Full wwPDB EM Validation Report ⓘ

Apr 23, 2026 – 02:22 AM JST

PDB ID	:	9VXZ / pdb_00009vxz
EMDB ID	:	EMD-65446
Title	:	Cryo-EM structure of Measles Virus L Protein bound by Phosphoprotein Tetramer
Authors	:	Xue, L.; Gui, J.; Chang, T.; Pan, H.; Xiong, X.
Deposited on	:	2025-07-20
Resolution	:	2.68 Å(reported)

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

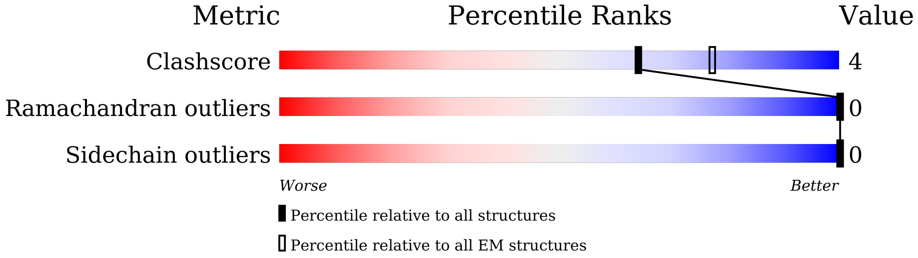
EMDB validation analysis	:	0.0.1.dev132
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh &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

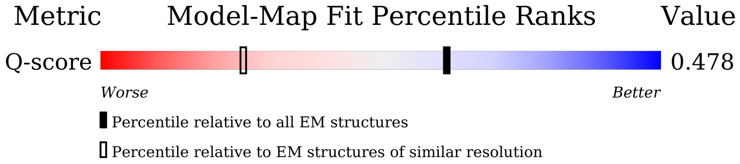
1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.68 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	9255 (2.18 - 3.18)

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	2183	
2	B	507	
2	C	507	
2	D	507	

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Mol	**Chain**	**Length**	**Quality of chain**
2	E	507	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 12553 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 RNA-directed RNA polymerase L.

Mol	Chain	Residues	Atoms	AltConf	Trace
1	A	1255	Total C N O S 10082 6445 1743 1839 55	0	0

- Molecule 2 is a protein called Phosphoprotein.

Mol	Chain	Residues	Atoms	AltConf	Trace
2	B	148	Total C N O S 1159 736 208 210 5	0	0
2	C	47	Total C N O S 372 233 65 73 1	0	0
2	D	67	Total C N O S 514 322 87 104 1	0	0
2	E	55	Total C N O S 425 269 74 81 1	0	0

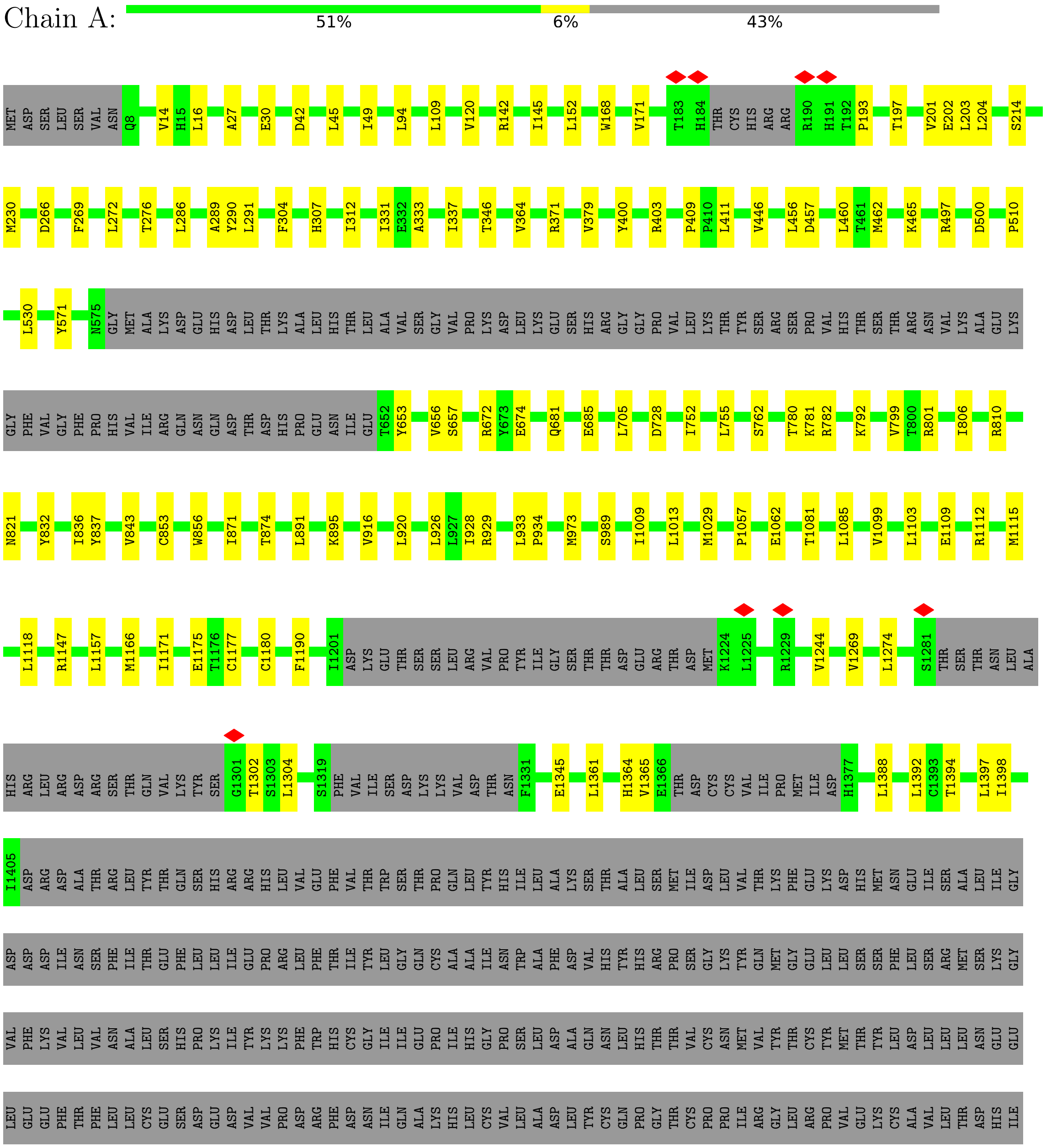
- Molecule 3 is ZINC ION (CCD ID: ZN) (formula: Zn).

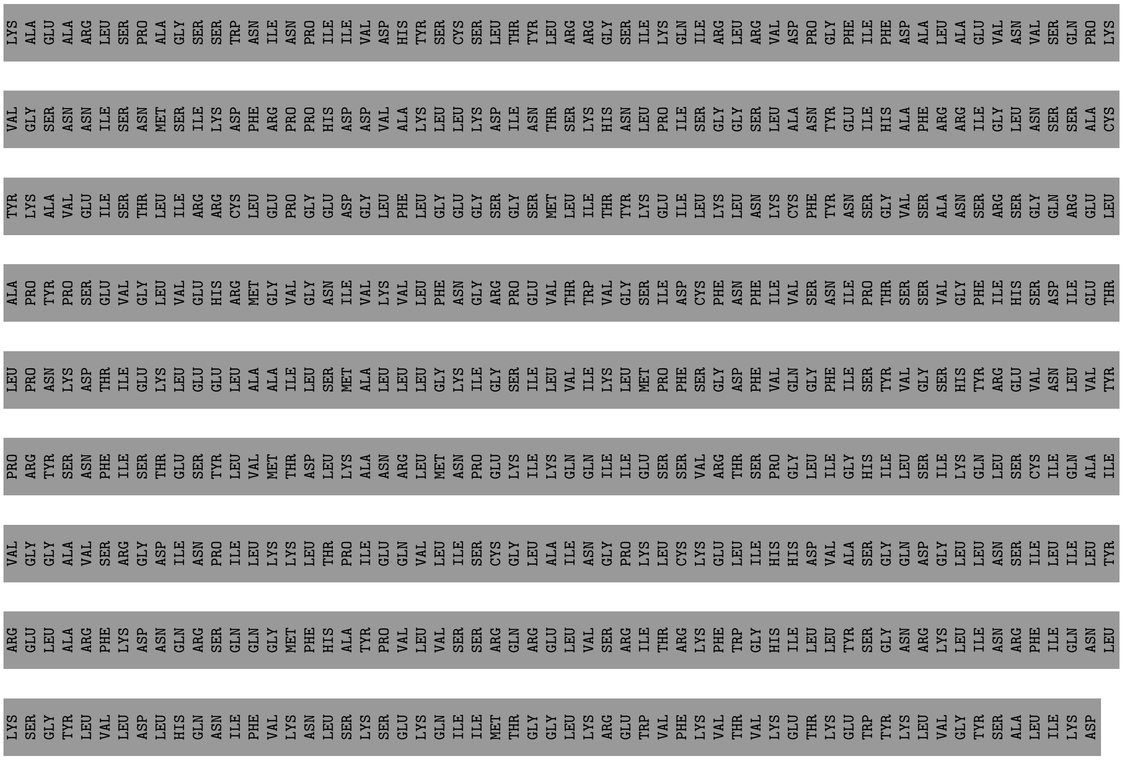
Mol	Chain	Residues	Atoms	AltConf
3	A	1	Total Zn 1 1	0

3 Residue-property plots ⓘ

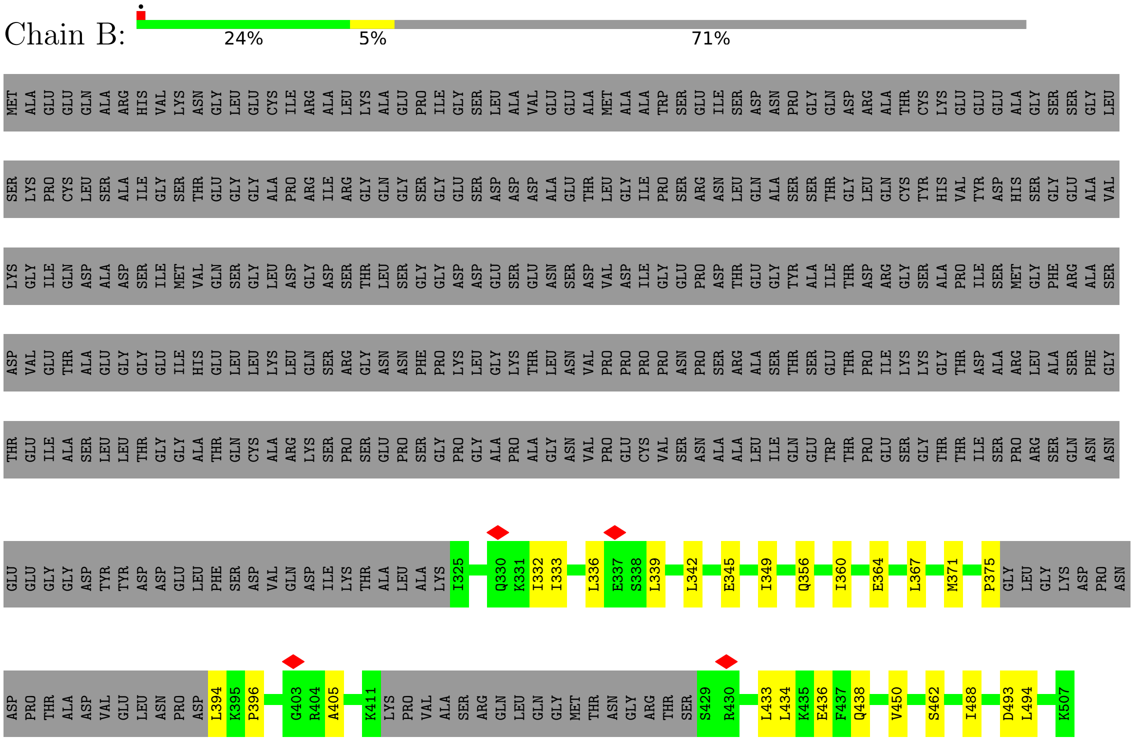
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: RNA-directed RNA polymerase L

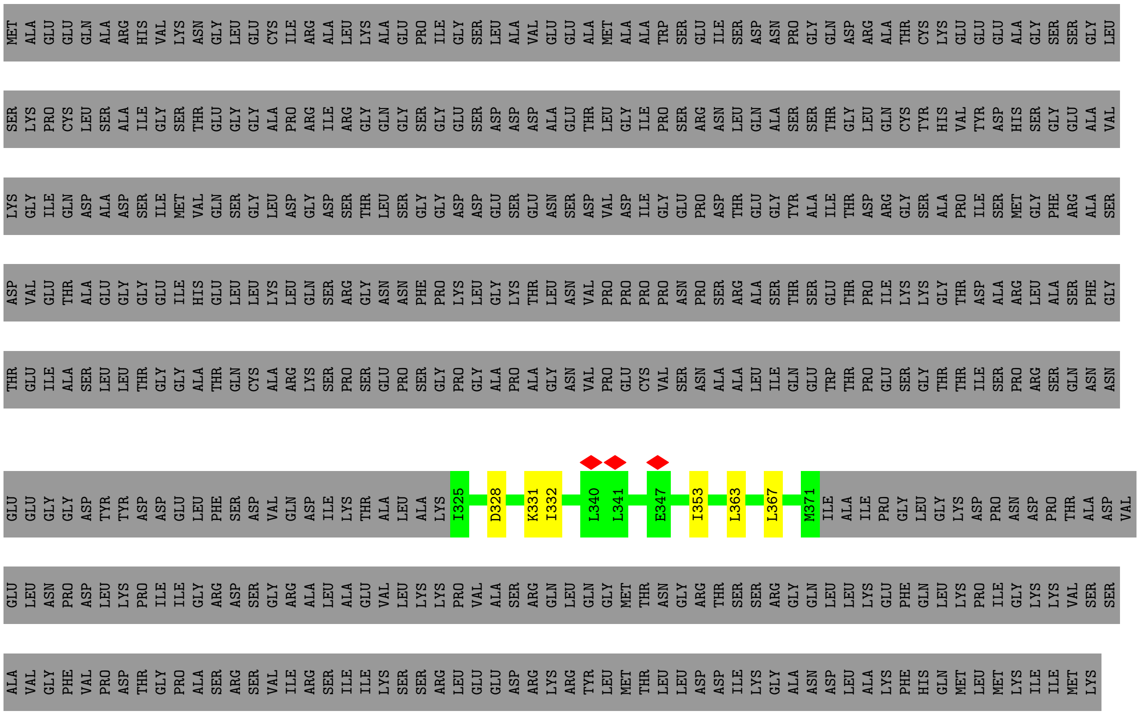




- Molecule 2: Phosphoprotein

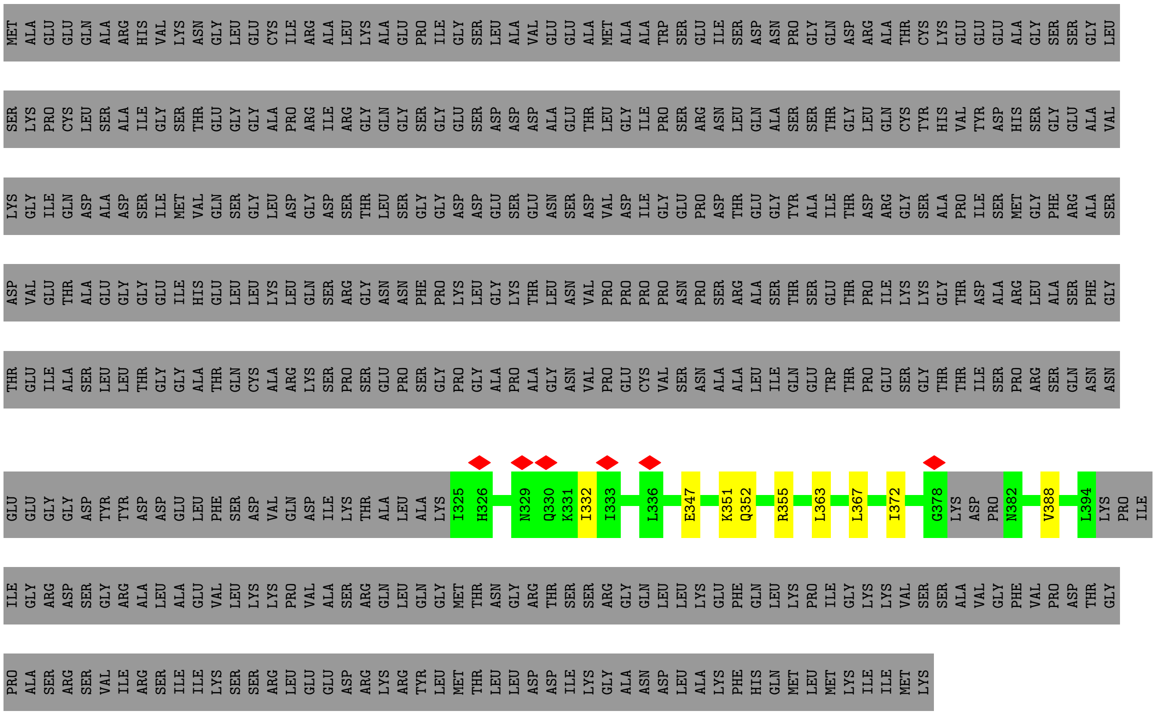


- Molecule 2: Phosphoprotein



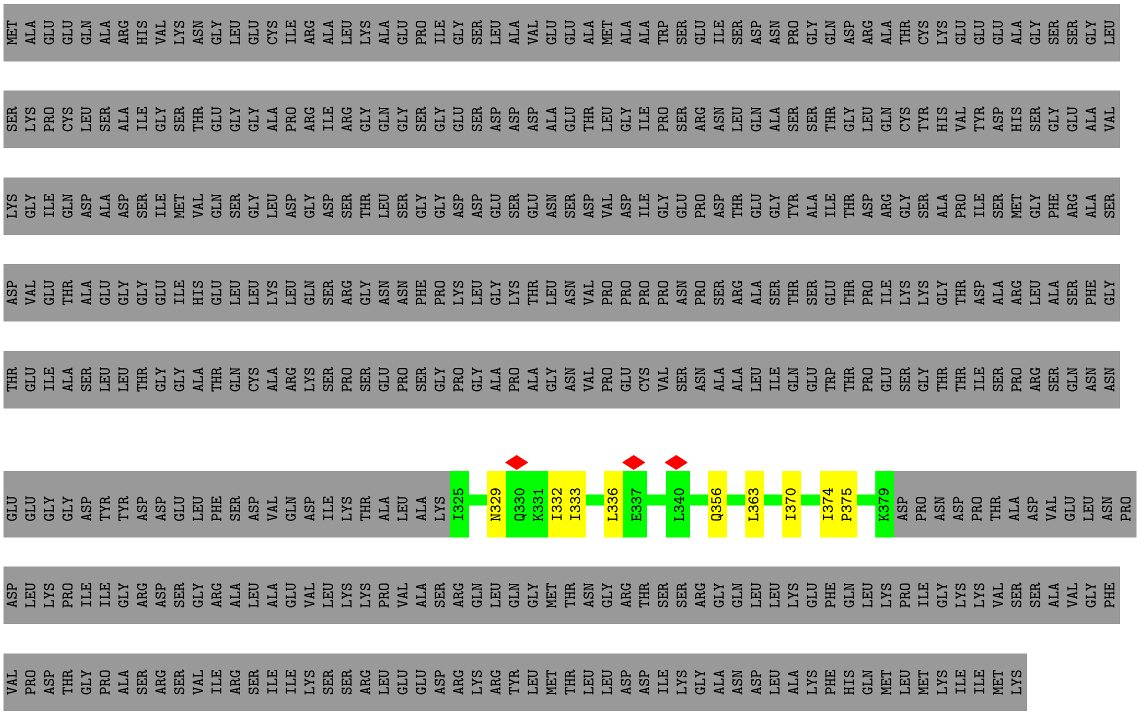
- Molecule 2: Phosphoprotein

Chain D:

- Molecule 2: Phosphoprotein

Chain E:



MET ALA GLU GLU GLN ALA ARG HIS VAL LYS ASN GLY LEU GLU CYS ILE ARG ALA LEU LYS ALA GLU PRO ILE GLY SER LEU ALA VAL GLU GLU ALA MET ALA ALA TRP SER GLU ILE SER ASP ASN PRO GLY GLN ASP ARG ALA THR CYS LYS GLU GLU GLU ALA GLY SER SER GLY LEU
SER LYS PRO CYS LEU SER ALA ILE GLY SER THR GLU GLY GLY ALA PRO ARG ILE ARG GLY GLN GLY SER GLY GLU SER ASP ASP ASP ALA GLU THR LEU GLY ILE PRO SER ARG ASN LEU GLN ALA SER SER THR GLY LEU GLN CYS TYR HIS VAL TYR ASP HIS SER GLY GLU ALA VAL
LYS GLY ILE GLN ASP ALA ASP SER ILE MET VAL GLN SER GLY LEU ASP GLY ASP SER THR LEU SER GLY GLY ASP ASP GLU SER GLU ASN SER ASP VAL ASP ILE GLY GLU PRO ASP THR GLU GLY TYR ALA ILE THR ASP ARG GLY SER ALA PRO ILE SER MET GLY PHE ARG ALA SER
ASP VAL GLU THR ALA GLU GLY GLY GLU ILE HIS GLU LEU LEU LYS LEU GLN SER ARG GLY ASN ASN PHE PRO LYS LEU GLY LYS THR LEU ASN VAL PRO PRO PRO PRO ASN PRO SER ARG ALA SER THR SER GLU THR PRO ILE LYS LYS GLY THR ASP ALA ARG LEU ALA SER PHE GLY
THR GLU ILE ALA SER LEU LEU THR GLY GLY ALA THR GLN CYS ALA ARG LYS SER PRO SER GLU PRO SER GLY PRO GLY ALA PRO ALA GLY ASN VAL PRO GLU CYS VAL SER ASN ALA ALA LEU ILE GLN GLU TRP THR PRO GLU SER GLY THR THR ILE SER PRO ARG SER GLN ASN ASN
GLU GLU GLY GLY ASP TYR TYR ASP ASP GLU LEU PHE SER ASP VAL GLN ASP ILE LYS THR ALA LEU ALA LYS I325 N329 Q330 K331 I332 I333 L336 E337 L340 Q356 L363 I370 I374 P375 K379 ASP PRO ASN ASP PRO THR ALA ASP VAL GLU LEU ASN PRO
ASP LEU LYS PRO ILE ILE GLY ARG ASP SER GLY ARG ALA LEU ALA GLU VAL LEU LYS LYS PRO VAL ALA SER ARG GLN LEU GLN GLY MET THR ASN GLY ARG THR SER SER ARG GLY GLN LEU LEU LYS GLU PHE GLN LEU LYS PRO ILE GLY LYS LYS VAL SER SER ALA VAL GLY PHE
VAL PRO ASP THR GLY PRO ALA SER ARG SER VAL ILE ARG SER ILE ILE LYS SER SER ARG LEU GLU GLU ASP ARG LYS ARG TYR LEU MET THR LEU LEU ASP ASP ILE LYS GLY ALA ASN ASP LEU ALA LYS PHE HIS GLN MET LEU MET LYS ILE ILE MET LYS

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	4035198	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 $(e^-/\text{Å}^2)$	50	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	TFS FALCON 4i (4k x 4k)	Depositor
Maximum map value	1.549	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.014	Depositor
Recommended contour level	0.006	Depositor
Map size (Å)	394.2016, 394.2016, 394.2016	wwPDB
Map dimensions	416, 416, 416	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.9476, 0.9476, 0.9476	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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	0.13	0/10307	0.32	0/13966
2	B	0.13	0/1168	0.34	0/1556
2	C	0.17	0/373	0.35	0/497
2	D	0.16	0/517	0.35	0/696
2	E	0.18	0/427	0.43	0/570
All	All	0.13	0/12792	0.32	0/17285

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	10082	0	10102	76	0
2	B	1159	0	1261	21	0
2	C	372	0	398	7	0
2	D	514	0	535	8	0
2	E	425	0	462	9	0
3	A	1	0	0	0	0
All	All	12553	0	12758	103	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 4.

All (103) 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:1180:CYS:SG	1:A:1364:HIS:HE1	2.11	0.71
2:B:356:GLN:HE21	2:E:356:GLN:HE22	1.37	0.69
2:B:434:LEU:HD23	2:B:436:GLU:H	1.60	0.67
2:B:342:LEU:HA	2:B:345:GLU:HG2	1.76	0.66
1:A:1397:LEU:HD12	1:A:1398:ILE:HG23	1.76	0.66
1:A:989:SER:H	1:A:1147:ARG:HH22	1.45	0.63
2:D:352:GLN:HG2	2:D:355:ARG:HH22	1.63	0.63
1:A:933:LEU:HD12	1:A:934:PRO:HD2	1.80	0.62
1:A:1081:THR:HG22	1:A:1085:LEU:HD23	1.81	0.62
1:A:1190:PHE:HB2	1:A:1361:LEU:HB3	1.83	0.60
2:C:363:LEU:HD23	2:D:363:LEU:HD22	1.86	0.58
1:A:1109:GLU:HG2	1:A:1112:ARG:HH21	1.68	0.57
1:A:530:LEU:HB3	1:A:705:LEU:HD22	1.86	0.57
1:A:457:ASP:HA	1:A:1029:MET:HE1	1.86	0.57
2:E:329:ASN:HA	2:E:332:ILE:HG12	1.86	0.57
1:A:197:THR:HA	1:A:202:GLU:HG2	1.87	0.56
1:A:1057:PRO:HG2	1:A:1157:LEU:HD11	1.88	0.56
2:B:339:LEU:HA	2:B:342:LEU:HD23	1.88	0.56
1:A:266:ASP:HA	1:A:269:PHE:HD2	1.71	0.54
1:A:1269:VAL:HG21	1:A:1274:LEU:HD13	1.88	0.53
1:A:1302:THR:HG22	1:A:1304:LEU:H	1.73	0.53
1:A:456:LEU:HD13	1:A:510:PRO:HB2	1.91	0.52
1:A:1009:ILE:HG23	1:A:1103:LEU:HD22	1.91	0.52
1:A:14:VAL:HG11	1:A:856:TRP:HB2	1.92	0.52
1:A:27:ALA:HB2	1:A:45:LEU:HD21	1.92	0.51
1:A:1392:LEU:HD23	1:A:1394:THR:H	1.75	0.51
1:A:656:VAL:HG21	1:A:792:LYS:HB3	1.93	0.51
1:A:929:ARG:HH12	1:A:1118:LEU:HB3	1.75	0.51
1:A:289:ALA:HB2	1:A:304:PHE:HD2	1.76	0.50
2:B:488:ILE:HG22	2:B:494:LEU:HD12	1.92	0.50
1:A:681:GLN:HG2	2:D:372:ILE:HD13	1.94	0.50
1:A:30:GLU:HB3	1:A:49:ILE:HG21	1.94	0.49
1:A:1166:MET:HG2	1:A:1365:VAL:HG22	1.93	0.49
1:A:16:LEU:HD22	1:A:230:MET:HB2	1.95	0.49
1:A:307:HIS:ND1	1:A:821:ASN:HB3	2.27	0.49
2:E:333:ILE:HA	2:E:336:LEU:HG	1.95	0.49
1:A:460:LEU:HD21	1:A:1029:MET:HG2	1.93	0.49
2:C:328:ASP:O	2:C:332:ILE:HG12	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:762:SER:HB3	1:A:806:ILE:HD12	1.95	0.49
1:A:853:CYS:HB2	1:A:874:THR:HG21	1.94	0.49
1:A:333:ALA:O	1:A:337:ILE:HG13	2.13	0.49
1:A:1062:GLU:HG2	1:A:1244:VAL:HG21	1.94	0.48
2:C:367:LEU:HD21	2:D:367:LEU:HD11	1.95	0.48
2:B:375:PRO:HD2	2:B:438:GLN:HE22	1.78	0.48
1:A:193:PRO:HB2	1:A:204:LEU:HD11	1.95	0.48
1:A:781:LYS:HD2	1:A:799:VAL:HG11	1.96	0.48
1:A:752:ILE:HA	1:A:755:LEU:HD12	1.95	0.47
1:A:832:TYR:HE1	1:A:837:TYR:HB2	1.80	0.47
2:B:345:GLU:O	2:B:349:ILE:HG12	2.15	0.47
1:A:371:ARG:HH12	1:A:728:ASP:HA	1.78	0.47
1:A:142:ARG:HB2	1:A:145:ILE:HG13	1.96	0.47
1:A:152:LEU:HD11	1:A:891:LEU:HD13	1.95	0.47
1:A:331:ILE:HG21	2:B:462:SER:HB3	1.96	0.47
2:B:396:PRO:HG2	2:E:370:ILE:HA	1.96	0.47
2:C:367:LEU:HG	2:D:367:LEU:HD21	1.95	0.47
2:B:333:ILE:HD13	2:B:336:LEU:HD12	1.98	0.46
1:A:1171:ILE:HG23	1:A:1175:GLU:HB3	1.97	0.46
1:A:291:LEU:HB2	1:A:346:THR:HG21	1.98	0.46
1:A:836:ILE:HB	1:A:843:VAL:HB	1.98	0.45
1:A:286:LEU:HD22	1:A:290:TYR:HE2	1.81	0.45
1:A:801:ARG:HD2	2:B:450:VAL:HG13	1.98	0.45
2:C:331:LYS:HG3	2:D:332:ILE:HD12	1.99	0.45
1:A:1099:VAL:O	1:A:1103:LEU:HG	2.17	0.45
1:A:497:ARG:HB3	1:A:500:ASP:HB2	1.99	0.45
1:A:920:LEU:HD23	1:A:926:LEU:HD23	1.99	0.45
1:A:1029:MET:HE3	1:A:1397:LEU:HD23	1.99	0.45
1:A:1013:LEU:HD12	1:A:1013:LEU:HA	1.80	0.44
1:A:916:VAL:HA	1:A:1115:MET:HE1	1.98	0.44
1:A:1171:ILE:HD11	1:A:1177:CYS:HB2	1.98	0.44
1:A:171:VAL:HG22	1:A:203:LEU:HD21	1.99	0.44
1:A:201:VAL:HG12	1:A:214:SER:HA	1.97	0.44
1:A:403:ARG:HD2	1:A:571:TYR:HE1	1.81	0.44
1:A:674:GLU:HB2	2:E:374:ILE:HD11	2.00	0.44
1:A:286:LEU:HD11	1:A:312:ILE:HD11	1.99	0.44
1:A:411:LEU:HD11	1:A:446:VAL:HG22	1.99	0.44
1:A:685:GLU:HA	2:D:388:VAL:HG13	2.00	0.44
1:A:462:MET:HA	1:A:465:LYS:HE3	1.99	0.43
1:A:400:TYR:HB3	1:A:409:PRO:HD3	1.99	0.43
1:A:94:LEU:HB3	1:A:168:TRP:HZ2	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:347:GLU:HG2	2:D:351:LYS:HE3	2.00	0.43
1:A:379:VAL:HG21	2:B:433:LEU:HD11	2.01	0.43
1:A:109:LEU:HD23	1:A:109:LEU:HA	1.91	0.43
1:A:272:LEU:HB3	1:A:276:THR:OG1	2.19	0.43
2:B:332:ILE:O	2:B:336:LEU:HG	2.19	0.43
2:B:488:ILE:HG23	2:B:493:ASP:HB3	2.01	0.43
2:B:364:GLU:HA	2:E:363:LEU:HD21	2.01	0.42
1:A:810:ARG:HA	1:A:810:ARG:HD3	1.84	0.42
1:A:120:VAL:HG11	1:A:928:ILE:HG21	2.01	0.42
1:A:871:ILE:HD13	1:A:895:LYS:HB3	2.01	0.42
2:B:371:MET:HB3	2:B:394:LEU:HD12	2.03	0.41
2:B:332:ILE:HD11	2:C:332:ILE:HG23	2.02	0.41
1:A:1388:LEU:HD23	1:A:1388:LEU:HA	1.92	0.41
1:A:973:MET:HE2	1:A:973:MET:HB3	1.92	0.41
2:B:405:ALA:HB2	2:E:375:PRO:HD3	2.03	0.41
1:A:653:TYR:HD2	1:A:782:ARG:HG2	1.86	0.41
1:A:1304:LEU:HD12	1:A:1345:GLU:HG3	2.02	0.41
2:B:349:ILE:HG23	2:C:353:ILE:HD13	2.03	0.41
2:B:360:ILE:HD13	2:B:360:ILE:HA	1.94	0.41
2:B:367:LEU:HD13	2:E:363:LEU:HD22	2.03	0.41
1:A:291:LEU:HD12	1:A:346:THR:HB	2.03	0.40
1:A:657:SER:HB2	1:A:780:THR:HG22	2.03	0.40
1:A:672:ARG:HD2	2:E:374:ILE:HG21	2.03	0.40
1:A:42:ASP:HB2	1:A:364:VAL:HG21	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	A	1241/2183 (57%)	1199 (97%)	42 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	142/507 (28%)	136 (96%)	6 (4%)	0	100	100
2	C	45/507 (9%)	45 (100%)	0	0	100	100
2	D	63/507 (12%)	63 (100%)	0	0	100	100
2	E	53/507 (10%)	53 (100%)	0	0	100	100
All	All	1544/4211 (37%)	1496 (97%)	48 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	1114/1945 (57%)	1114 (100%)	0	100	100
2	B	132/416 (32%)	132 (100%)	0	100	100
2	C	45/416 (11%)	45 (100%)	0	100	100
2	D	61/416 (15%)	61 (100%)	0	100	100
2	E	50/416 (12%)	50 (100%)	0	100	100
All	All	1402/3609 (39%)	1402 (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 (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	313	HIS
1	A	358	HIS
2	B	326	HIS
2	B	356	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 ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

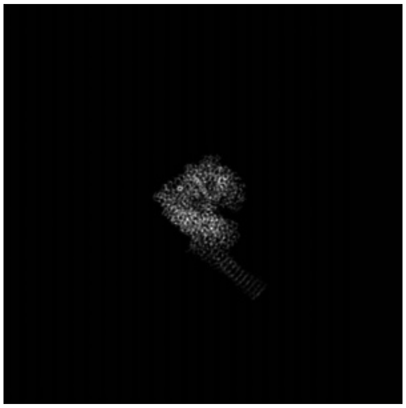
6 Map visualisation

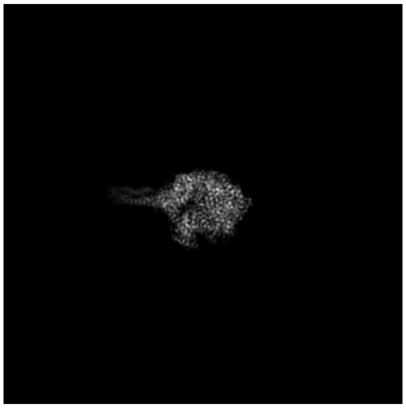
This section contains visualisations of the EMDB entry EMD-65446. These allow visual inspection of the internal detail of the map and identification of artifacts.

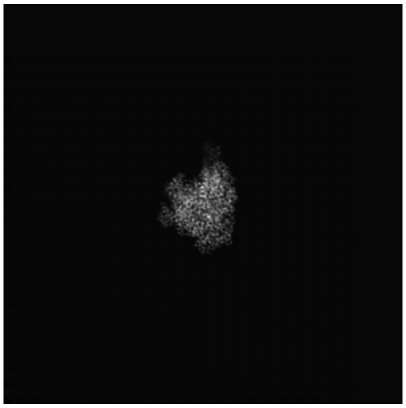
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

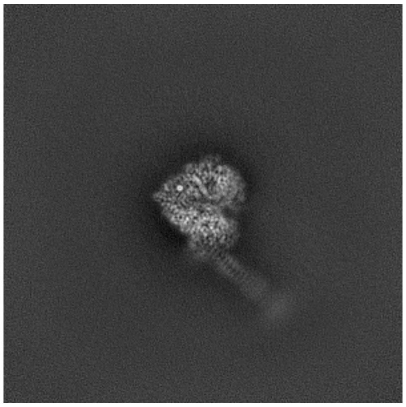
6.1.1 Primary map

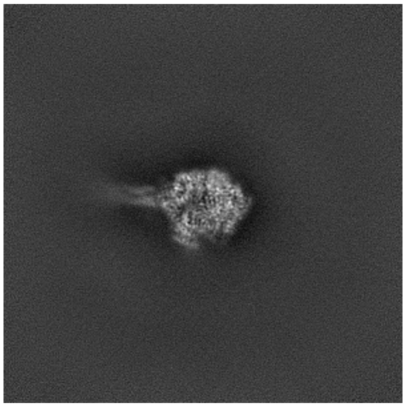

X

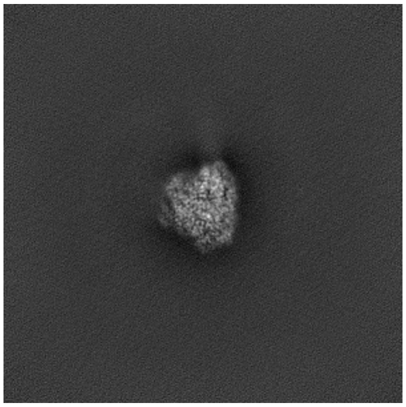

Y


Z

6.1.2 Raw map


X

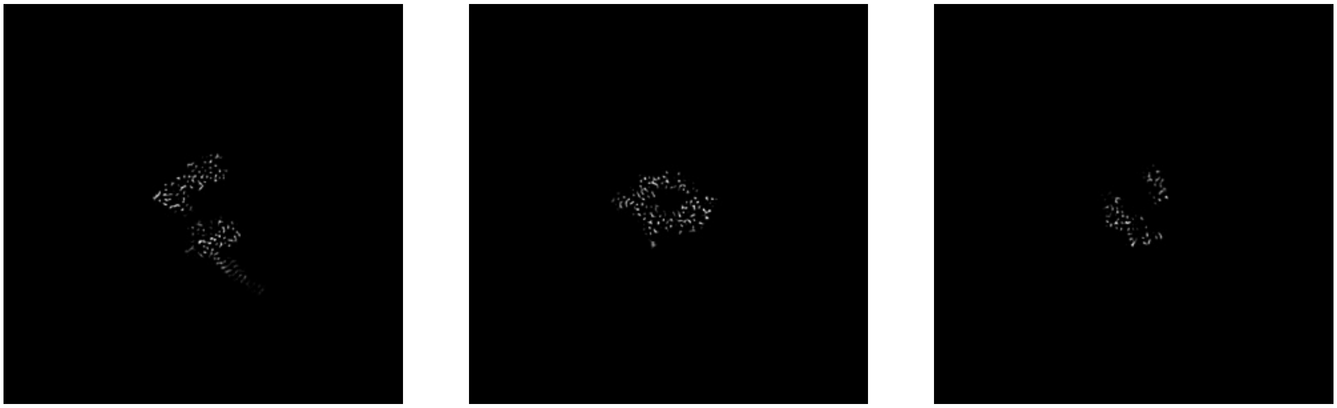

Y


Z

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

6.2 Central slices

6.2.1 Primary map

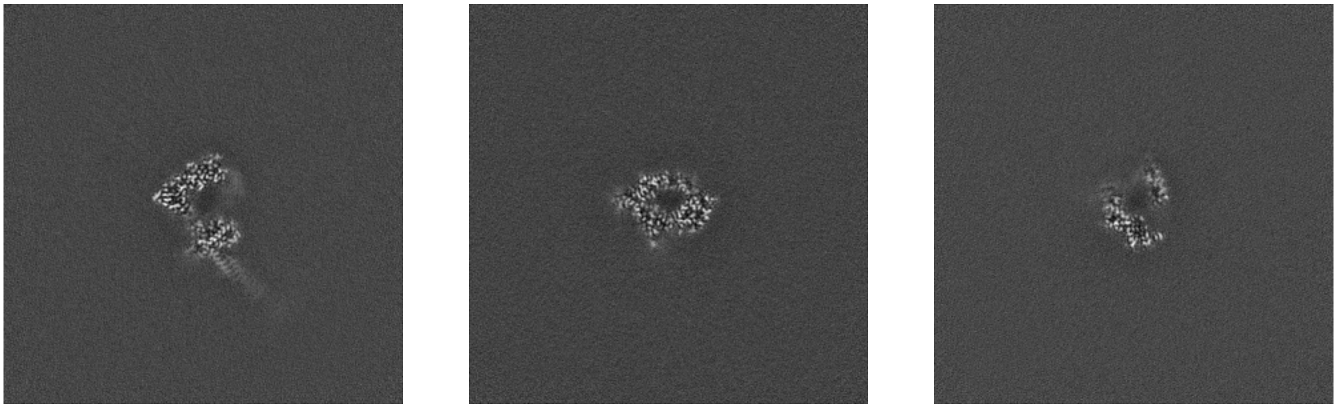


X Index: 208

Y Index: 208

Z Index: 208

6.2.2 Raw map



X Index: 208

Y Index: 208

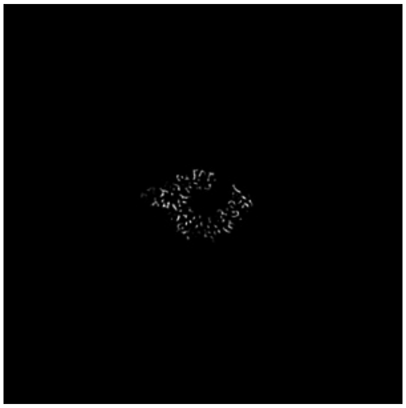
Z Index: 208

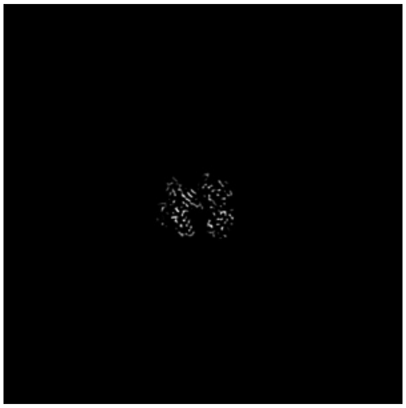
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ

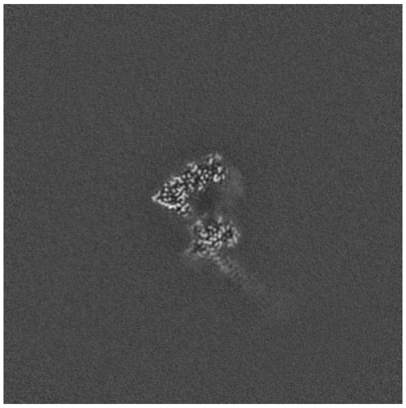
6.3.1 Primary map

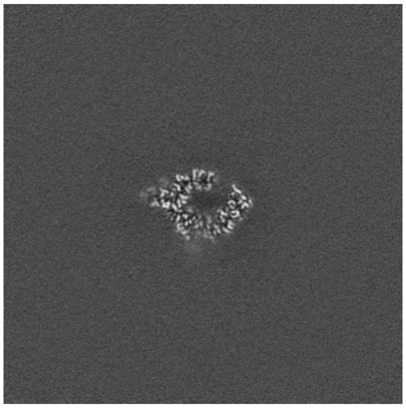

X Index: 222

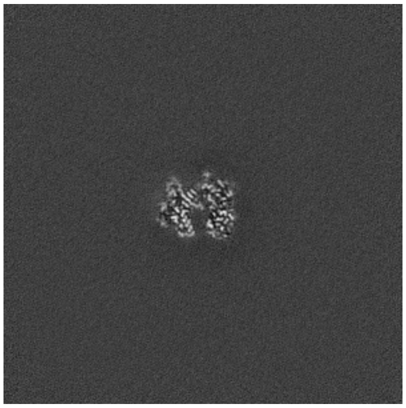

Y Index: 216


Z Index: 190

6.3.2 Raw map


X Index: 207

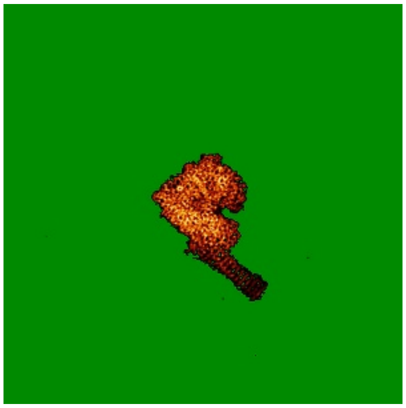

Y Index: 216


Z Index: 190

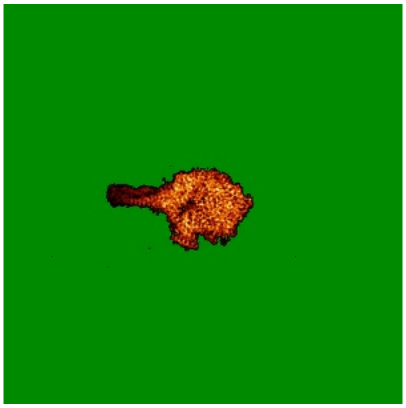
The images above show the largest variance slices of the map in three orthogonal directions.

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

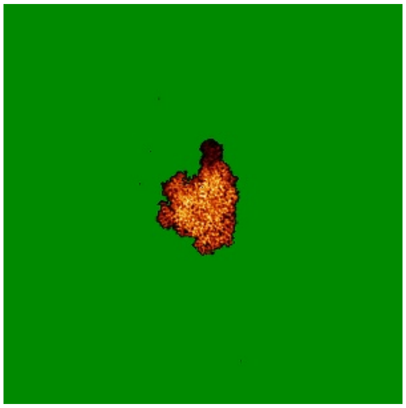
6.4.1 Primary map



X

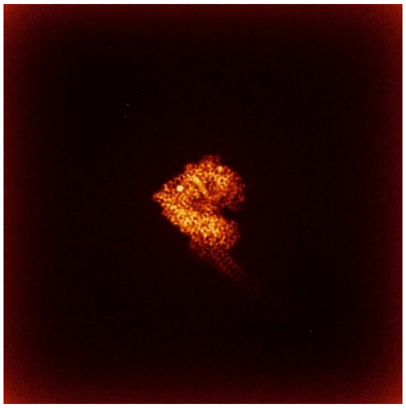


Y

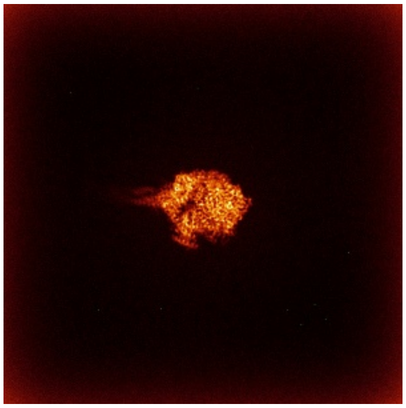


Z

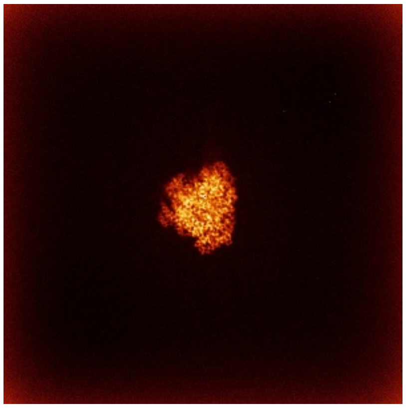
6.4.2 Raw map



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

6.5.1 Primary map

X

Y

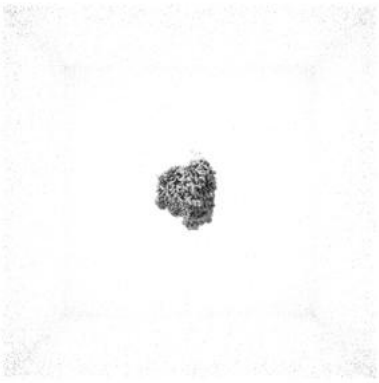
Z

The images above show the 3D surface view of the map at the recommended contour level 0.006. 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.

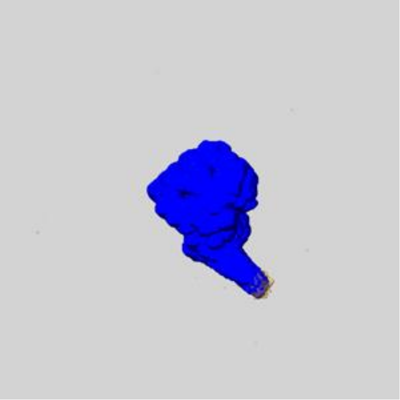
6.6 Mask visualisation (i)

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

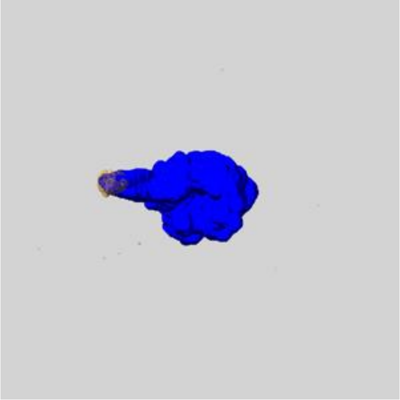
A mask typically either:

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

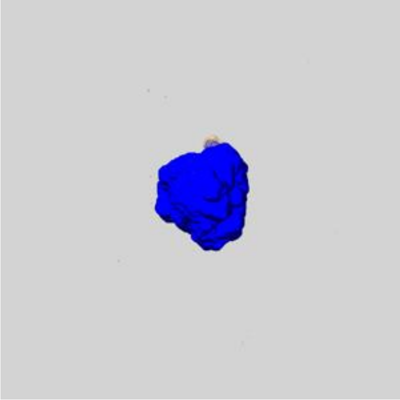
6.6.1 emd_65446_msk_1.map (i)



X



Y

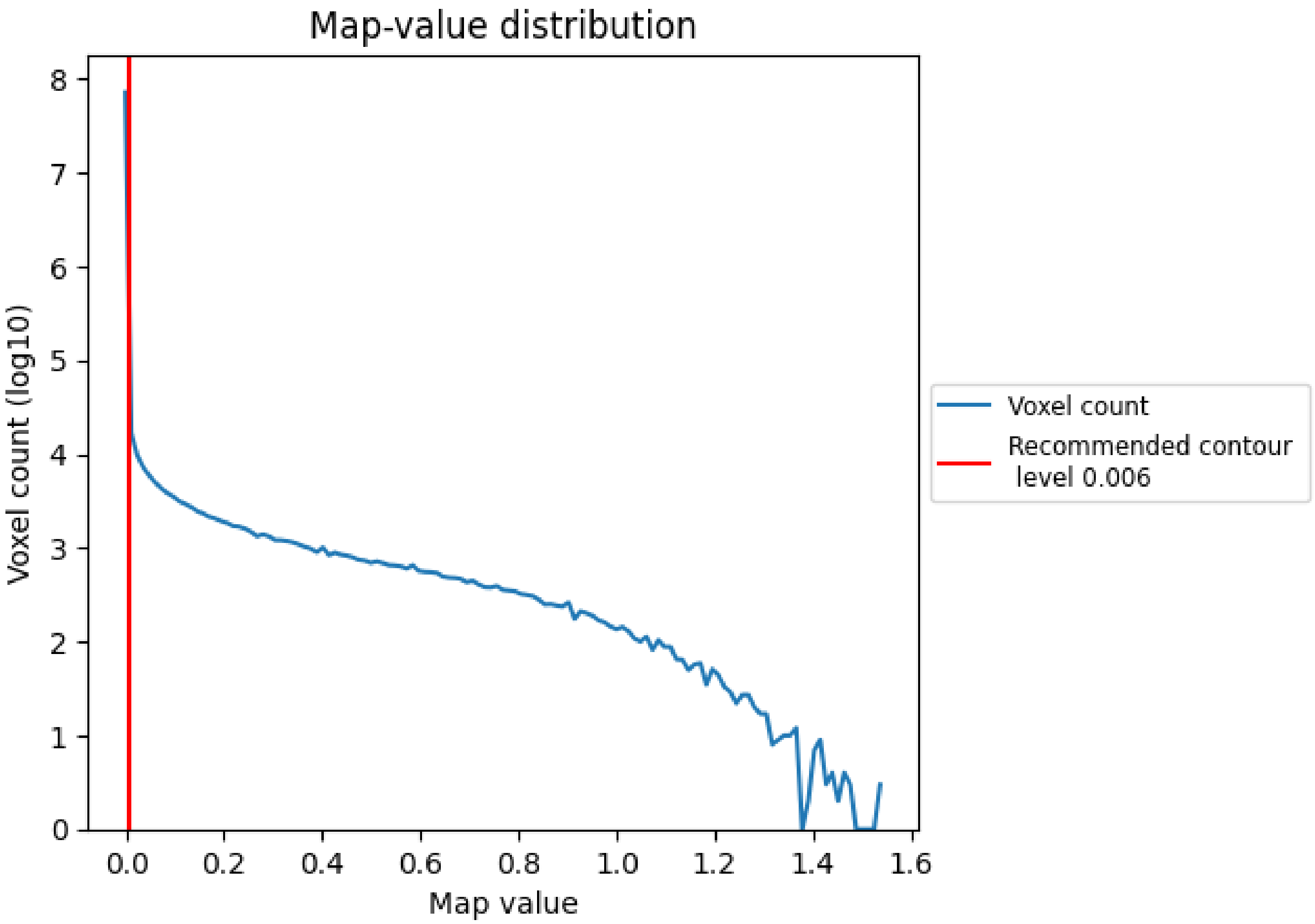


Z

7 Map analysis (i)

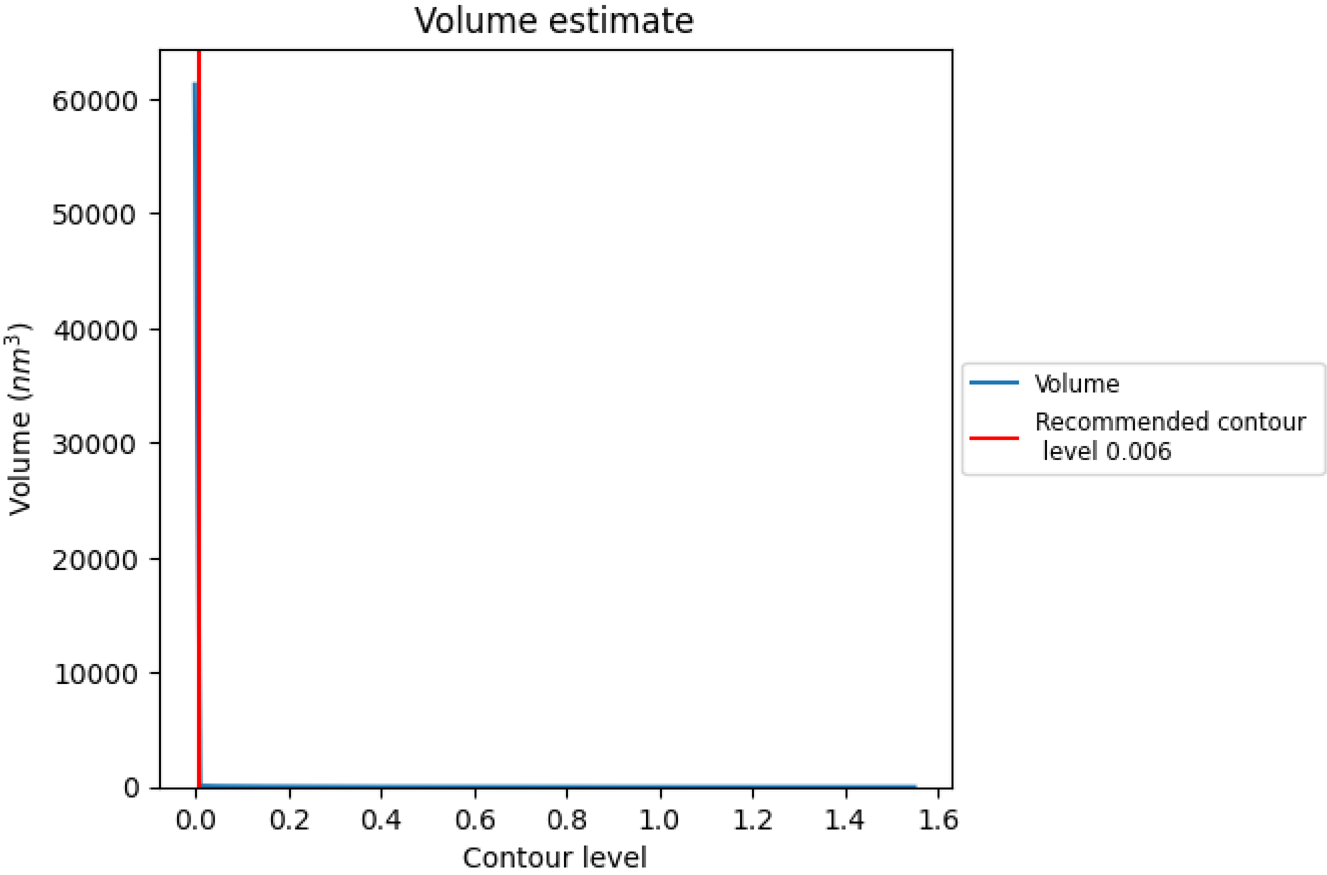
This section contains the results of statistical analysis of the map.

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.

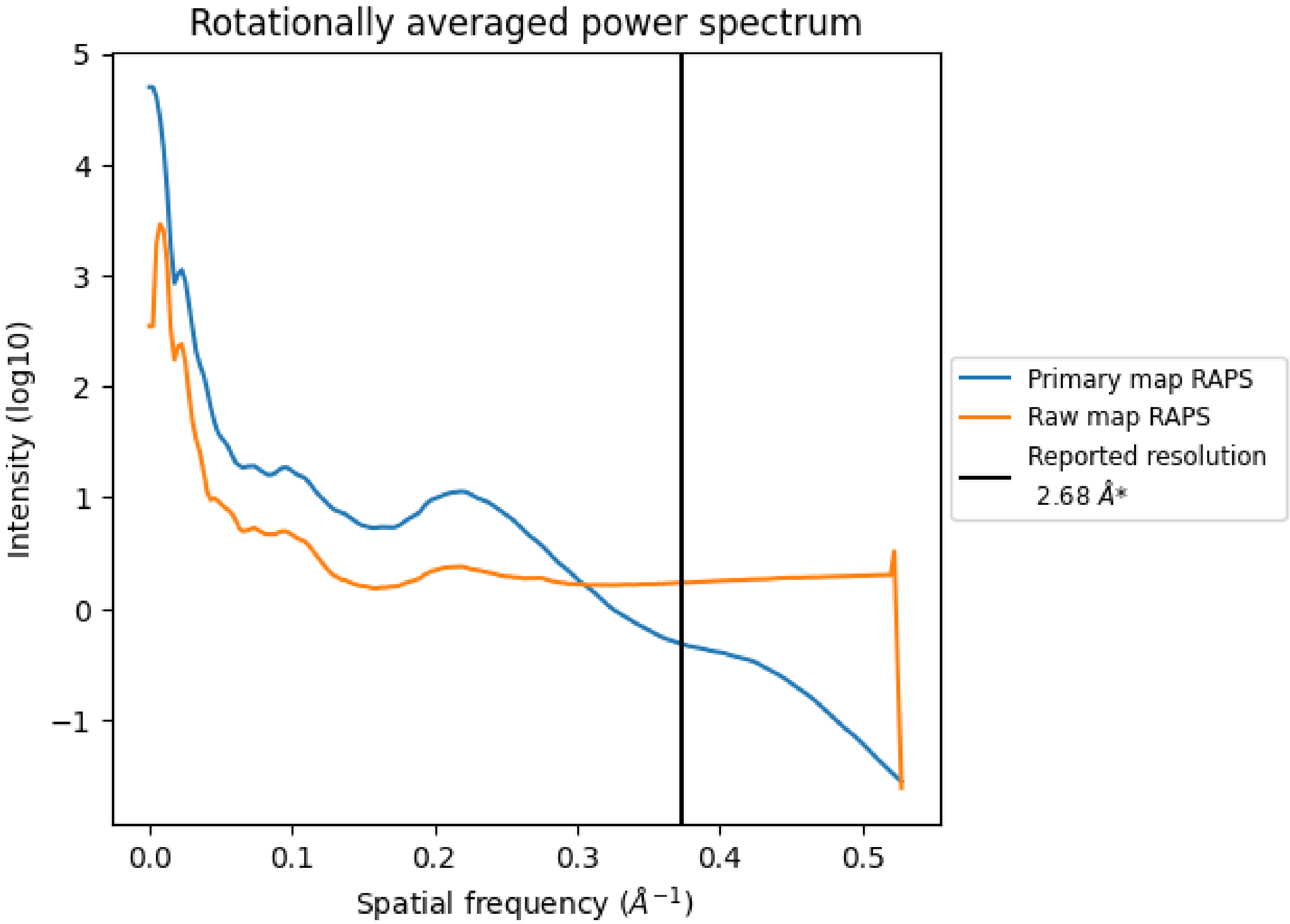
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 22068 nm^3; this corresponds to an approximate mass of 19935 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 ⓘ

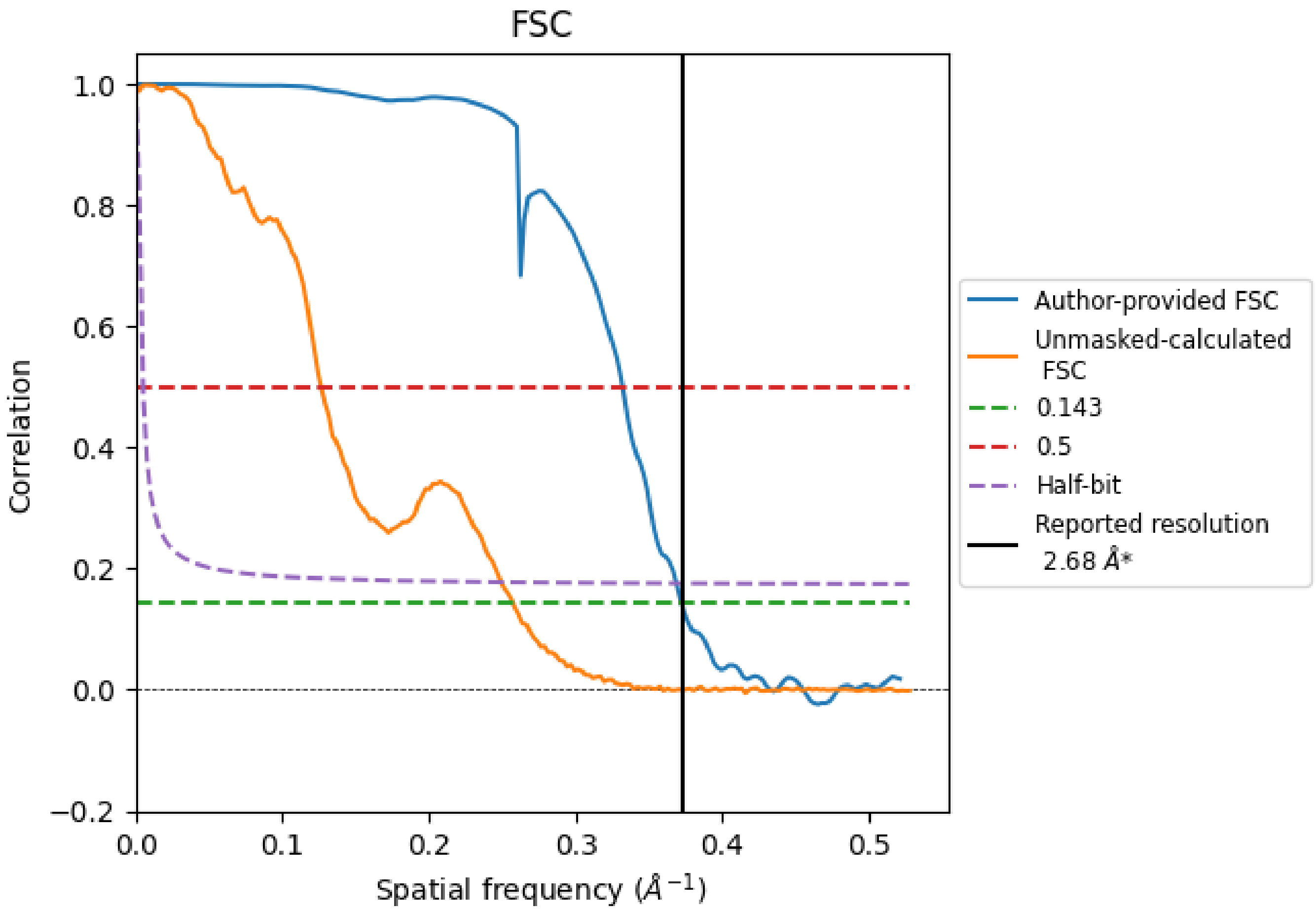


*Reported resolution corresponds to spatial frequency of 0.373 Å^{-1}

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 0.373 Å^{-1}

8.2 Resolution estimates ⓘ

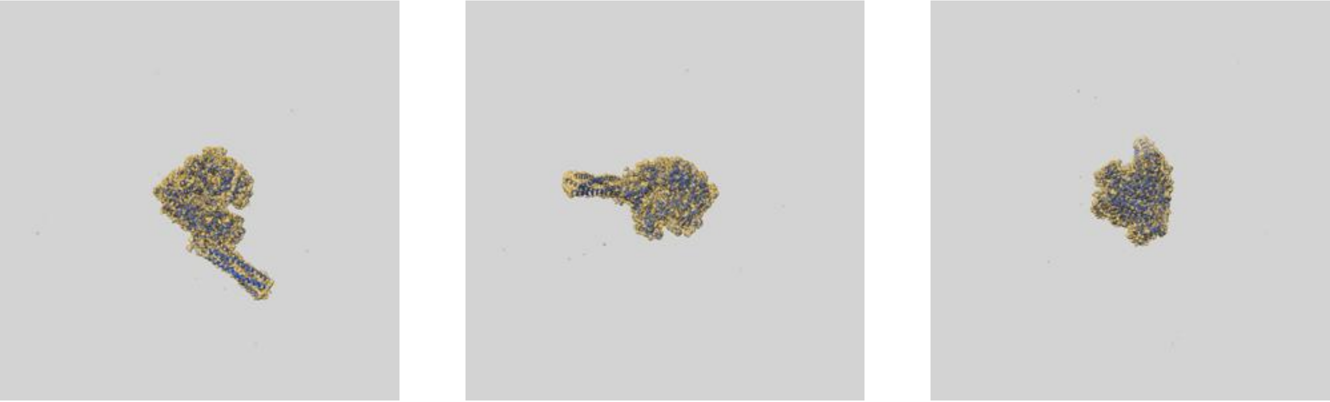
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	2.68	-	-
Author-provided FSC curve	2.69	3.01	2.71
Unmasked-calculated*	3.89	7.90	4.01

*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 3.89 differs from the reported value 2.68 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-65446 and PDB model 9VXZ. Per-residue inclusion information can be found in section 3 on page 5.

9.1 Map-model overlay ⓘ



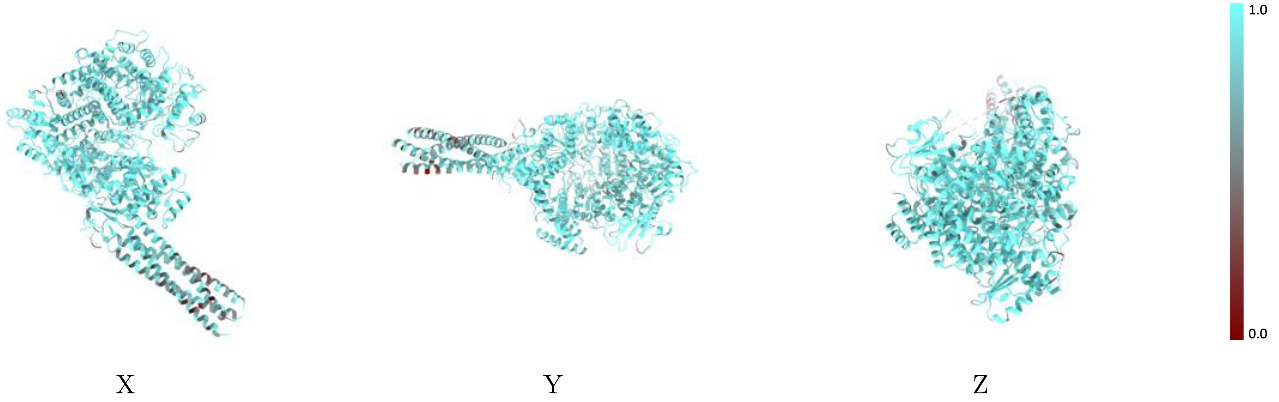
X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.006 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

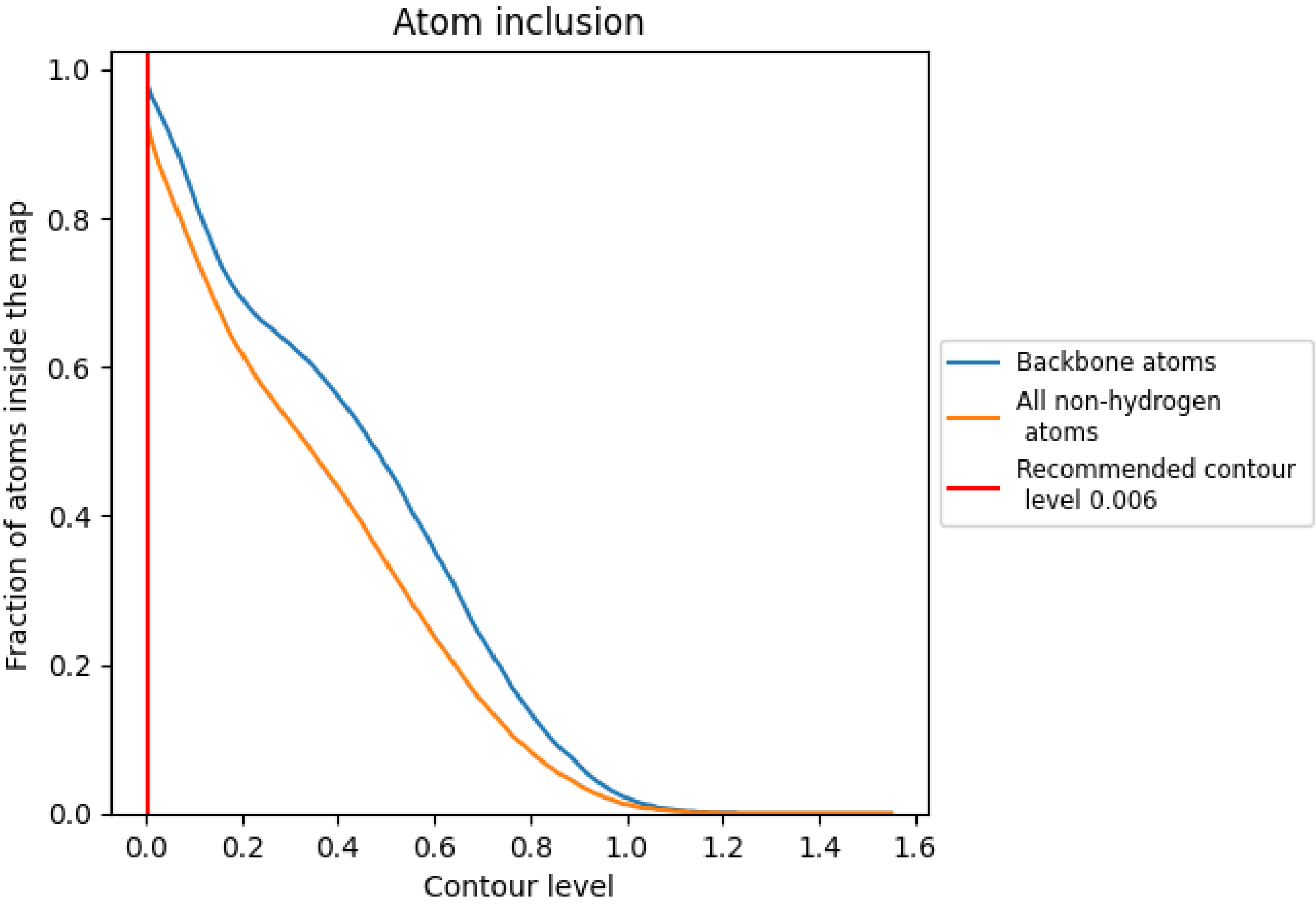
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model ⓘ



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.006).

9.4 Atom inclusion ⓘ



At the recommended contour level, 98% of all backbone atoms, 92% 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 (0.006) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	▬ 0.9210	▬ 0.4780
A	▬ 0.9490	▬ 0.5230
B	▬ 0.8390	▬ 0.3530
C	▬ 0.7220	▬ 0.1470
D	▬ 0.7950	▬ 0.2940
E	▬ 0.8270	▬ 0.2580