Full wwPDB EM Validation Report ⓘ

Nov 17, 2026 – 05:14 PM JST

PDB ID	:	21KY / pdb_000021ky
EMDB ID	:	EMD-67782
Title	:	BTR1_NaCl_pH6.5_Inward conformation
Authors	:	Zhang, S.S.
Deposited on	:	2025-12-17
Resolution	:	2.65 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:

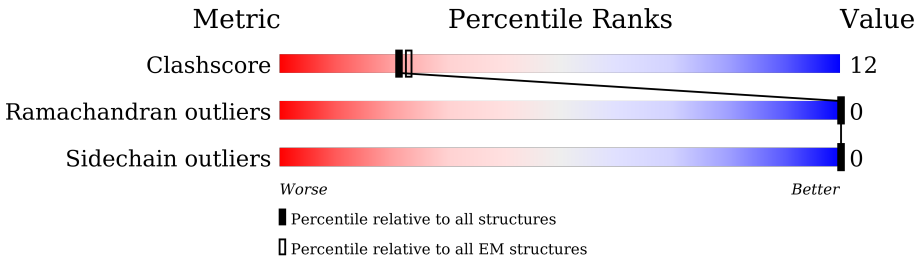
EMDB validation analysis	:	0.0.1.dev133
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

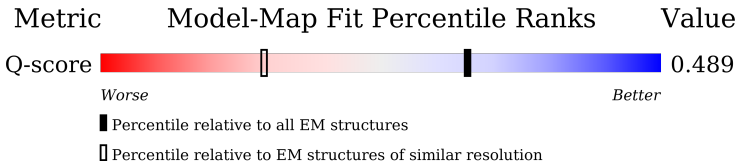
1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.65 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	9050 (2.15 - 3.15)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	875	55% 22% 23%
1	B	875	55% 22% 23%

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 10760 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 Solute carrier family 4 member 11.

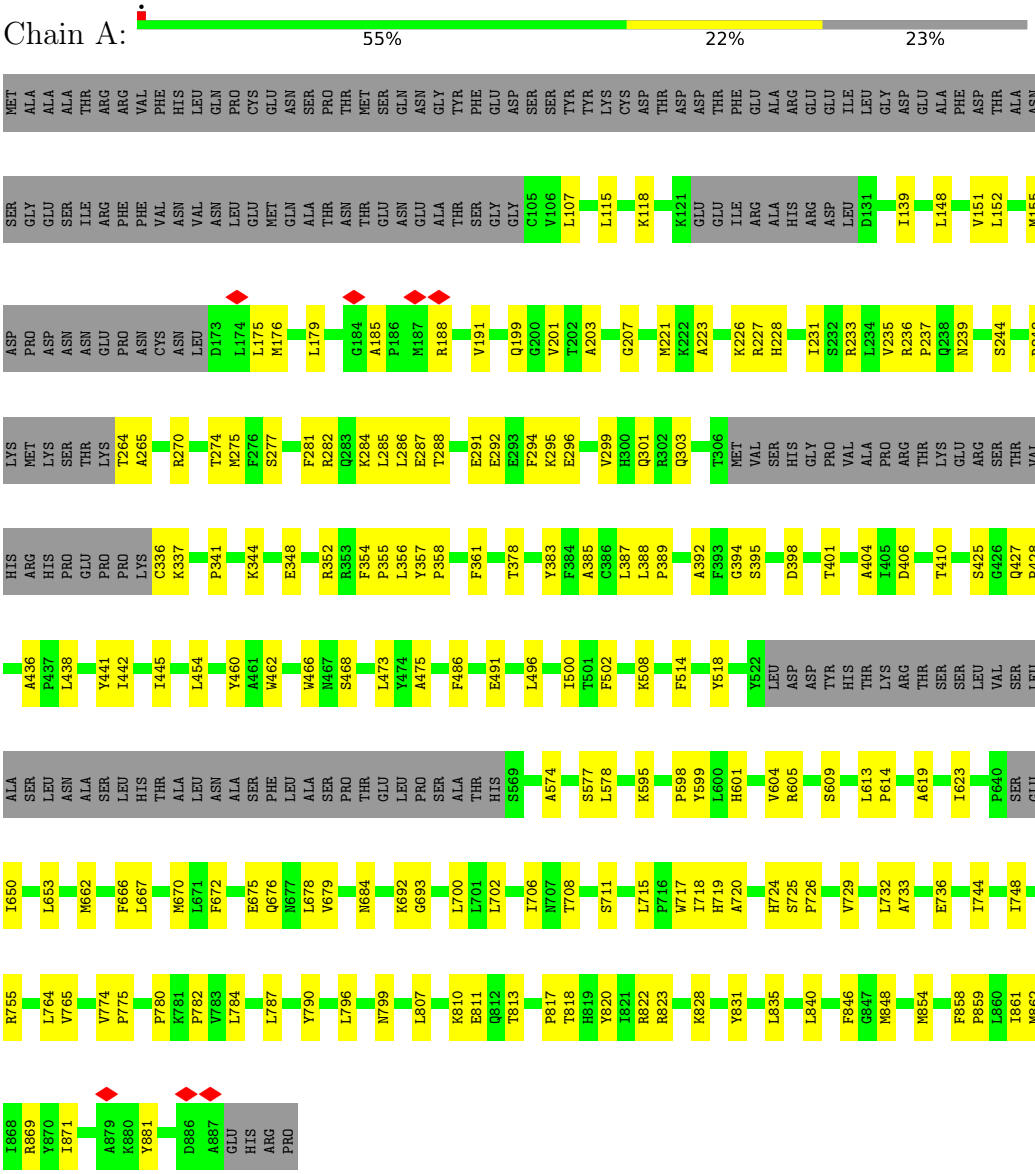
Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	676	Total	C	N	O	S	0	0
			5380	3542	885	923	30		
1	B	676	Total	C	N	O	S	0	0
			5380	3542	885	923	30		

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Solute carrier family 4 member 11

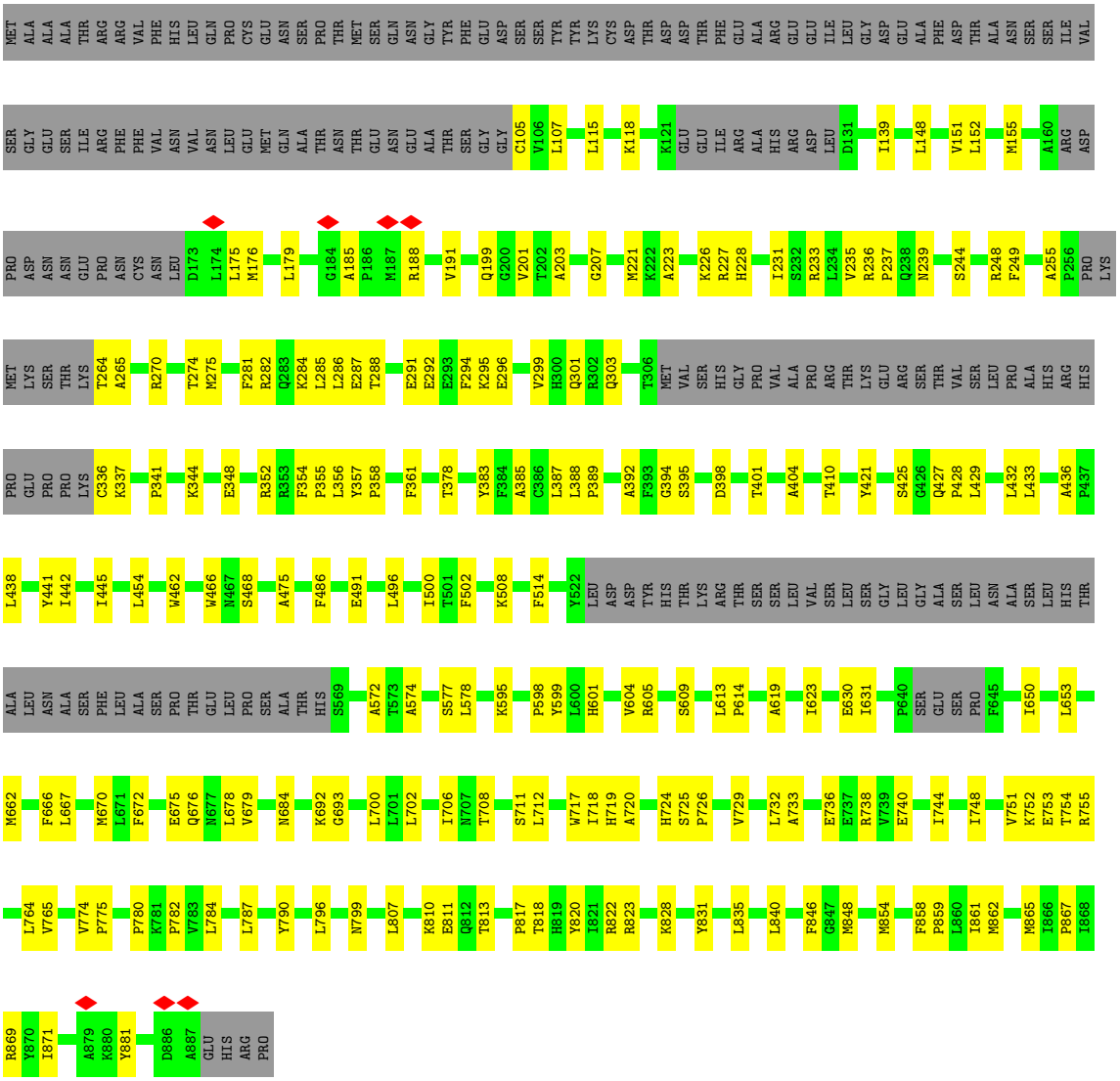
Chain A:



• Molecule 1: Solute carrier family 4 member 11

Chain B:


55%
22%
23%


MET ALA ALA ALA THR ARG ARG VAL PHE HIS LEU GLN PRO CYS GLU ASN SER PRO THR MET SER GLN ASN GLY TYR PHE GLU ASP SER SER TYR TYR LYS CYS ASP THR ASP ASP THR PHE GLU ALA ARG GLU GLU ILE LEU GLY ASP GLU ALA PHE ASP THR ALA ASN SER SER ILE VAL
SER GLY GLU SER ILE ARG PHE PHE VAL ASN VAL ASN LEU GLU MET GLN ALA THR ASN THR GLU ASN GLU ALA THR SER GLY GLY C105 Y106 L107 L115 K118 K121 GLU GLU ILE ARG ALA HIS ARG ASP LEU D131 I139 L148 V151 L152 M155 A160 ARG ASP
PRO ASP ASN ASN GLU PRO ASN CYS ASN LEU D173 L174 L175 M176 L179 G184 A185 P186 M187 R188 V191 Q199 G200 V201 T202 A203 G207 M221 K222 A223 K226 R227 H228 I231 S232 R233 L234 V235 R236 P237 Q238 N239 S244 R248 F249 A255 P256 PRO LYS
MET LYS SER THR LYS T264 A265 R270 T274 M275 F281 R282 Q283 K284 L285 L286 E287 T288 E291 E292 E293 F294 K295 E296 V299 H300 Q301 R302 Q303 T306 MET VAL SER HIS GLY PRO VAL ALA PRO ARG THR LYS GLU ARG SER THR VAL SER LEU PRO ALA HIS ARG HIS
PRO GLU PRO PRO LYS C336 K337 P341 K344 E348 R352 R353 F354 P355 L356 Y357 P358 F361 T378 Y383 F384 A385 C386 L387 L388 P389 A392 F393 G394 S395 D398 T401 A404 T410 Y421 S425 G426 Q427 P428 L429 L432 L433 A436 P437
L438 Y441 I442 I445 L454 W462 W466 N467 S468 A475 F486 E491 L496 I500 T501 F502 K508 F514 Y522 LEU ASP ASP TYR HIS THR LYS ARG THR SER SER LEU VAL SER LEU SER GLY LEU GLY ALA SER LEU ASN ALA SER LEU HIS THR
ALA LEU ASN ALA SER PHE LEU ALA SER PRO THR GLU LEU PRO SER ALA THR HIS S569 A572 T573 A574 S577 L578 K595 P598 Y599 L600 H601 V604 R605 S609 L613 P614 A619 I623 E630 I631 P640 SER GLU SER PRO F645 I650 L653
M662 F666 L667 M670 L671 F672 E675 Q676 N677 L678 V679 N684 K692 G693 L700 L701 L702 I706 N707 T708 S711 L712 W717 I718 H719 A720 H724 S725 P726 V729 L732 A733 E736 E737 R738 V739 E740 I744 I748 V751 K752 E753 T754 R755
L764 V765 V774 P775 P780 K781 P782 V783 L784 L787 Y790 L796 N799 L807 K810 E811 Q812 T813 P817 T818 H819 Y820 I821 R822 R823 K828 Y831 L835 L840 F846 G847 M848 M854 F858 P859 L860 I861 M862 M865 I866 P867 I868
R869 Y870 I871 A879 K880 Y881 D886 A887 GLU HIS ARG PRO

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	150000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.917	Depositor
Minimum map value	-1.763	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.079	Depositor
Recommended contour level	0.275	Depositor
Map size (Å)	267.96802, 267.96802, 267.96802	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.8374001, 0.8374001, 0.8374001	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	0.14	0/5502	0.33	0/7467
1	B	0.14	0/5502	0.33	0/7467
All	All	0.14	0/11004	0.33	0/14934

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5380	0	5574	139	0
1	B	5380	0	5574	140	0
All	All	10760	0	11148	259	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 12.

All (259) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:807:LEU:HA	1:B:810:LYS:HB3	1.58	0.85
1:A:807:LEU:HA	1:A:810:LYS:HB3	1.58	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:392:ALA:HA	1:A:784:LEU:HD11	1.65	0.79
1:B:392:ALA:HA	1:B:784:LEU:HD11	1.64	0.78
1:B:118:LYS:HD3	1:B:270:ARG:HE	1.58	0.68
1:A:115:LEU:HB2	1:B:107:LEU:HB2	1.75	0.68
1:A:118:LYS:HD3	1:A:270:ARG:HE	1.58	0.67
1:A:107:LEU:HB2	1:B:115:LEU:HB2	1.75	0.67
1:B:711:SER:HB2	1:B:717:TRP:HE1	1.59	0.67
1:A:711:SER:HB2	1:A:717:TRP:HE1	1.59	0.66
1:B:378:THR:HG21	1:B:732:LEU:HD13	1.78	0.66
1:B:356:LEU:HD13	1:B:692:LYS:HG2	1.79	0.65
1:A:336:CYS:SG	1:A:337:LYS:N	2.69	0.65
1:A:378:THR:HG21	1:A:732:LEU:HD13	1.77	0.65
1:A:356:LEU:HD13	1:A:692:LYS:HG2	1.79	0.64
1:A:221:MET:HE2	1:A:223:ALA:HB3	1.80	0.64
1:B:774:VAL:HB	1:B:775:PRO:HD3	1.80	0.64
1:A:774:VAL:HB	1:A:775:PRO:HD3	1.79	0.63
1:A:239:ASN:O	1:B:822:ARG:NH1	2.32	0.63
1:A:822:ARG:NH1	1:B:239:ASN:O	2.32	0.63
1:B:221:MET:HE2	1:B:223:ALA:HB3	1.80	0.63
1:B:336:CYS:SG	1:B:337:LYS:N	2.70	0.63
1:B:780:PRO:HB2	1:B:782:PRO:HD2	1.81	0.62
1:B:595:LYS:O	1:B:605:ARG:NH2	2.25	0.62
1:B:869:ARG:O	1:B:869:ARG:NH1	2.32	0.62
1:A:869:ARG:O	1:A:869:ARG:NH1	2.32	0.62
1:A:780:PRO:HB2	1:A:782:PRO:HD2	1.81	0.61
1:A:199:GLN:NE2	1:A:244:SER:OG	2.34	0.60
1:B:199:GLN:NE2	1:B:244:SER:OG	2.34	0.60
1:B:151:VAL:O	1:B:155:MET:HG2	2.02	0.59
1:A:151:VAL:O	1:A:155:MET:HG2	2.02	0.59
1:B:207:GLY:HA2	1:B:818:THR:HG23	1.85	0.59
1:A:207:GLY:HA2	1:A:818:THR:HG23	1.85	0.58
1:B:389:PRO:HB2	1:B:433:LEU:HD21	1.86	0.58
1:A:427:GLN:NE2	1:A:684:ASN:OD1	2.37	0.57
1:B:427:GLN:NE2	1:B:684:ASN:OD1	2.37	0.57
1:A:389:PRO:HB2	1:A:433:LEU:HD21	1.86	0.57
1:A:810:LYS:HE3	1:B:599:TYR:HB3	1.87	0.57
1:A:460:TYR:OH	1:A:715:LEU:O	2.15	0.57
1:B:748:ILE:HD12	1:B:748:ILE:H	1.69	0.57
1:A:748:ILE:HD12	1:A:748:ILE:H	1.69	0.57
1:A:595:LYS:O	1:A:605:ARG:NH2	2.25	0.56
1:B:401:THR:HB	1:B:404:ALA:HB3	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:599:TYR:HB3	1:B:810:LYS:HE3	1.87	0.56
1:A:401:THR:HB	1:A:404:ALA:HB3	1.86	0.56
1:A:118:LYS:H	1:A:274:THR:HG21	1.71	0.55
1:A:491:GLU:HG2	1:A:678:LEU:HD22	1.89	0.55
1:A:425:SER:HB3	1:A:702:LEU:HD22	1.89	0.55
1:A:675:GLU:OE2	1:A:719:HIS:ND1	2.40	0.55
1:B:491:GLU:HG2	1:B:678:LEU:HD22	1.89	0.54
1:B:425:SER:HB3	1:B:702:LEU:HD22	1.89	0.54
1:B:118:LYS:H	1:B:274:THR:HG21	1.71	0.54
1:B:675:GLU:OE2	1:B:719:HIS:ND1	2.40	0.53
1:B:862:MET:HA	1:B:865:MET:HE2	1.90	0.53
1:A:139:ILE:HD12	1:A:231:ILE:HB	1.91	0.53
1:B:846:PHE:HD2	1:B:861:ILE:HG13	1.74	0.53
1:A:468:SER:OG	1:A:708:THR:OG1	2.27	0.53
1:A:862:MET:HA	1:A:865:MET:HE2	1.90	0.53
1:A:438:LEU:HD11	1:A:719:HIS:CD2	2.44	0.53
1:B:468:SER:OG	1:B:708:THR:OG1	2.27	0.53
1:A:817:PRO:HB3	1:B:148:LEU:HD13	1.91	0.53
1:A:282:ARG:NH2	1:A:736:GLU:OE1	2.42	0.52
1:B:613:LEU:HD13	1:B:790:TYR:HD1	1.75	0.52
1:A:454:LEU:HD21	1:A:653:LEU:HD11	1.92	0.52
1:A:867:PRO:O	1:A:871:ILE:HG22	2.09	0.52
1:B:441:TYR:O	1:B:445:ILE:HG12	2.10	0.52
1:A:441:TYR:O	1:A:445:ILE:HG12	2.10	0.52
1:A:292:GLU:HA	1:A:295:LYS:HE2	1.91	0.52
1:B:139:ILE:HD12	1:B:231:ILE:HB	1.91	0.52
1:B:282:ARG:NH2	1:B:736:GLU:OE1	2.42	0.52
1:A:429:LEU:HD13	1:A:729:VAL:HG22	1.91	0.52
1:A:679:VAL:HG11	1:A:720:ALA:HB1	1.92	0.52
1:A:846:PHE:HD2	1:A:861:ILE:HG13	1.73	0.52
1:B:496:LEU:HD23	1:B:840:LEU:HD13	1.91	0.51
1:B:867:PRO:O	1:B:871:ILE:HG22	2.09	0.51
1:A:148:LEU:HD13	1:B:817:PRO:HB3	1.91	0.51
1:B:438:LEU:HD11	1:B:719:HIS:CD2	2.44	0.51
1:B:679:VAL:HG11	1:B:720:ALA:HB1	1.92	0.51
1:A:828:LYS:HG2	1:A:881:TYR:CD2	2.46	0.51
1:B:429:LEU:HD13	1:B:729:VAL:HG22	1.91	0.51
1:B:233:ARG:NH1	1:B:288:THR:OG1	2.44	0.51
1:B:285:LEU:O	1:B:288:THR:OG1	2.18	0.51
1:B:454:LEU:HD21	1:B:653:LEU:HD11	1.92	0.51
1:B:292:GLU:HA	1:B:295:LYS:HE2	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:236:ARG:HE	1:B:813:THR:HG21	1.75	0.51
1:A:496:LEU:HD23	1:A:840:LEU:HD13	1.91	0.51
1:B:613:LEU:HD11	1:B:787:LEU:HD12	1.93	0.51
1:A:233:ARG:NH1	1:A:288:THR:OG1	2.44	0.50
1:A:813:THR:HG21	1:B:236:ARG:HE	1.75	0.50
1:B:344:LYS:O	1:B:348:GLU:HG3	2.11	0.50
1:A:613:LEU:HD11	1:A:787:LEU:HD12	1.93	0.50
1:B:828:LYS:HG2	1:B:881:TYR:CD2	2.46	0.50
1:A:667:LEU:HA	1:A:670:MET:HE2	1.94	0.50
1:A:429:LEU:HD21	1:A:753:GLU:HA	1.93	0.50
1:A:175:LEU:O	1:A:179:LEU:HG	2.12	0.50
1:A:237:PRO:HD3	1:A:248:ARG:NH2	2.27	0.50
1:A:613:LEU:HD13	1:A:790:TYR:HD1	1.75	0.50
1:B:388:LEU:HB2	1:B:389:PRO:HD3	1.94	0.50
1:A:344:LYS:O	1:A:348:GLU:HG3	2.12	0.49
1:B:237:PRO:HD3	1:B:248:ARG:NH2	2.27	0.49
1:B:429:LEU:HD21	1:B:753:GLU:HA	1.93	0.49
1:A:394:GLY:HA3	1:A:410:THR:HG21	1.95	0.49
1:A:388:LEU:HB2	1:A:389:PRO:HD3	1.94	0.49
1:B:226:LYS:HG3	1:B:228:HIS:CE1	2.48	0.49
1:B:341:PRO:HB2	1:B:344:LYS:HG2	1.95	0.49
1:A:732:LEU:HD21	1:A:754:THR:HG22	1.95	0.49
1:B:605:ARG:HH22	1:B:744:ILE:HG13	1.77	0.49
1:B:667:LEU:HA	1:B:670:MET:HE2	1.94	0.49
1:B:175:LEU:O	1:B:179:LEU:HG	2.12	0.48
1:B:185:ALA:HB1	1:B:188:ARG:HB2	1.95	0.48
1:B:385:ALA:O	1:B:724:HIS:NE2	2.46	0.48
1:A:796:LEU:HD22	1:A:799:ASN:HD22	1.78	0.48
1:B:395:SER:HA	1:B:398:ASP:OD1	2.14	0.48
1:A:702:LEU:O	1:A:706:ILE:HG12	2.13	0.48
1:A:185:ALA:HB1	1:A:188:ARG:HB2	1.95	0.48
1:A:858:PHE:CD2	1:A:859:PRO:HD3	2.49	0.48
1:A:226:LYS:HG3	1:A:228:HIS:CE1	2.48	0.48
1:A:395:SER:HA	1:A:398:ASP:OD1	2.14	0.48
1:B:732:LEU:HG	1:B:752:LYS:HB2	1.96	0.48
1:B:357:TYR:HB3	1:B:358:PRO:HD3	1.96	0.48
1:A:605:ARG:HH22	1:A:744:ILE:HG13	1.77	0.48
1:B:394:GLY:HA3	1:B:410:THR:HG21	1.95	0.48
1:B:702:LEU:O	1:B:706:ILE:HG12	2.13	0.48
1:B:732:LEU:HD21	1:B:754:THR:HG22	1.95	0.48
1:A:341:PRO:HB2	1:A:344:LYS:HG2	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:732:LEU:HG	1:A:752:LYS:HB2	1.96	0.47
1:A:296:GLU:HA	1:A:299:VAL:HG22	1.95	0.47
1:B:595:LYS:HE3	1:B:609:SER:OG	2.13	0.47
1:B:796:LEU:HD22	1:B:799:ASN:HD22	1.78	0.47
1:A:282:ARG:O	1:A:286:LEU:HG	2.14	0.47
1:A:385:ALA:O	1:A:724:HIS:NE2	2.46	0.47
1:A:595:LYS:HE3	1:A:609:SER:OG	2.13	0.47
1:B:619:ALA:O	1:B:623:ILE:HG12	2.15	0.47
1:A:191:VAL:HG11	1:B:201:VAL:HG12	1.96	0.47
1:A:666:PHE:CD2	1:A:670:MET:HE1	2.50	0.47
1:B:282:ARG:O	1:B:286:LEU:HG	2.14	0.47
1:B:296:GLU:HA	1:B:299:VAL:HG22	1.95	0.47
1:B:666:PHE:CD2	1:B:670:MET:HE1	2.50	0.47
1:B:725:SER:HB3	1:B:726:PRO:HD3	1.97	0.47
1:A:201:VAL:HG12	1:B:191:VAL:HG11	1.97	0.47
1:B:858:PHE:CD2	1:B:859:PRO:HD3	2.49	0.47
1:A:361:PHE:CE1	1:A:755:ARG:HD2	2.50	0.47
1:A:284:LYS:O	1:A:287:GLU:HG2	2.15	0.46
1:A:285:LEU:O	1:A:288:THR:OG1	2.18	0.46
1:B:284:LYS:O	1:B:287:GLU:HG2	2.15	0.46
1:A:619:ALA:O	1:A:623:ILE:HG12	2.15	0.46
1:B:598:PRO:HB3	1:B:744:ILE:HG12	1.97	0.46
1:A:486:PHE:HE2	1:A:491:GLU:HG3	1.81	0.46
1:A:725:SER:HB3	1:A:726:PRO:HD3	1.97	0.46
1:A:357:TYR:HB3	1:A:358:PRO:HD3	1.96	0.46
1:B:361:PHE:CE1	1:B:755:ARG:HD2	2.50	0.46
1:B:858:PHE:CG	1:B:859:PRO:HD3	2.51	0.46
1:B:859:PRO:HA	1:B:862:MET:HG3	1.98	0.46
1:A:466:TRP:CE2	1:A:662:MET:HG2	2.51	0.46
1:A:508:LYS:HE2	1:A:508:LYS:HB2	1.81	0.46
1:B:235:VAL:O	1:B:248:ARG:NH1	2.49	0.46
1:A:281:PHE:CG	1:A:301:GLN:HG3	2.51	0.45
1:A:176:MET:HA	1:A:179:LEU:HD12	1.98	0.45
1:A:820:TYR:HB3	1:A:823:ARG:HH21	1.81	0.45
1:A:859:PRO:HA	1:A:862:MET:HG3	1.98	0.45
1:B:176:MET:HA	1:B:179:LEU:HD12	1.98	0.45
1:B:281:PHE:CG	1:B:301:GLN:HG3	2.51	0.45
1:B:738:ARG:NH2	1:B:740:GLU:OE2	2.34	0.45
1:B:486:PHE:HE2	1:B:491:GLU:HG3	1.81	0.45
1:A:235:VAL:O	1:A:248:ARG:NH1	2.49	0.45
1:A:598:PRO:HB3	1:A:744:ILE:HG12	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:508:LYS:HE2	1:B:508:LYS:HB2	1.81	0.45
1:A:191:VAL:HG12	1:B:203:ALA:HB2	1.99	0.45
1:B:820:TYR:HB3	1:B:823:ARG:HH21	1.81	0.45
1:A:203:ALA:HB2	1:B:191:VAL:HG12	1.99	0.45
1:B:466:TRP:CE2	1:B:662:MET:HG2	2.51	0.45
1:A:387:LEU:HB2	1:A:765:VAL:HG22	2.00	0.44
1:A:255:ALA:HB2	1:A:265:ALA:HB2	2.00	0.44
1:A:392:ALA:CA	1:A:784:LEU:HD11	2.42	0.44
1:A:394:GLY:CA	1:A:410:THR:HG21	2.48	0.44
1:B:352:ARG:HD2	1:B:693:GLY:HA3	1.99	0.44
1:B:421:TYR:O	1:B:425:SER:OG	2.32	0.44
1:A:599:TYR:HB3	1:B:810:LYS:CE	2.47	0.44
1:A:831:TYR:O	1:A:835:LEU:HG	2.18	0.44
1:A:858:PHE:CG	1:A:859:PRO:HD3	2.51	0.44
1:B:428:PRO:HG3	1:B:755:ARG:NH1	2.33	0.44
1:A:152:LEU:HD12	1:A:179:LEU:HD13	2.00	0.44
1:B:152:LEU:HD12	1:B:179:LEU:HD13	1.99	0.44
1:A:428:PRO:HG3	1:A:755:ARG:NH1	2.33	0.44
1:B:299:VAL:O	1:B:303:GLN:HG2	2.18	0.44
1:B:387:LEU:HB2	1:B:765:VAL:HG22	2.00	0.44
1:A:436:ALA:HB2	1:A:502:PHE:CE1	2.53	0.44
1:A:810:LYS:CE	1:B:599:TYR:HB3	2.47	0.43
1:B:475:ALA:HA	1:B:700:LEU:HD23	2.00	0.43
1:B:854:MET:HE2	1:B:854:MET:HA	2.00	0.43
1:B:392:ALA:CA	1:B:784:LEU:HD11	2.42	0.43
1:B:676:GLN:NE2	1:B:700:LEU:HD12	2.33	0.43
1:A:854:MET:HE2	1:A:854:MET:HA	2.00	0.43
1:B:436:ALA:HB2	1:B:502:PHE:CE1	2.53	0.43
1:B:613:LEU:HB3	1:B:614:PRO:HD3	2.01	0.43
1:B:577:SER:HB2	1:B:782:PRO:HG3	2.01	0.43
1:A:432:LEU:HD12	1:A:718:ILE:HG22	2.00	0.43
1:B:432:LEU:HD12	1:B:718:ILE:HG22	2.00	0.43
1:A:613:LEU:HB3	1:A:614:PRO:HD3	2.01	0.43
1:A:676:GLN:NE2	1:A:700:LEU:HD12	2.33	0.43
1:B:255:ALA:HB2	1:B:265:ALA:HB2	2.00	0.43
1:B:291:GLU:O	1:B:294:PHE:HB3	2.19	0.43
1:A:227:ARG:HH21	1:A:264:THR:N	2.17	0.43
1:A:352:ARG:HD2	1:A:693:GLY:HA3	2.00	0.43
1:B:831:TYR:O	1:B:835:LEU:HG	2.18	0.43
1:A:118:LYS:HB2	1:A:270:ARG:HG2	2.01	0.43
1:A:784:LEU:HA	1:A:784:LEU:HD12	1.82	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:118:LYS:HB2	1:B:270:ARG:HG2	2.01	0.43
1:B:394:GLY:CA	1:B:410:THR:HG21	2.48	0.43
1:B:712:LEU:HD23	1:B:712:LEU:HA	1.86	0.43
1:B:383:TYR:CG	1:B:764:LEU:HD23	2.54	0.42
1:B:462:TRP:CD1	1:B:653:LEU:HD22	2.54	0.42
1:A:151:VAL:HG13	1:A:155:MET:HE3	2.01	0.42
1:A:299:VAL:O	1:A:303:GLN:HG2	2.18	0.42
1:B:227:ARG:HH21	1:B:264:THR:N	2.17	0.42
1:A:383:TYR:CG	1:A:764:LEU:HD23	2.54	0.42
1:B:233:ARG:HG3	1:B:249:PHE:HE1	1.84	0.42
1:B:784:LEU:HD12	1:B:784:LEU:HA	1.82	0.42
1:A:475:ALA:HA	1:A:700:LEU:HD23	2.01	0.42
1:B:151:VAL:HG13	1:B:155:MET:HE3	2.01	0.42
1:B:432:LEU:HD13	1:B:719:HIS:C	2.45	0.42
1:A:291:GLU:O	1:A:294:PHE:HB3	2.19	0.42
1:A:500:ILE:HG22	1:A:848:MET:HE1	2.01	0.42
1:A:518:TYR:OH	1:B:630:GLU:OE1	2.29	0.42
1:A:462:TRP:NE1	1:A:650:ILE:HB	2.34	0.42
1:A:233:ARG:HG3	1:A:249:PHE:HE1	1.84	0.42
1:A:577:SER:HB2	1:A:782:PRO:HG3	2.01	0.42
1:B:500:ILE:HG22	1:B:848:MET:HE1	2.02	0.42
1:A:438:LEU:O	1:A:442:ILE:HG12	2.20	0.41
1:A:462:TRP:CD1	1:A:653:LEU:HD22	2.55	0.41
1:A:281:PHE:CD1	1:A:301:GLN:HG3	2.55	0.41
1:A:432:LEU:HD13	1:A:719:HIS:C	2.45	0.41
1:A:811:GLU:OE2	1:B:601:HIS:HA	2.21	0.41
1:B:281:PHE:CD1	1:B:301:GLN:HG3	2.55	0.41
1:A:514:PHE:HZ	1:A:578:LEU:HB2	1.85	0.41
1:B:275:MET:HB2	1:B:301:GLN:OE1	2.21	0.41
1:B:675:GLU:HG3	1:B:719:HIS:CE1	2.55	0.41
1:B:438:LEU:O	1:B:442:ILE:HG12	2.20	0.41
1:B:733:ALA:HB2	1:B:751:VAL:HG22	2.02	0.41
1:B:462:TRP:NE1	1:B:650:ILE:HB	2.34	0.41
1:B:514:PHE:HZ	1:B:578:LEU:HB2	1.85	0.41
1:A:514:PHE:CD1	1:A:574:ALA:HB1	2.56	0.41
1:A:672:PHE:HZ	1:A:717:TRP:HB3	1.86	0.41
1:A:675:GLU:HG3	1:A:719:HIS:CE1	2.55	0.41
1:B:672:PHE:HZ	1:B:717:TRP:HB3	1.86	0.41
1:A:354:PHE:HB3	1:A:355:PRO:HD3	2.03	0.41
1:B:354:PHE:HB3	1:B:355:PRO:HD3	2.03	0.40
1:A:733:ALA:HB2	1:A:751:VAL:HG22	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:152:LEU:O	1:A:156:LEU:HD23	2.21	0.40
1:A:406:ASP:OD1	1:A:406:ASP:N	2.44	0.40
1:B:514:PHE:CD1	1:B:574:ALA:HB1	2.56	0.40
1:A:601:HIS:HA	1:B:811:GLU:OE2	2.21	0.40
1:A:275:MET:HB2	1:A:301:GLN:OE1	2.21	0.40
1:A:277:SER:OG	1:B:105:CYS:SG	2.79	0.40
1:A:473:LEU:HD12	1:A:473:LEU:HA	1.92	0.40
1:A:601:HIS:HB2	1:A:604:VAL:HB	2.02	0.40
1:B:572:ALA:HB1	1:B:631:ILE:HD13	2.03	0.40
1:B:601:HIS:HB2	1:B:604:VAL:HB	2.02	0.40
1:B:613:LEU:HB2	1:B:790:TYR:HE1	1.87	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	662/875 (76%)	644 (97%)	18 (3%)	0	100	100
1	B	662/875 (76%)	644 (97%)	18 (3%)	0	100	100
All	All	1324/1750 (76%)	1288 (97%)	36 (3%)	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	A	584/758 (77%)	584 (100%)	0	100	100
1	B	584/758 (77%)	584 (100%)	0	100	100
All	All	1168/1516 (77%)	1168 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

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

Mol	Chain	Res	Type
1	A	142	ASN
1	A	199	GLN
1	A	427	GLN
1	A	688	ASN
1	A	839	GLN
1	B	142	ASN
1	B	199	GLN
1	B	300	HIS
1	B	427	GLN
1	B	688	ASN
1	B	839	GLN

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 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.

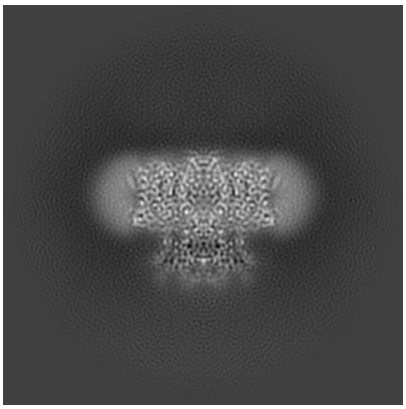
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-67782. These allow visual inspection of the internal detail of the map and identification of artifacts.

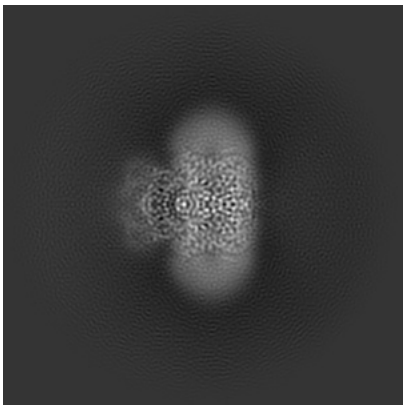
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

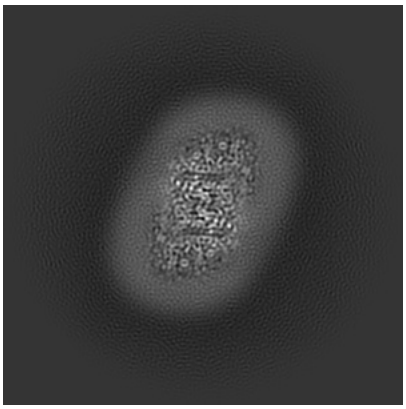
6.1.1 Primary map



X

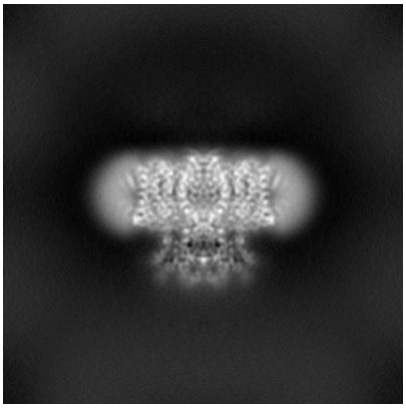


Y

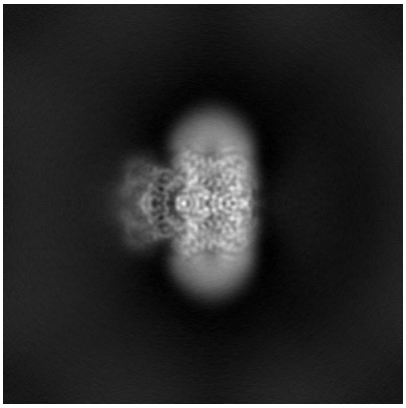


Z

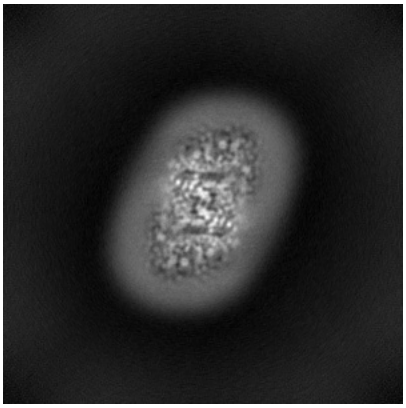
6.1.2 Raw map



X



Y

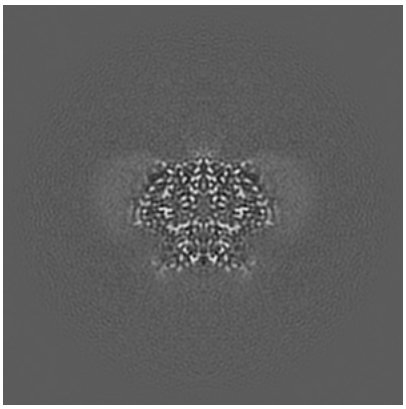


Z

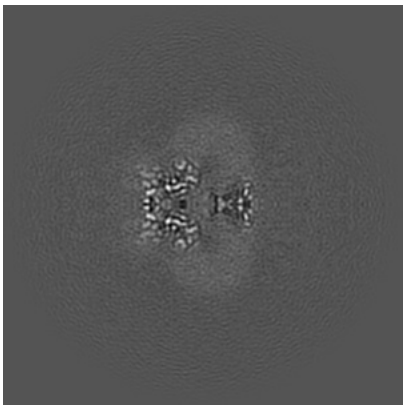
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

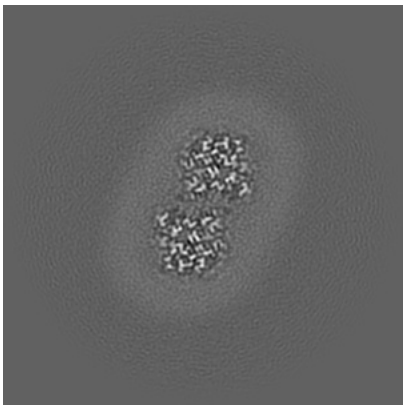
6.2.1 Primary map



X Index: 160

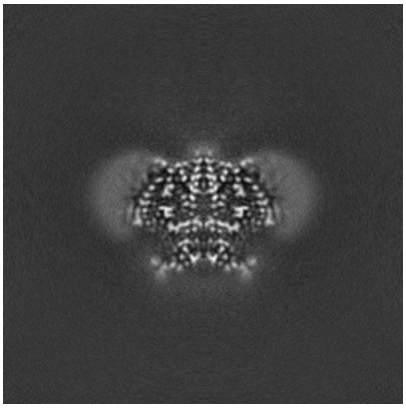


Y Index: 160

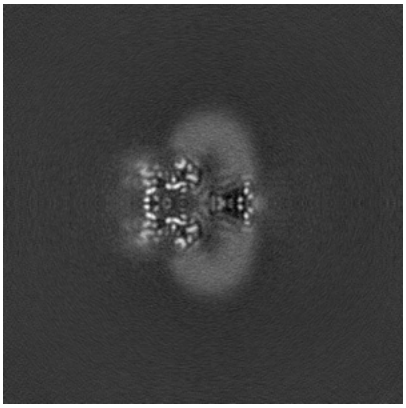


Z Index: 160

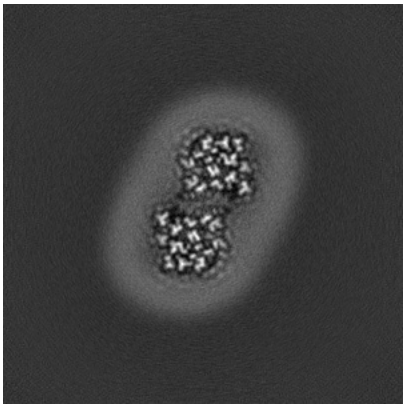
6.2.2 Raw map



X Index: 160



Y Index: 160

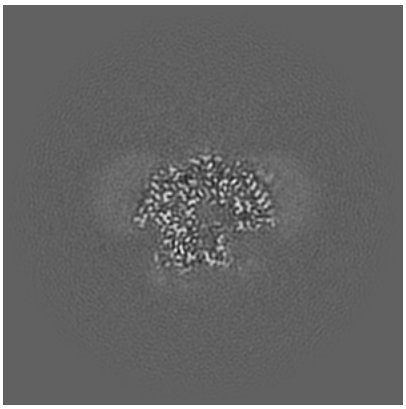


Z Index: 160

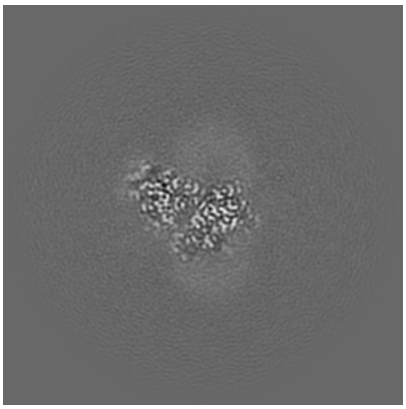
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

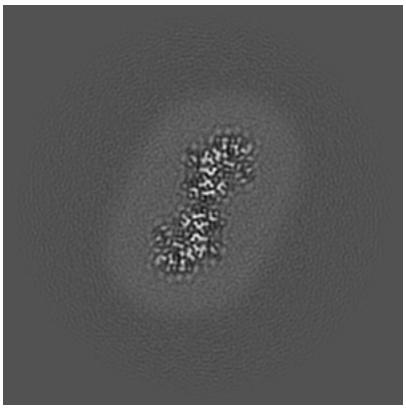
6.3.1 Primary map



X Index: 165

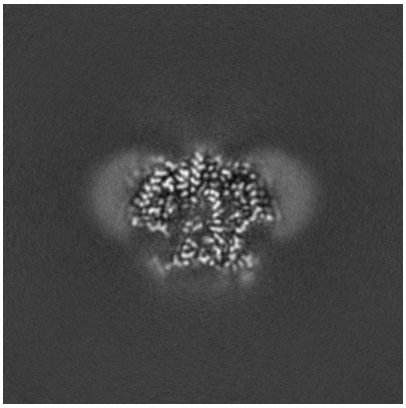


Y Index: 146

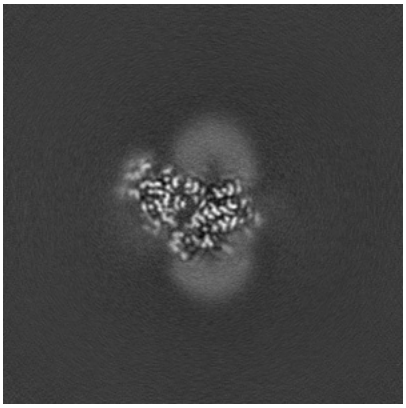


Z Index: 179

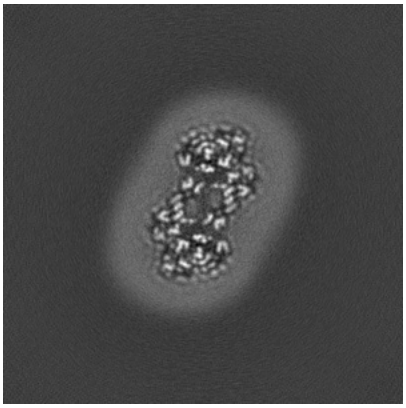
6.3.2 Raw map



X Index: 157



Y Index: 146

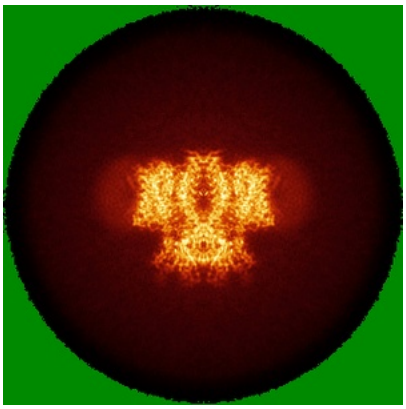


Z Index: 154

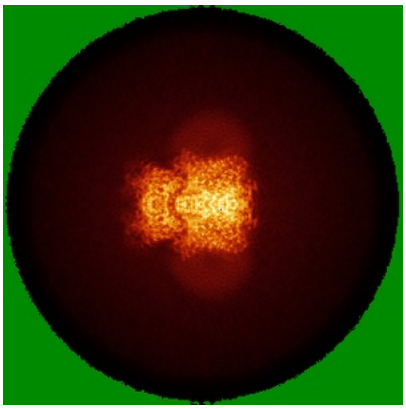
The images above show the largest variance slices of the map in three orthogonal directions.

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

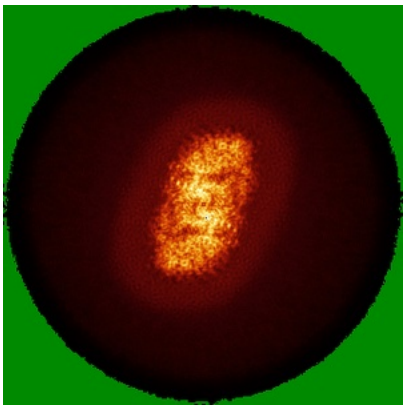
6.4.1 Primary map



X

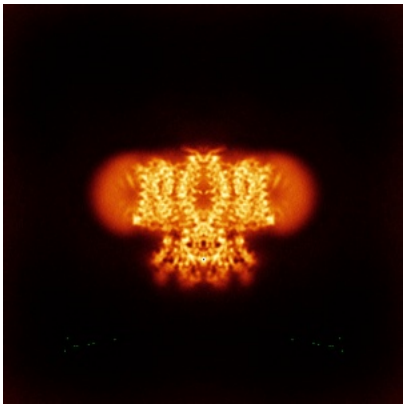


Y

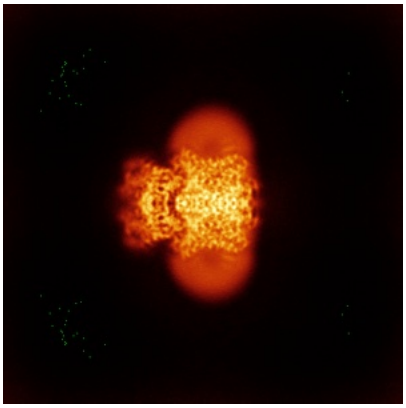


Z

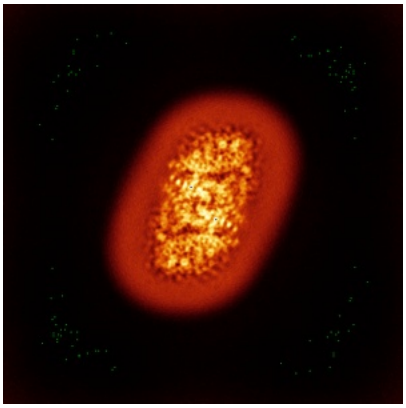
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views (i)

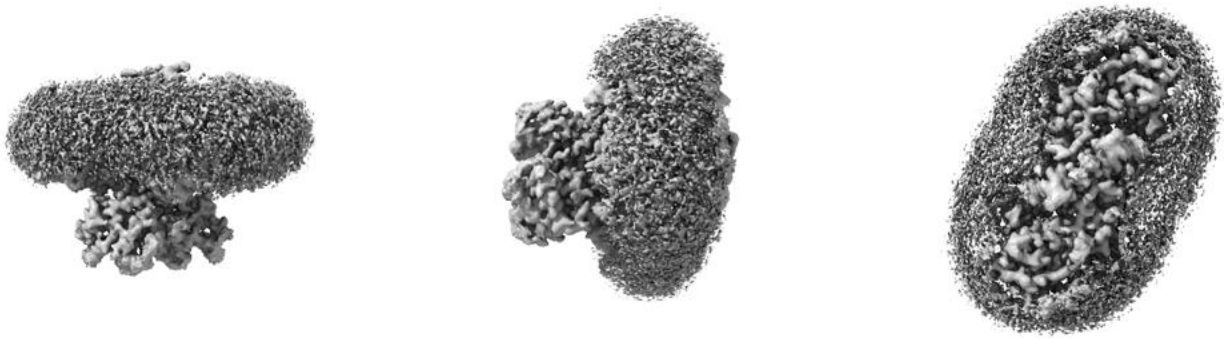
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.275. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

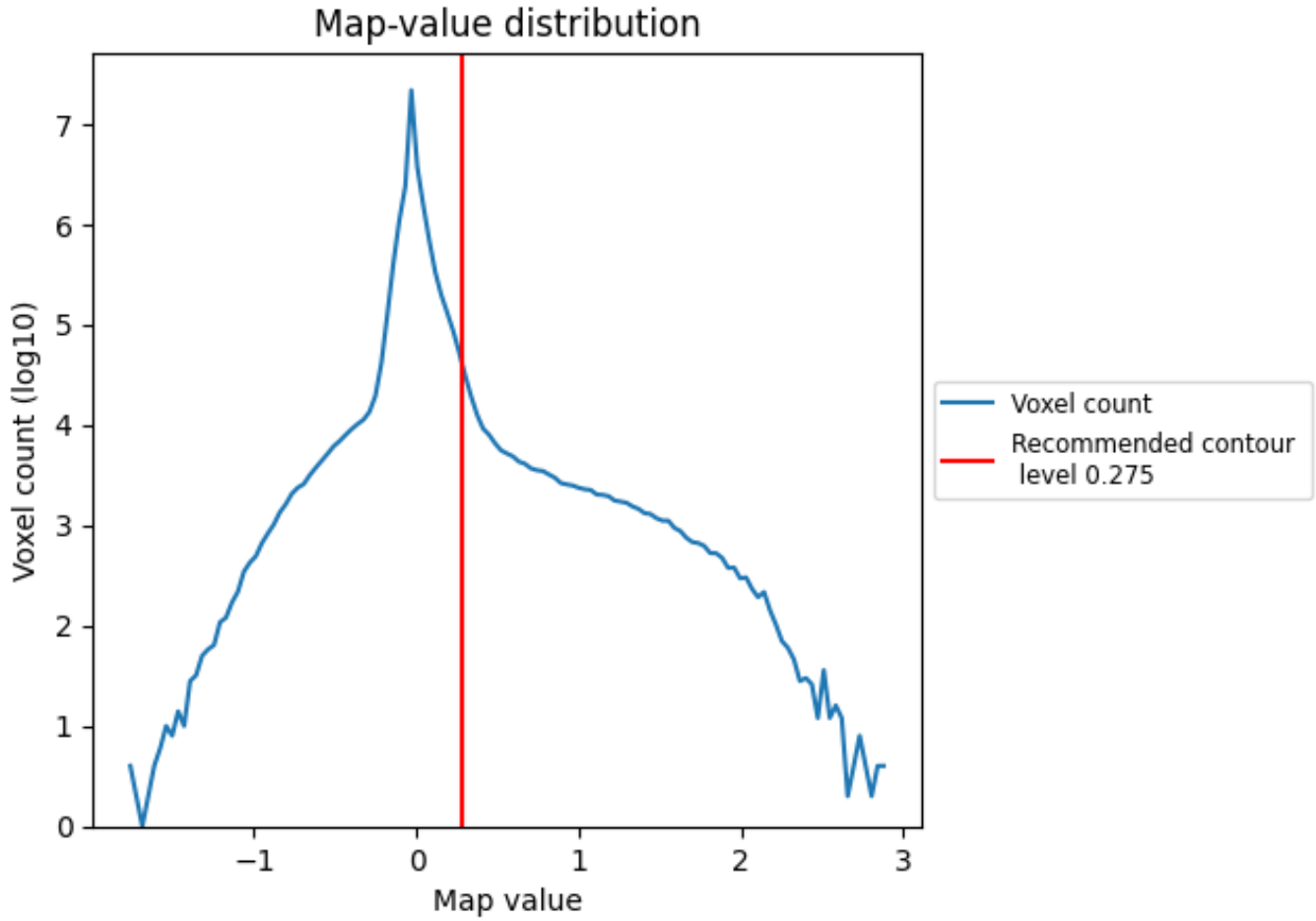
6.6 Mask visualisation (i)

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

7 Map analysis

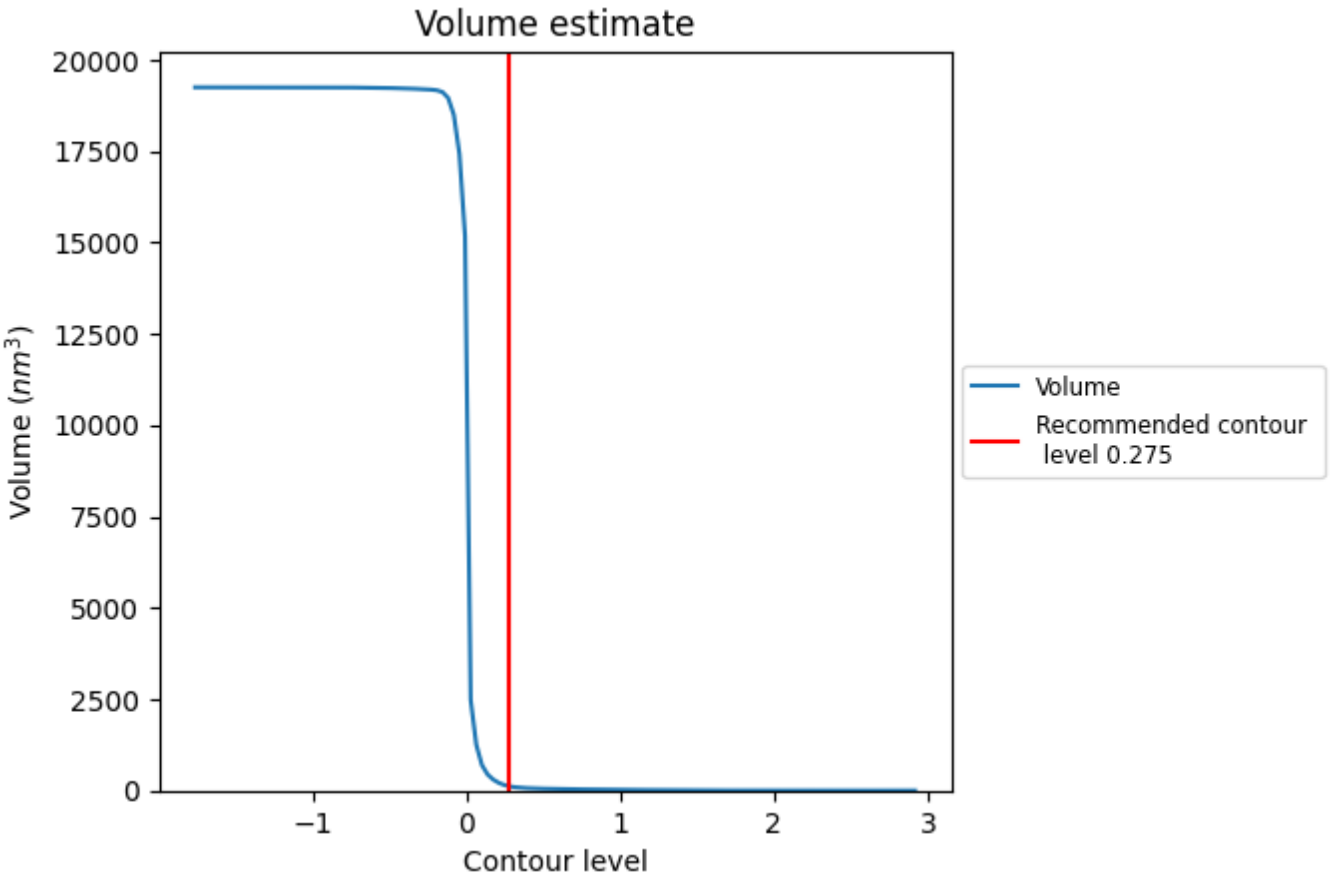
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

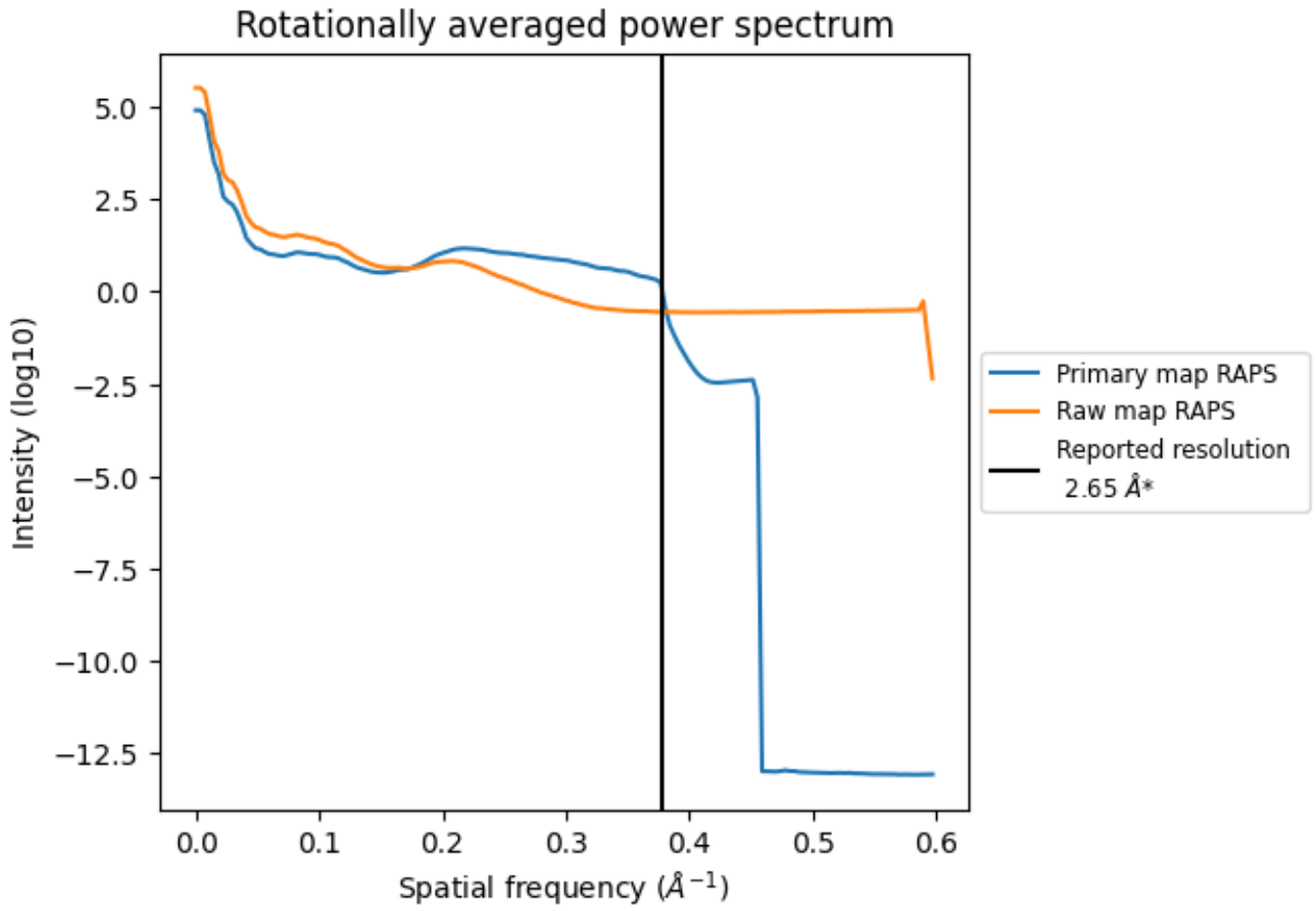
7.2 Volume estimate



The volume at the recommended contour level is 122 nm^3; this corresponds to an approximate mass of 110 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)

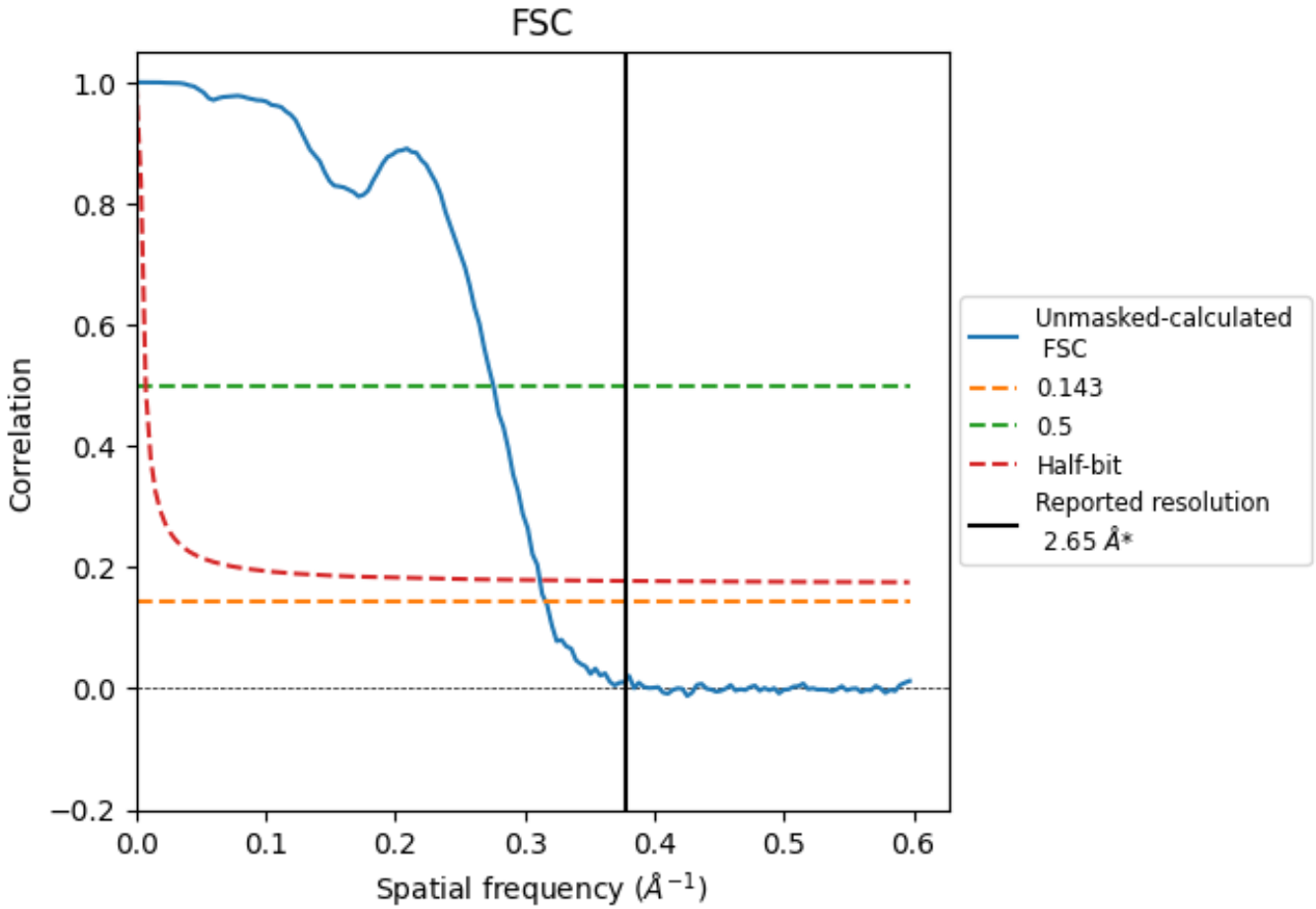


*Reported resolution corresponds to spatial frequency of 0.377 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.377 Å^{-1}

8.2 Resolution estimates (i)

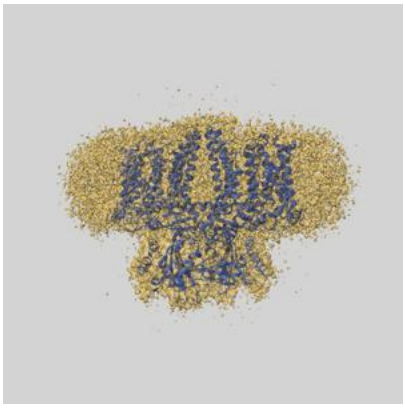
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.65	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.16	3.63	3.21

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.16 differs from the reported value 2.65 by more than 10 %

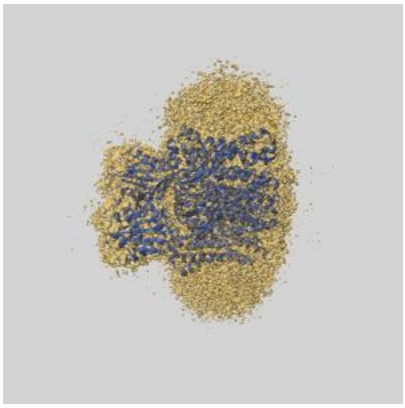
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-67782 and PDB model 21KY. Per-residue inclusion information can be found in section 3 on page 4.

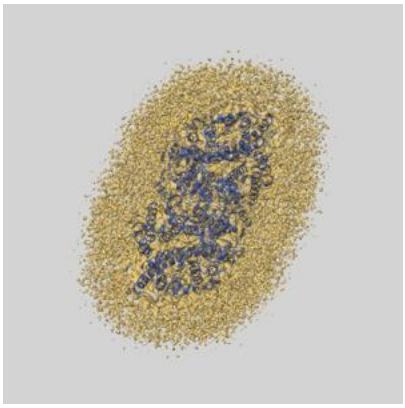
9.1 Map-model overlay



X



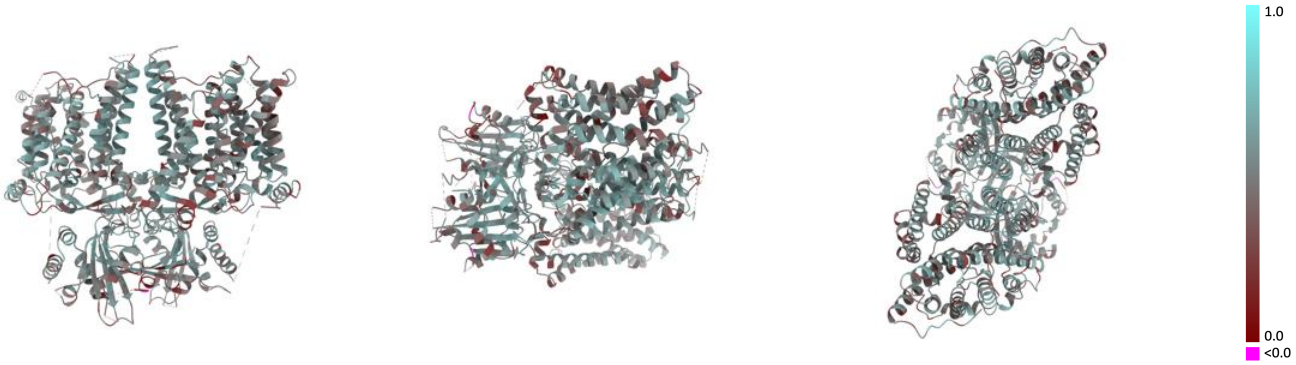
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.275 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

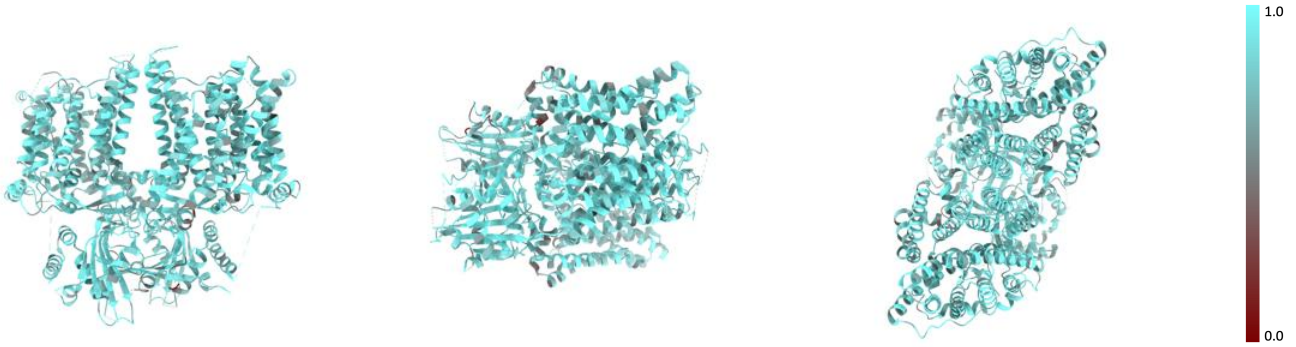
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

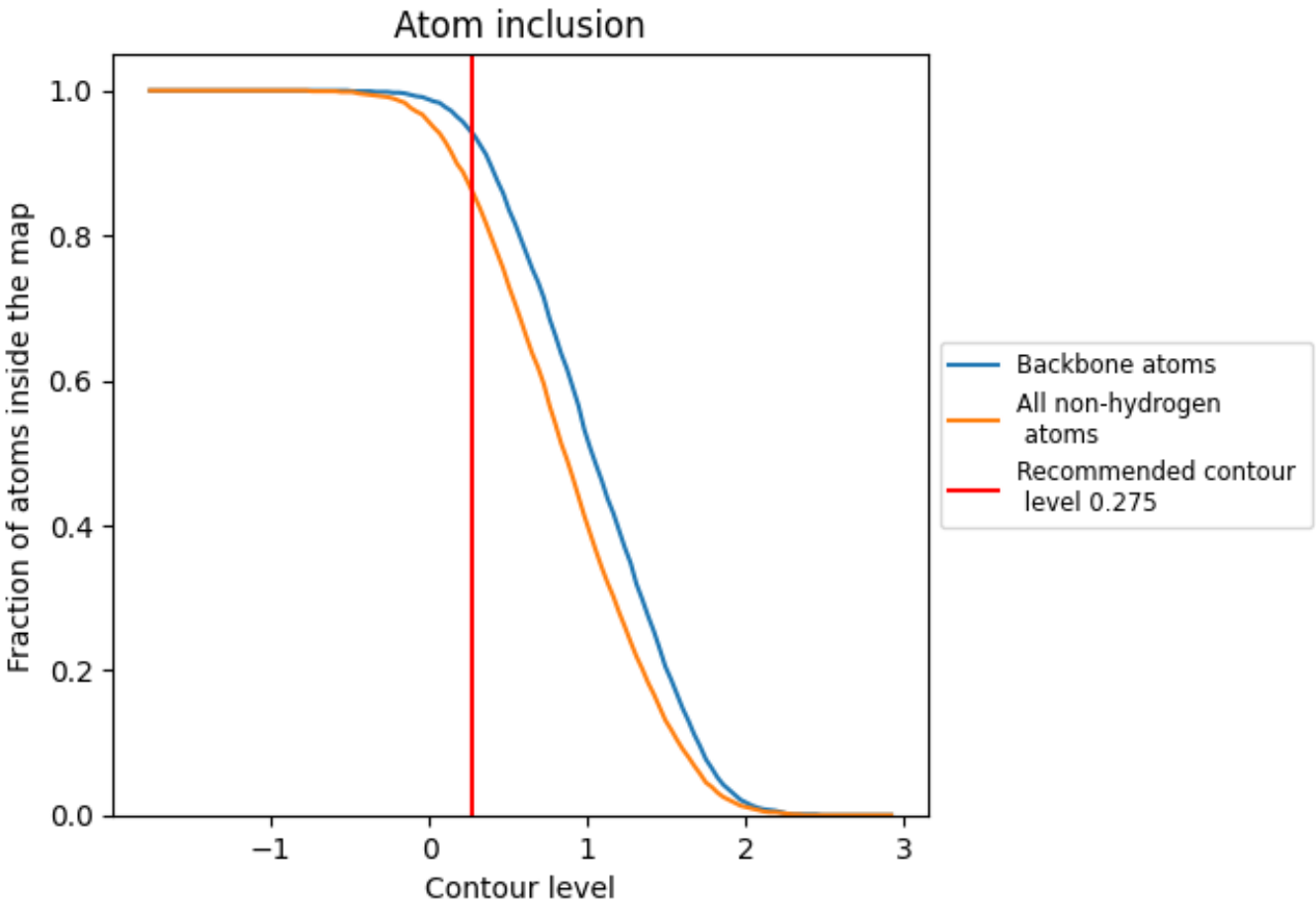
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.275).

9.4 Atom inclusion (i)



At the recommended contour level, 94% of all backbone atoms, 86% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.275) and Q-score for the entire model and for each chain.



Chain	Atom inclusion	Q-score
All	0.8590	0.4890
A	0.8600	0.4890
B	0.8590	0.4890