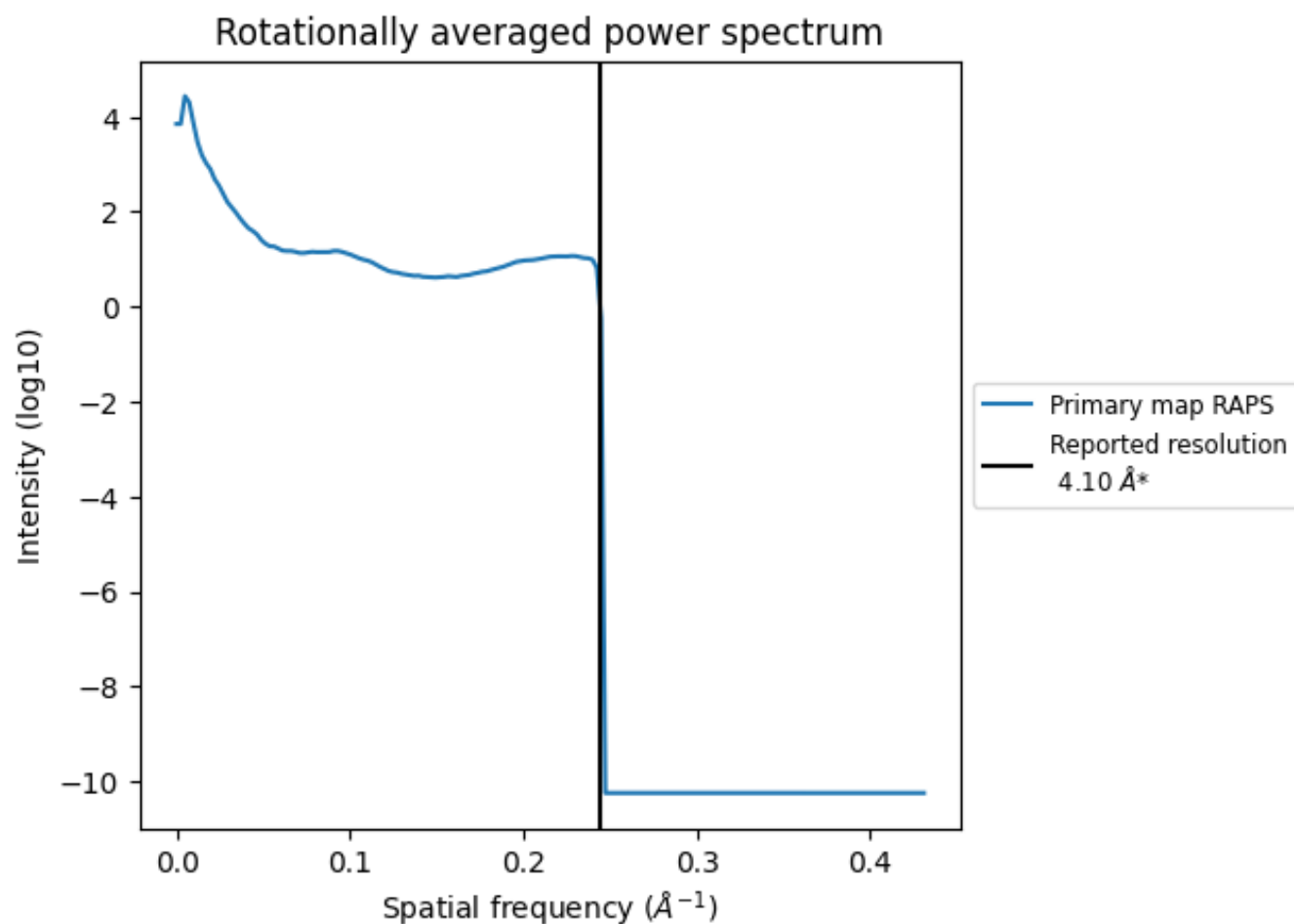
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 377 nm³; this corresponds to an approximate mass of 340 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 ⓘ



*Reported resolution corresponds to spatial frequency of 0.244 Å⁻¹

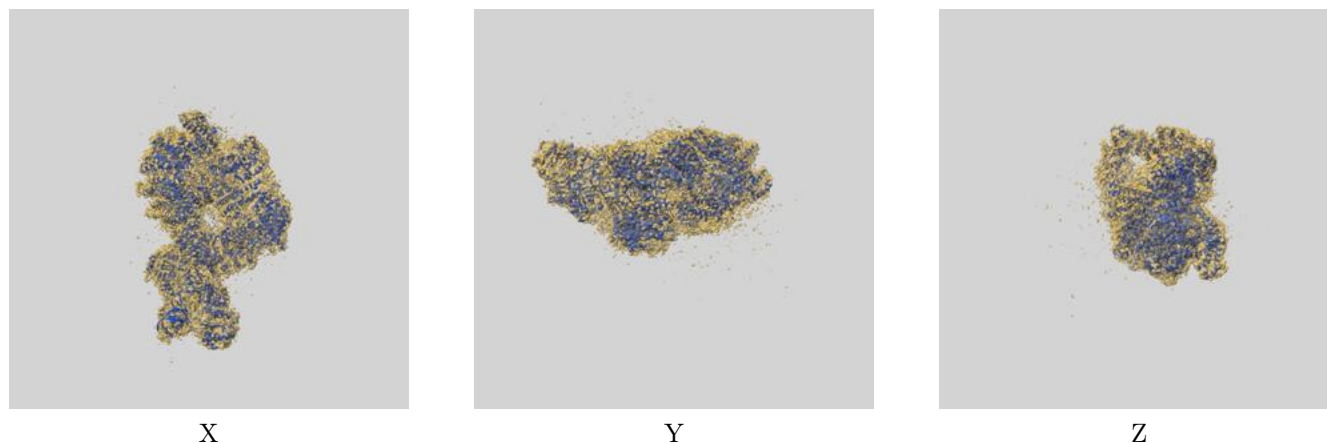
8 Fourier-Shell correlation ⓘ

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

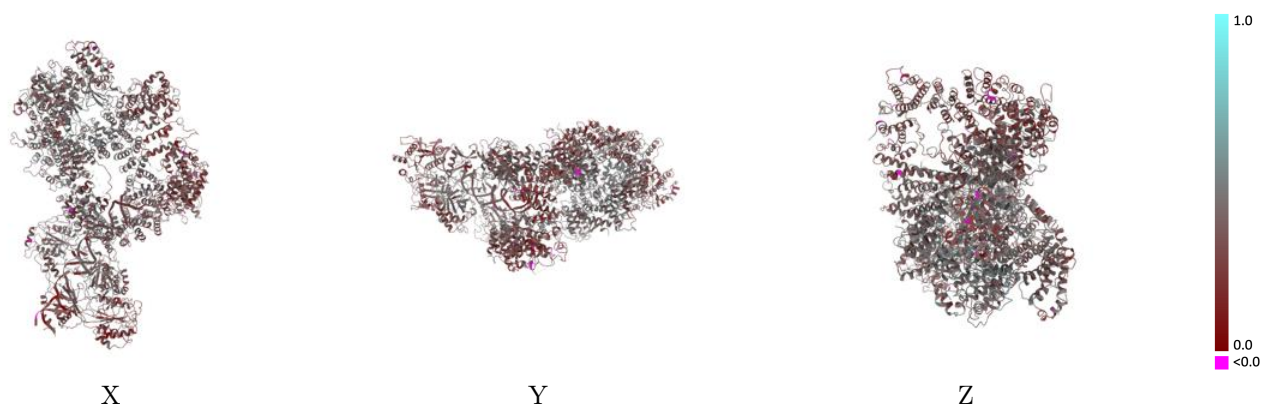
This section contains information regarding the fit between EMDB map EMD-22625 and PDB model 7K1K. Per-residue inclusion information can be found in section 3 on page 5.

9.1 Map-model overlay [i](#)



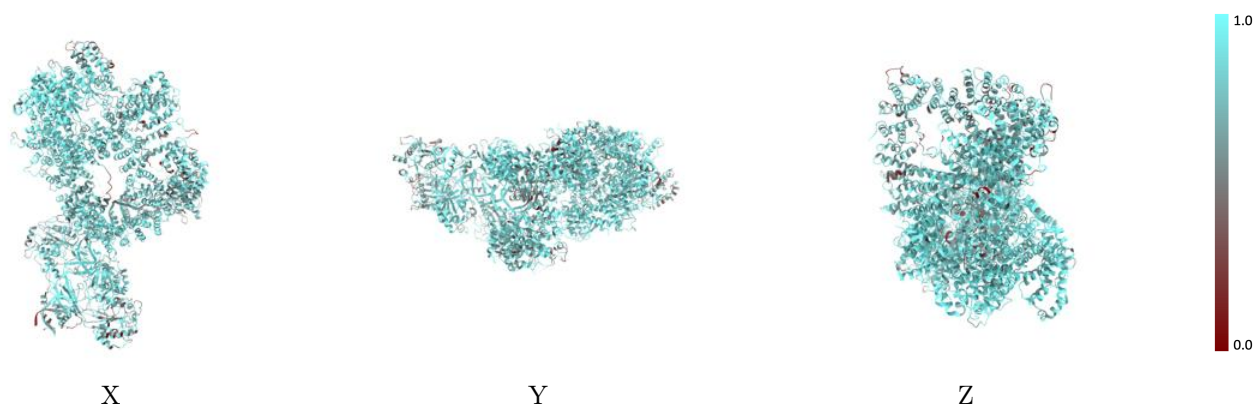
The images above show the 3D surface view of the map at the recommended contour level 0.013 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



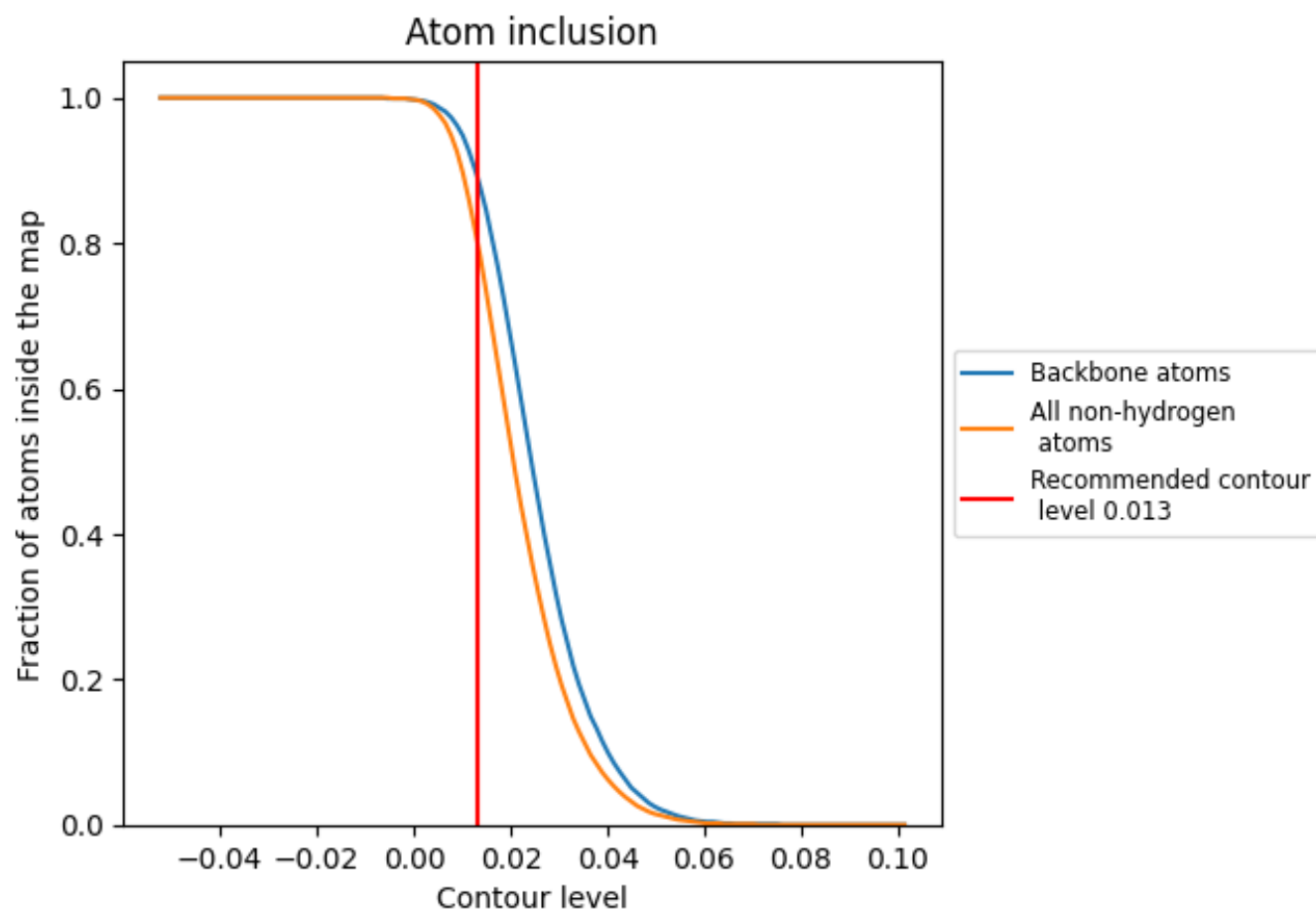
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.013).

9.4 Atom inclusion [i](#)



At the recommended contour level, 90% of all backbone atoms, 81% 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 (0.013) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8080	0.3780
A	0.8210	0.3870
B	0.7840	0.3840
C	0.7370	0.3470
D	0.8240	0.3190
E	0.6650	0.1990
F	0.8780	0.3080
G	0.8790	0.3040

1.0

0.0

<0.0