Full wwPDB EM Validation Report ⓘ

Mar 3, 2024 – 01:29 PM EST

PDB ID	:	6BF6
EMDB ID	:	EMD-7090
Title	:	Cryo-EM structure of human insulin degrading enzyme
Authors	:	Liang, W.G.; Zhang, Z.; Bailey, L.J.; Kossiakoff, A.A.; Tan, Y.Z.; Wei, H.; Carragher, B.; Potter, S.C.; Tang, W.J.
Deposited on	:	2017-10-26
Resolution	:	6.50 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:

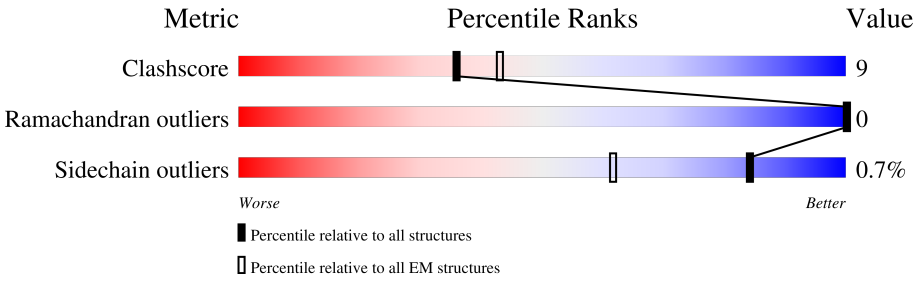
EMDB validation analysis	:	0.0.1.dev70
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 6.50 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=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	966	76% 22% .
1	B	966	75% 22% .

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 15407 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 Insulin-degrading enzyme.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	949	Total	C	N	O	S	0	0
			7736	4983	1302	1429	22		
1	B	940	Total	C	N	O	S	0	0
			7671	4945	1288	1417	21		

There are 22 discrepancies between the modelled and reference sequences:

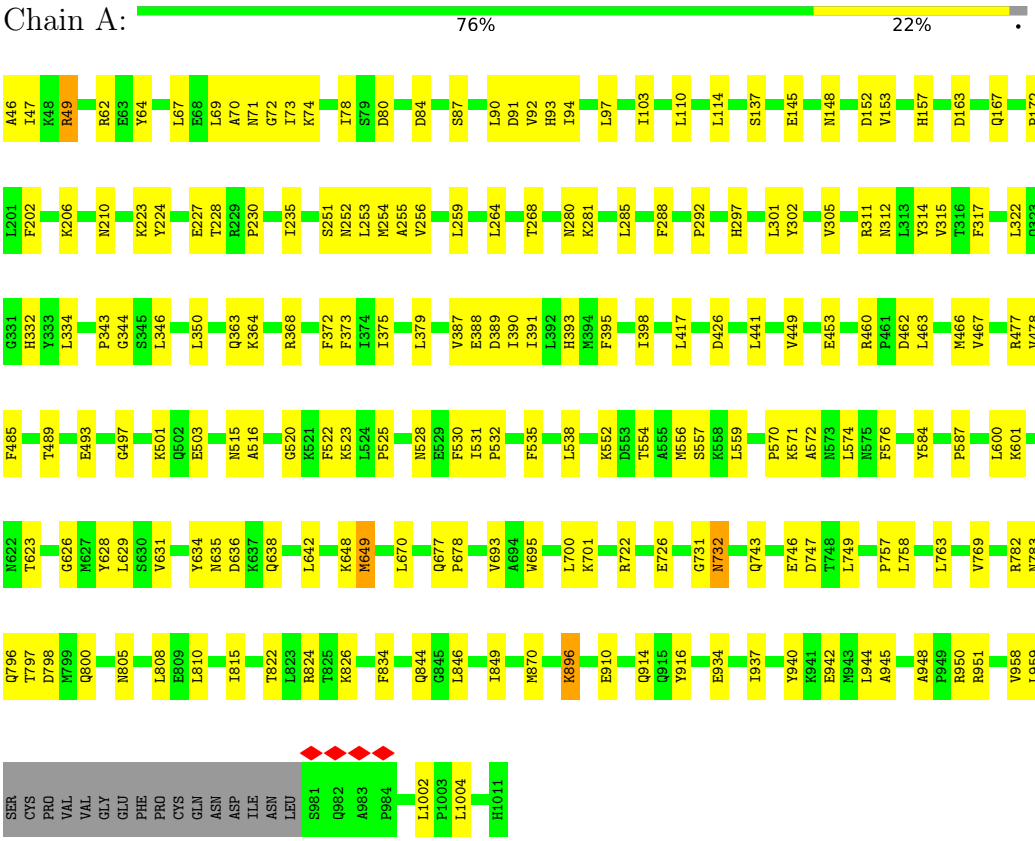
Chain	Residue	Modelled	Actual	Comment	Reference
A	110	LEU	CYS	engineered mutation	UNP P14735
A	171	SER	CYS	engineered mutation	UNP P14735
A	178	ALA	CYS	engineered mutation	UNP P14735
A	257	VAL	CYS	engineered mutation	UNP P14735
A	414	LEU	CYS	engineered mutation	UNP P14735
A	573	ASN	CYS	engineered mutation	UNP P14735
A	590	SER	CYS	engineered mutation	UNP P14735
A	789	SER	CYS	engineered mutation	UNP P14735
A	812	ALA	CYS	engineered mutation	UNP P14735
A	819	ALA	CYS	engineered mutation	UNP P14735
A	904	SER	CYS	engineered mutation	UNP P14735
B	110	LEU	CYS	engineered mutation	UNP P14735
B	171	SER	CYS	engineered mutation	UNP P14735
B	178	ALA	CYS	engineered mutation	UNP P14735
B	257	VAL	CYS	engineered mutation	UNP P14735
B	414	LEU	CYS	engineered mutation	UNP P14735
B	573	ASN	CYS	engineered mutation	UNP P14735
B	590	SER	CYS	engineered mutation	UNP P14735
B	789	SER	CYS	engineered mutation	UNP P14735
B	812	ALA	CYS	engineered mutation	UNP P14735
B	819	ALA	CYS	engineered mutation	UNP P14735
B	904	SER	CYS	engineered mutation	UNP P14735

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.

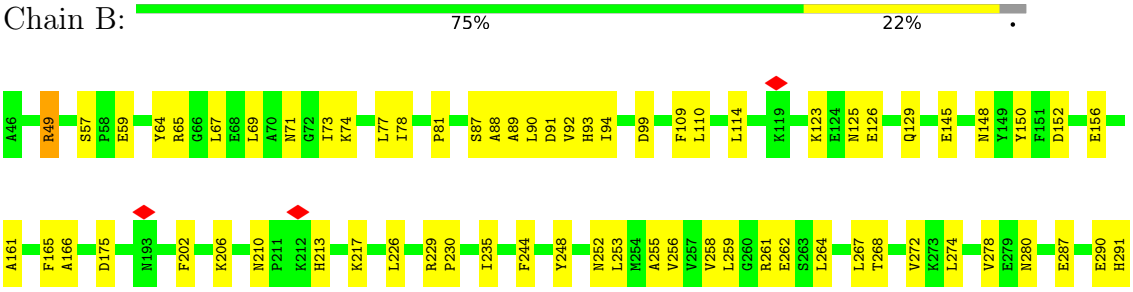
• Molecule 1: Insulin-degrading enzyme

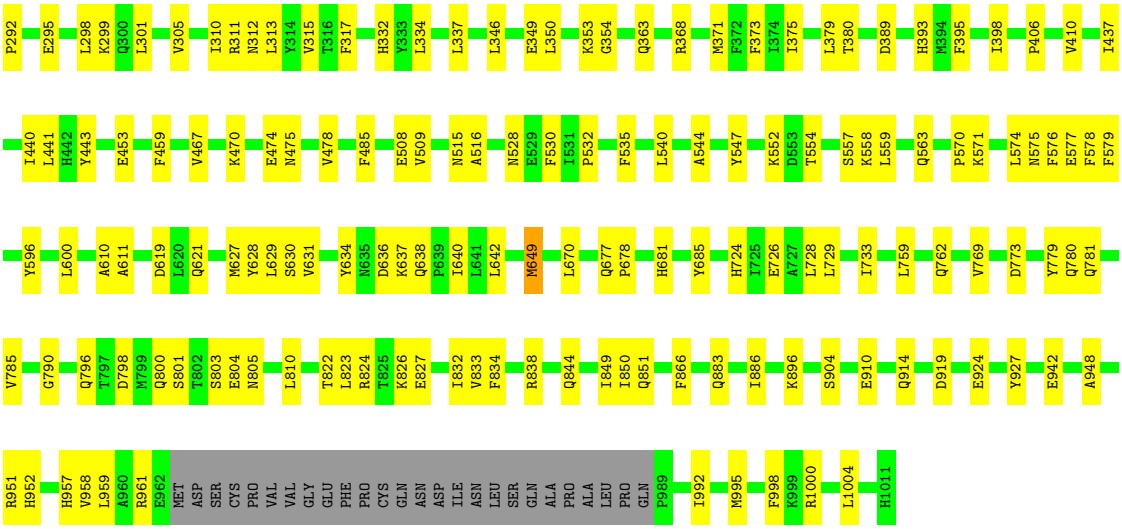
Chain A:



• Molecule 1: Insulin-degrading enzyme

Chain B:




P292 E295 L298 K299 Q300 L301 V305 I310 R311 N312 L313 Y314 V315 T316 F317 H332 Y333 L334 L337 L346 E349 L350 K353 G354 Q363 R368 M371 F372 F373 I374 I375 L379 T380 D389 H393 M394 F395 I398 P406 V410 I437
I440 L441 H442 Y443 E453 F459 V467 K470 E474 N475 V478 F485 E508 V509 N515 A516 N528 E529 F530 I531 P532 F535 L540 A544 Y547 K552 D553 T554 S557 K558 L559 Q563 P570 K571 L574 N575 F576 E577 F578 F579
Y596 L600 A610 A611 D619 L620 Q621 M627 Y628 L629 S630 V631 Y634 N635 D636 K637 Q638 P639 I640 L641 L642 M649 L670 Q677 P678 H681 Y685 H724 I725 E726 A727 L728 L729 I733 L759 Q762 V769 D773 Y779 Q780 Q781
V785 G790 Q796 T797 D798 M799 Q800 S801 T802 S803 E804 N805 L810 T822 L823 R824 T825 K826 E827 I832 V833 F834 R838 Q844 I849 I850 Q851 F866 Q883 I886 K896 S904 E910 Q914 D919 E924 Y927 E942 A948
R951 H952 H957 V958 L959 A960 R961 E962 MET ASP SER CYS PRO VAL VAL GLY GLU PHE PRO CYS GLN ASN ASP ILE ASN LEU SER GLN ALA PRO ALA LEU PRO GLN P989 I992 M995 F998 K999 R1000 L1004 H1011

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	16944	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 ($e^-/Å^2$)	7.9, 6.8	Depositor
Minimum defocus (nm)	940	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	46598	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k), GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.106	Depositor
Minimum map value	-0.148	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.017	Depositor
Map size (Å)	343.36, 343.36, 343.36	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.073, 1.073, 1.073	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	0.39	0/7930	0.64	0/10728
1	B	0.38	0/7863	0.64	0/10635
All	All	0.38	0/15793	0.64	0/21363

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	7736	0	7650	131	0
1	B	7671	0	7588	134	0
All	All	15407	0	15238	261	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 9.

All (261) 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:317:PHE:HB2	1:A:373:PHE:HB3	1.69	0.72
1:B:317:PHE:HB2	1:B:373:PHE:HB3	1.73	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:538:LEU:H	1:A:732:ASN:HD21	1.37	0.69
1:B:621:GLN:HB3	1:B:628:TYR:HB3	1.75	0.68
1:A:346:LEU:HD11	1:A:393:HIS:HB3	1.77	0.67
1:B:638:GLN:O	1:B:642:LEU:HB3	1.94	0.66
1:A:576:PHE:HB2	1:A:629:LEU:HB3	1.78	0.66
1:B:834:PHE:HB3	1:B:849:ILE:HB	1.76	0.66
1:A:834:PHE:HB3	1:A:849:ILE:HB	1.78	0.66
1:A:1004:LEU:HB2	1:B:1004:LEU:HB2	1.82	0.62
1:B:532:PRO:HB3	1:B:636:ASP:HB2	1.82	0.62
1:A:782:ARG:HA	1:A:959:LEU:HB2	1.81	0.62
1:B:805:ASN:ND2	1:B:924:GLU:OE2	2.33	0.61
1:B:156:GLU:HB3	1:B:261:ARG:HH21	1.64	0.61
1:B:579:PHE:HB3	1:B:724:HIS:HB3	1.82	0.61
1:A:332:HIS:HE1	1:A:453:GLU:HG3	1.67	0.60
1:A:695:TRP:HH2	1:B:762:GLN:HB3	1.65	0.60
1:A:489:THR:HA	1:A:501:LYS:HB2	1.83	0.60
1:A:389:ASP:O	1:A:393:HIS:ND1	2.34	0.60
1:B:832:ILE:HB	1:B:851:GLN:HG2	1.84	0.60
1:A:635:ASN:ND2	1:A:732:ASN:O	2.36	0.59
1:B:301:LEU:HA	1:B:478:VAL:HB	1.85	0.59
1:A:769:VAL:O	1:A:796:GLN:NE2	2.35	0.59
1:B:576:PHE:HB2	1:B:629:LEU:HB3	1.84	0.59
1:B:769:VAL:O	1:B:796:GLN:NE2	2.35	0.59
1:B:69:LEU:HD21	1:B:272:VAL:HG13	1.84	0.58
1:B:790:GLY:N	1:B:958:VAL:O	2.32	0.58
1:A:800:GLN:HA	1:A:844:GLN:HE21	1.67	0.58
1:A:93:HIS:HB3	1:A:253:LEU:HB3	1.84	0.58
1:A:815:ILE:HG22	1:A:870:MET:HG3	1.85	0.58
1:A:251:SER:HA	1:A:281:LYS:H	1.69	0.58
1:A:92:VAL:HG12	1:A:94:ILE:H	1.69	0.58
1:A:670:LEU:HD13	1:A:701:LYS:HA	1.85	0.57
1:B:508:GLU:HG3	1:B:509:VAL:HG23	1.87	0.57
1:A:71:ASN:HA	1:A:280:ASN:HB3	1.87	0.57
1:A:795:TYR:HB2	1:A:846:LEU:HB3	1.87	0.57
1:B:575:ASN:ND2	1:B:904:SER:OG	2.38	0.56
1:B:577:GLU:HB3	1:B:726:GLU:HB3	1.86	0.56
1:B:822:THR:O	1:B:826:LYS:HB3	2.05	0.56
1:A:72:GLY:HA3	1:A:252:ASN:HA	1.87	0.56
1:B:759:LEU:HB2	1:B:762:GLN:HG2	1.87	0.56
1:B:600:LEU:HD11	1:B:649:MET:HA	1.88	0.56
1:A:74:LYS:O	1:A:256:VAL:N	2.37	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:638:GLN:O	1:B:642:LEU:CB	2.54	0.56
1:A:301:LEU:HD22	1:A:503:GLU:HB3	1.87	0.55
1:A:210:ASN:N	1:A:292:PRO:O	2.40	0.55
1:B:69:LEU:HB2	1:B:73:ILE:HB	1.89	0.55
1:B:834:PHE:N	1:B:849:ILE:O	2.40	0.55
1:A:315:VAL:HB	1:A:375:ILE:HB	1.89	0.54
1:B:99:ASP:O	1:B:217:LYS:NZ	2.41	0.54
1:A:532:PRO:HB3	1:A:636:ASP:HB2	1.90	0.54
1:A:571:LYS:HA	1:A:634:TYR:HA	1.88	0.54
1:A:574:LEU:HB2	1:A:631:VAL:HB	1.90	0.54
1:B:262:GLU:HB2	1:B:267:LEU:HD23	1.90	0.54
1:B:574:LEU:HB2	1:B:631:VAL:HB	1.89	0.54
1:A:163:ASP:O	1:A:167:GLN:NE2	2.41	0.54
1:B:800:GLN:HA	1:B:844:GLN:HE21	1.73	0.53
1:B:528:ASN:ND2	1:B:610:ALA:O	2.42	0.53
1:B:305:VAL:HG22	1:B:485:PHE:HB2	1.91	0.53
1:A:934:GLU:HA	1:A:937:ILE:HD12	1.90	0.53
1:A:264:LEU:O	1:A:268:THR:OG1	2.19	0.53
1:A:552:LYS:HB3	1:A:559:LEU:HB3	1.91	0.53
1:A:330:PRO:HG3	1:A:463:LEU:HD23	1.90	0.53
1:A:1004:LEU:HD12	1:B:1004:LEU:HD12	1.90	0.53
1:A:638:GLN:O	1:A:642:LEU:HB3	2.09	0.52
1:B:552:LYS:HB3	1:B:559:LEU:HB3	1.91	0.52
1:B:619:ASP:HB3	1:B:630:SER:HB3	1.90	0.52
1:A:554:THR:HB	1:A:557:SER:H	1.74	0.52
1:B:781:GLN:O	1:B:959:LEU:N	2.41	0.52
1:A:137:SER:N	1:A:152:ASP:OD1	2.42	0.52
1:B:389:ASP:O	1:B:393:HIS:ND1	2.39	0.52
1:B:81:PRO:HA	1:B:261:ARG:HG3	1.91	0.52
1:B:92:VAL:HG12	1:B:94:ILE:H	1.75	0.52
1:A:153:VAL:HB	1:A:157:HIS:HB2	1.93	0.51
1:B:470:LYS:O	1:B:475:ASN:ND2	2.39	0.51
1:B:596:TYR:O	1:B:600:LEU:HB2	2.11	0.51
1:B:798:ASP:HB3	1:B:804:GLU:HG3	1.93	0.50
1:A:726:GLU:OE2	1:A:916:TYR:OH	2.28	0.50
1:A:301:LEU:HA	1:A:478:VAL:HB	1.93	0.50
1:A:388:GLU:HA	1:A:391:ILE:HD12	1.93	0.50
1:B:125:ASN:O	1:B:129:GLN:N	2.42	0.49
1:A:746:GLU:HA	1:A:749:LEU:HD12	1.94	0.49
1:B:264:LEU:O	1:B:268:THR:OG1	2.19	0.49
1:A:84:ASP:OD2	1:A:896:LYS:NZ	2.44	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:224:TYR:O	1:A:228:THR:HB	2.12	0.49
1:A:110:LEU:O	1:A:114:LEU:N	2.45	0.49
1:B:93:HIS:HB3	1:B:253:LEU:HB3	1.95	0.49
1:B:252:ASN:ND2	1:B:280:ASN:OD1	2.43	0.49
1:A:297:HIS:ND1	1:A:302:TYR:OH	2.43	0.49
1:B:65:ARG:HB3	1:B:77:LEU:HD12	1.94	0.49
1:B:295:GLU:HA	1:B:298:LEU:HB2	1.94	0.49
1:A:74:LYS:HB3	1:A:441:LEU:HG	1.95	0.49
1:A:334:LEU:HD11	1:A:467:VAL:HG21	1.93	0.49
1:B:315:VAL:HB	1:B:375:ILE:HB	1.93	0.49
1:A:49:ARG:HB2	1:A:67:LEU:HD22	1.95	0.48
1:A:253:LEU:HD21	1:A:285:LEU:HG	1.95	0.48
1:A:572:ALA:HA	1:A:731:GLY:HA3	1.95	0.48
1:B:563:GLN:NE2	1:B:733:ILE:O	2.45	0.48
1:B:805:ASN:OD1	1:B:844:GLN:NE2	2.46	0.48
1:B:801:SER:O	1:B:805:ASN:ND2	2.46	0.48
1:B:547:TYR:OH	1:B:919:ASP:OD1	2.27	0.48
1:A:722:ARG:HG2	1:A:758:LEU:HD23	1.95	0.48
1:B:88:ALA:HA	1:B:258:VAL:HA	1.96	0.48
1:A:87:SER:HA	1:A:152:ASP:HA	1.95	0.48
1:B:554:THR:OG1	1:B:557:SER:N	2.39	0.48
1:B:780:GLN:HA	1:B:957:HIS:HB2	1.96	0.48
1:B:833:VAL:HG13	1:B:850:ILE:HG12	1.96	0.48
1:B:213:HIS:NE2	1:B:290:GLU:O	2.47	0.48
1:A:47:ILE:HA	1:A:69:LEU:HD22	1.95	0.48
1:B:575:ASN:HB2	1:B:728:LEU:HB3	1.96	0.48
1:A:311:ARG:HB3	1:A:379:LEU:HB2	1.95	0.47
1:A:940:TYR:O	1:A:945:ALA:N	2.46	0.47
1:B:779:TYR:HB3	1:B:992:ILE:HB	1.95	0.47
1:A:493:GLU:HB3	1:A:497:GLY:H	1.79	0.47
1:B:600:LEU:HD21	1:B:649:MET:HB2	1.96	0.47
1:A:395:PHE:HD1	1:A:398:ILE:HD12	1.80	0.47
1:B:123:LYS:HB2	1:B:126:GLU:HB2	1.95	0.47
1:A:798:ASP:O	1:A:844:GLN:N	2.42	0.47
1:B:311:ARG:HB3	1:B:379:LEU:HB2	1.97	0.47
1:B:350:LEU:O	1:B:354:GLY:N	2.48	0.47
1:B:948:ALA:HB3	1:B:951:ARG:HB2	1.96	0.47
1:A:297:HIS:HB2	1:A:477:ARG:HH12	1.79	0.47
1:A:822:THR:O	1:A:826:LYS:HB3	2.14	0.47
1:A:312:ASN:HB2	1:A:481:VAL:HB	1.96	0.47
1:A:515:ASN:OD1	1:A:516:ALA:N	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:556:MET:HB2	1:A:757:PRO:HG3	1.97	0.47
1:B:535:PHE:HA	1:B:570:PRO:HB3	1.97	0.47
1:A:74:LYS:HB2	1:A:255:ALA:HA	1.96	0.46
1:A:790:GLY:N	1:A:958:VAL:O	2.39	0.46
1:B:57:SER:O	1:B:59:GLU:N	2.44	0.46
1:B:552:LYS:O	1:B:559:LEU:N	2.43	0.46
1:A:78:ILE:HB	1:A:259:LEU:HA	1.96	0.46
1:B:759:LEU:H	1:B:762:GLN:HE21	1.63	0.46
1:A:46:ALA:HB1	1:A:70:ALA:HB3	1.97	0.46
1:A:600:LEU:HD11	1:A:649:MET:HA	1.97	0.46
1:B:210:ASN:HB3	1:B:213:HIS:HB2	1.97	0.46
1:B:637:LYS:HG2	1:B:640:ILE:HD12	1.97	0.46
1:A:64:TYR:HE1	1:A:78:ILE:HG23	1.81	0.46
1:A:460:ARG:HE	1:A:463:LEU:HD13	1.80	0.46
1:A:324:LYS:HE2	1:A:324:LYS:HB3	1.82	0.46
1:A:103:ILE:HG12	1:A:230:PRO:HG3	1.98	0.45
1:B:255:ALA:HB1	1:B:441:LEU:HD23	1.99	0.45
1:B:334:LEU:HD11	1:B:467:VAL:HG21	1.97	0.45
1:B:337:LEU:HD21	1:B:410:VAL:HG11	1.98	0.45
1:A:535:PHE:HA	1:A:570:PRO:HB3	1.98	0.45
1:A:621:GLN:O	1:A:628:TYR:N	2.43	0.45
1:A:387:VAL:HA	1:A:390:ILE:HD12	1.98	0.45
1:A:97:LEU:HD13	1:A:288:PHE:HE2	1.82	0.45
1:A:314:TYR:HB2	1:A:479:ALA:HB3	1.99	0.45
1:B:49:ARG:HA	1:B:67:LEU:HB2	1.98	0.45
1:B:74:LYS:O	1:B:256:VAL:N	2.46	0.45
1:A:305:VAL:HG22	1:A:485:PHE:HB2	1.99	0.45
1:B:803:SER:HA	1:B:927:TYR:CE2	2.52	0.44
1:A:230:PRO:O	1:A:235:ILE:N	2.47	0.44
1:B:87:SER:HA	1:B:152:ASP:HA	1.99	0.44
1:B:145:GLU:OE2	1:B:368:ARG:N	2.50	0.44
1:A:960:ALA:H	1:A:963:MET:HB2	1.83	0.44
1:B:406:PRO:HB2	1:B:459:PHE:HZ	1.82	0.44
1:B:395:PHE:HD1	1:B:398:ILE:HD12	1.81	0.44
1:B:578:PHE:HB2	1:B:627:MET:HB2	2.00	0.44
1:A:426:ASP:OD1	1:A:426:ASP:N	2.48	0.44
1:B:332:HIS:HE1	1:B:453:GLU:HG3	1.82	0.44
1:A:62:ARG:HG2	1:A:80:ASP:HB2	2.00	0.44
1:A:797:THR:HG21	1:A:808:LEU:HD12	1.99	0.44
1:B:571:LYS:HA	1:B:634:TYR:HA	1.99	0.44
1:B:317:PHE:O	1:B:373:PHE:N	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:175:ASP:OD1	1:B:175:ASP:N	2.51	0.44
1:B:349:GLU:O	1:B:353:LYS:N	2.47	0.44
1:B:579:PHE:N	1:B:724:HIS:O	2.46	0.44
1:A:601:LYS:HD2	1:A:620:LEU:HB2	2.00	0.43
1:A:91:ASP:HA	1:A:148:ASN:HA	2.00	0.43
1:B:71:ASN:HB2	1:B:278:VAL:HG12	2.00	0.43
1:A:364:LYS:HB3	1:A:372:PHE:HB2	1.99	0.43
1:A:441:LEU:HD12	1:A:449:VAL:HG11	2.00	0.43
1:B:558:LYS:HB3	1:B:726:GLU:HG3	1.99	0.43
1:A:520:GLY:H	1:A:522:PHE:HD2	1.65	0.43
1:A:584:TYR:HE2	1:A:693:VAL:HG13	1.83	0.43
1:B:670:LEU:HD23	1:B:670:LEU:HA	1.84	0.43
1:A:587:PRO:HB3	1:A:700:LEU:HD23	2.00	0.43
1:A:763:LEU:O	1:B:1000:ARG:NH2	2.51	0.43
1:B:677:GLN:HA	1:B:678:PRO:HD3	1.91	0.43
1:A:87:SER:O	1:A:259:LEU:N	2.49	0.43
1:A:638:GLN:O	1:A:642:LEU:CB	2.67	0.43
1:A:942:GLU:O	1:A:948:ALA:HB1	2.18	0.43
1:B:230:PRO:O	1:B:235:ILE:N	2.46	0.43
1:B:244:PHE:O	1:B:248:TYR:HB2	2.18	0.43
1:A:114:LEU:HD12	1:A:172:PRO:HB3	2.01	0.43
1:A:223:LYS:NZ	1:A:227:GLU:OE2	2.37	0.43
1:A:528:ASN:HD21	1:A:530:PHE:HB2	1.84	0.43
1:B:363:GLN:NE2	1:B:371:MET:SD	2.92	0.43
1:B:575:ASN:OD1	1:B:628:TYR:OH	2.36	0.43
1:B:785:VAL:O	1:B:961:ARG:NH1	2.52	0.43
1:A:417:LEU:HD21	1:A:531:ILE:HG22	2.01	0.42
1:B:596:TYR:O	1:B:600:LEU:CB	2.67	0.42
1:B:822:THR:O	1:B:827:GLU:N	2.45	0.42
1:A:322:LEU:HA	1:A:325:TYR:HD2	1.84	0.42
1:B:109:PHE:HB2	1:B:226:LEU:HD11	2.01	0.42
1:A:462:ASP:O	1:A:466:MET:HB2	2.19	0.42
1:B:287:GLU:HB3	1:B:368:ARG:HD3	2.01	0.42
1:B:350:LEU:HD23	1:B:350:LEU:HA	1.84	0.42
1:B:145:GLU:OE1	1:B:443:TYR:OH	2.29	0.42
1:B:515:ASN:OD1	1:B:516:ALA:N	2.52	0.42
1:B:910:GLU:O	1:B:914:GLN:N	2.52	0.42
1:B:310:ILE:HD12	1:B:312:ASN:HD22	1.85	0.42
1:B:995:MET:HA	1:B:998:PHE:HB3	2.02	0.42
1:A:363:GLN:HA	1:A:373:PHE:HA	2.01	0.42
1:A:202:PHE:O	1:A:206:LYS:HG2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:620:LEU:HD13	1:A:620:LEU:HA	1.90	0.42
1:A:797:THR:OG1	1:A:798:ASP:N	2.53	0.42
1:B:540:LEU:HD21	1:B:544:ALA:HA	2.01	0.42
1:A:343:PRO:HG2	1:A:525:PRO:HA	2.02	0.42
1:A:90:LEU:HG	1:A:256:VAL:HG12	2.01	0.41
1:A:145:GLU:OE2	1:A:368:ARG:N	2.52	0.41
1:A:805:ASN:N	1:A:844:GLN:HE22	2.18	0.41
1:A:1002:LEU:HD23	1:A:1002:LEU:HA	1.91	0.41
1:B:823:LEU:HD21	1:B:866:PHE:HB2	2.02	0.41
1:A:197:ASP:HA	1:A:200:ARG:HD3	2.02	0.41
1:A:317:PHE:N	1:A:373:PHE:O	2.44	0.41
1:A:623:THR:N	1:A:626:GLY:O	2.41	0.41
1:B:883:GLN:HA	1:B:886:ILE:HG12	2.02	0.41
1:A:460:ARG:HB3	1:A:463:LEU:HD13	2.03	0.41
1:B:89:ALA:HA	1:B:150:TYR:HA	2.02	0.41
1:B:437:ILE:HA	1:B:440:ILE:HG13	2.01	0.41
1:B:805:ASN:N	1:B:844:GLN:HE22	2.17	0.41
1:A:800:GLN:HA	1:A:844:GLN:NE2	2.34	0.41
1:B:202:PHE:O	1:B:206:LYS:HG2	2.20	0.41
1:B:49:ARG:HB2	1:B:67:LEU:HD22	2.03	0.41
1:B:773:ASP:HA	1:B:952:HIS:CD2	2.56	0.41
1:A:74:LYS:HD2	1:A:74:LYS:HA	1.83	0.41
1:A:604:LEU:HD22	1:A:648:LYS:HG2	2.02	0.41
1:A:940:TYR:HA	1:A:944:LEU:HB2	2.02	0.41
1:B:90:LEU:HD13	1:B:165:PHE:HZ	1.86	0.41
1:B:91:ASP:HA	1:B:148:ASN:HA	2.02	0.41
1:B:166:ALA:HB2	1:B:274:LEU:HD11	2.03	0.41
1:B:161:ALA:O	1:B:165:PHE:HB2	2.21	0.41
1:A:73:ILE:HA	1:A:254:MET:HB2	2.02	0.41
1:A:315:VAL:O	1:A:375:ILE:N	2.46	0.41
1:A:743:GLN:O	1:A:747:ASP:HB2	2.20	0.41
1:B:87:SER:O	1:B:259:LEU:N	2.53	0.41
1:B:311:ARG:HH11	1:B:380:THR:HA	1.84	0.41
1:B:313:LEU:HD11	1:B:478:VAL:HG13	2.02	0.41
1:B:681:HIS:CE1	1:B:685:TYR:HE2	2.39	0.41
1:B:810:LEU:HD11	1:B:886:ILE:HG22	2.02	0.41
1:B:110:LEU:O	1:B:114:LEU:N	2.52	0.41
1:B:299:LYS:HD3	1:B:474:GLU:HA	2.03	0.41
1:A:344:GLY:HA3	1:A:523:LYS:HB2	2.04	0.40
1:A:677:GLN:HA	1:A:678:PRO:HD3	1.93	0.40
1:A:810:LEU:HA	1:A:810:LEU:HD12	1.88	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:910:GLU:O	1:A:914:GLN:N	2.54	0.40
1:A:948:ALA:H	1:A:951:ARG:NH1	2.19	0.40
1:B:291:HIS:HA	1:B:292:PRO:HD3	1.93	0.40
1:B:773:ASP:OD1	1:B:952:HIS:NE2	2.55	0.40
1:B:942:GLU:O	1:B:948:ALA:HB1	2.21	0.40
1:A:942:GLU:O	1:A:950:ARG:HB2	2.20	0.40
1:B:64:TYR:HE1	1:B:78:ILE:HG23	1.85	0.40
1:B:530:PHE:HD2	1:B:611:ALA:HA	1.86	0.40
1:A:325:TYR:CD1	1:A:463:LEU:HD21	2.57	0.40
1:A:350:LEU:HD23	1:A:350:LEU:HA	1.89	0.40
1:A:535:PHE:HD1	1:A:570:PRO:HG3	1.87	0.40
1:B:346:LEU:HD11	1:B:393:HIS:HB3	2.04	0.40
1:B:559:LEU:HD11	1:B:729:LEU:HG	2.02	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	945/966 (98%)	912 (96%)	33 (4%)	0	100	100
1	B	936/966 (97%)	902 (96%)	34 (4%)	0	100	100
All	All	1881/1932 (97%)	1814 (96%)	67 (4%)	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	836/861 (97%)	830 (99%)	6 (1%)	84 90
1	B	829/861 (96%)	823 (99%)	6 (1%)	84 90
All	All	1665/1722 (97%)	1653 (99%)	12 (1%)	84 90

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	49	ARG
1	A	649	MET
1	A	732	ASN
1	A	783	ASN
1	A	824	ARG
1	A	896	LYS
1	B	49	ARG
1	B	229	ARG
1	B	649	MET
1	B	824	ARG
1	B	838	ARG
1	B	896	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	157	HIS
1	A	332	HIS
1	A	805	ASN
1	A	844	GLN
1	A	851	GLN
1	B	332	HIS
1	B	340	HIS
1	B	519	ASN
1	B	681	HIS
1	B	762	GLN
1	B	844	GLN
1	B	915	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 monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

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

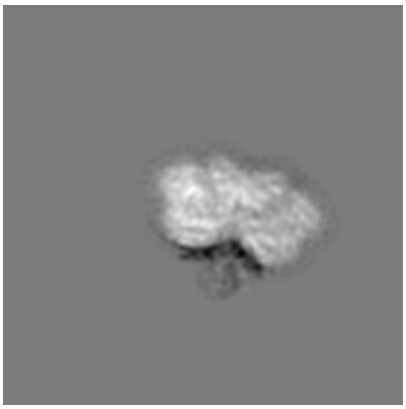
This section contains visualisations of the EMDB entry EMD-7090. These allow visual inspection of the internal detail of the map and identification of artifacts.

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.

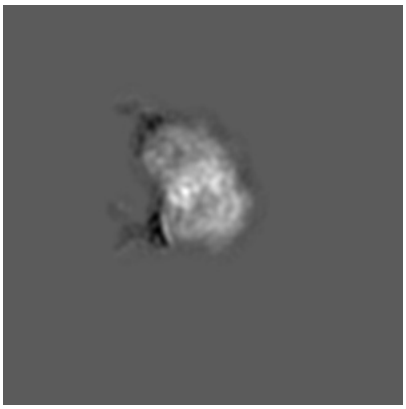
6.1 Orthogonal projections

6.1.1 Primary map

X

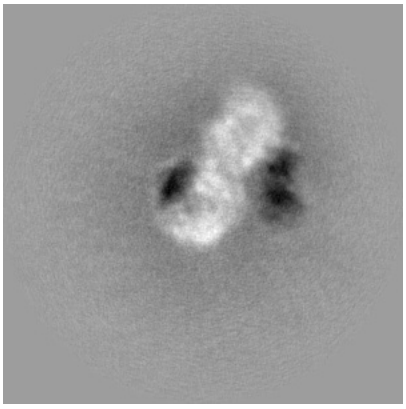


Y

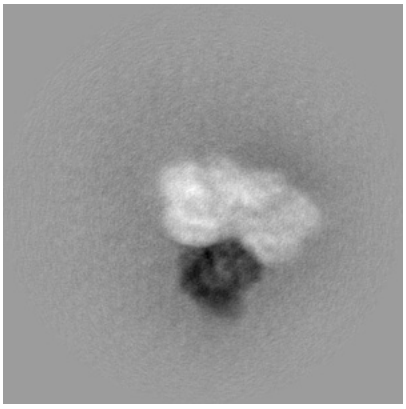


Z

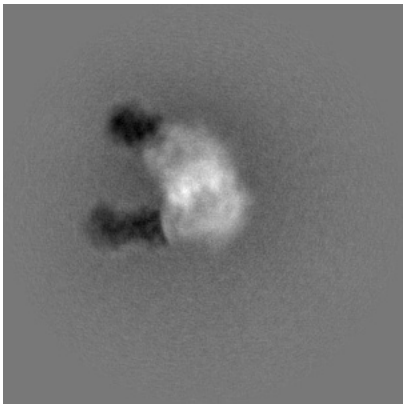
6.1.2 Raw map



X



Y

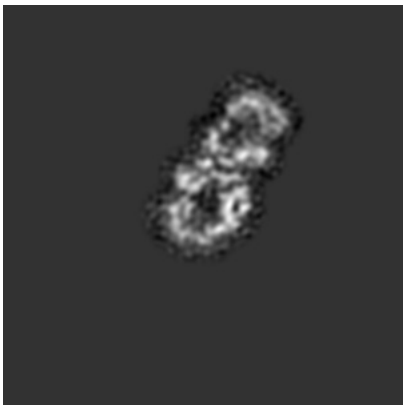


Z

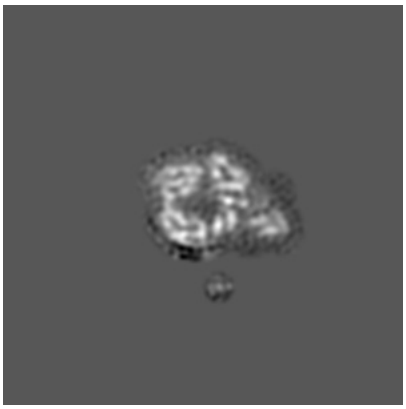
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

6.2.1 Primary map



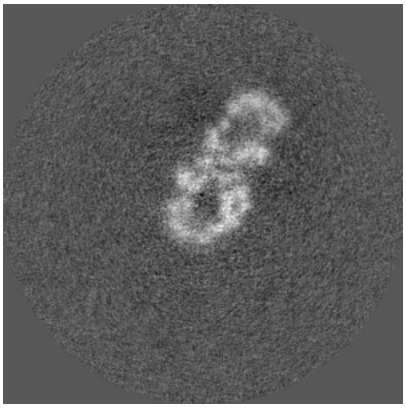
X Index: 160



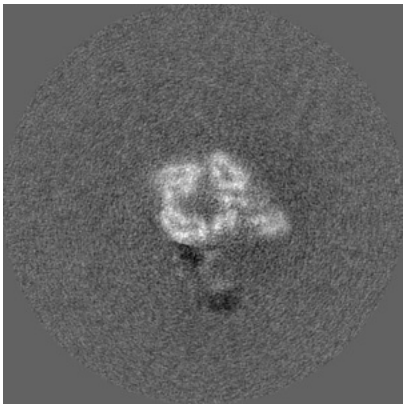
Y Index: 160

Z Index: 160

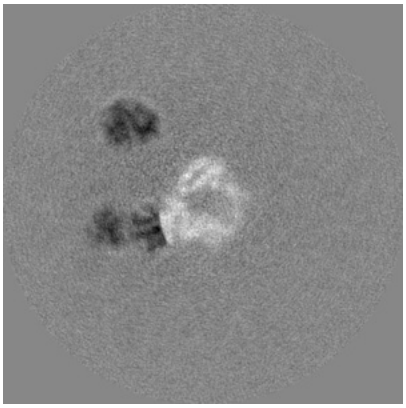
6.2.2 Raw map



X Index: 160



Y Index: 160



Z Index: 160

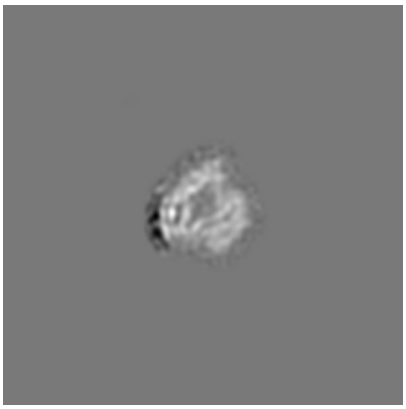
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map

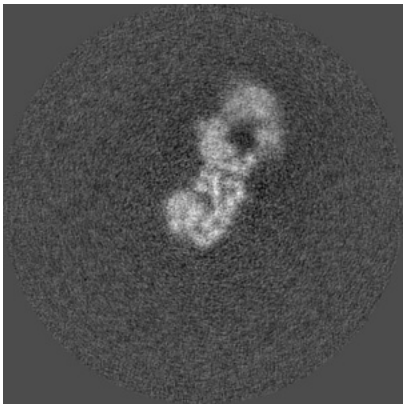
X Index: 146

Y Index: 171

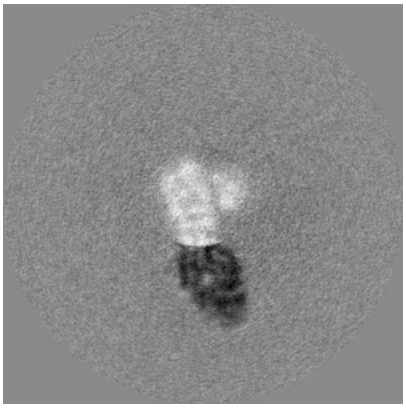


Z Index: 151

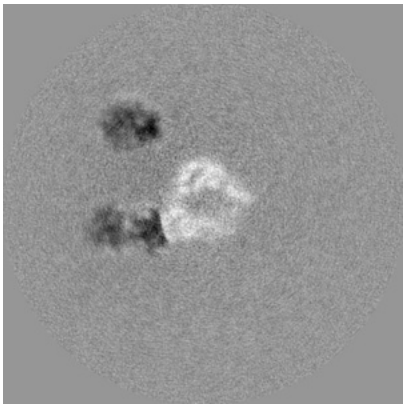
6.3.2 Raw map



X Index: 146



Y Index: 143

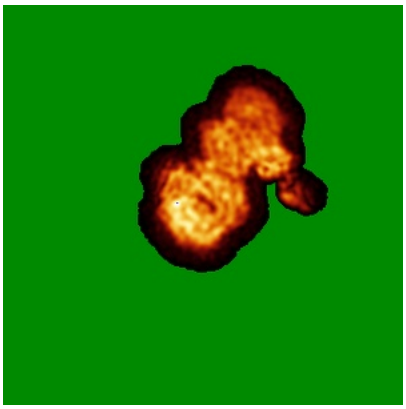


Z Index: 163

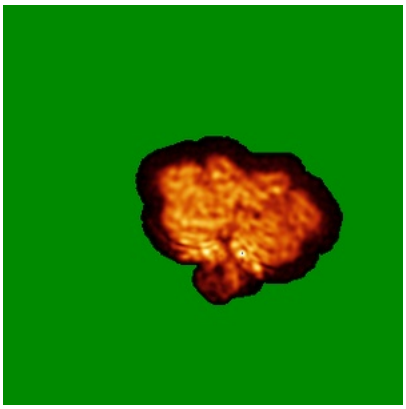
The images above show the largest variance slices of the map in three orthogonal directions.

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

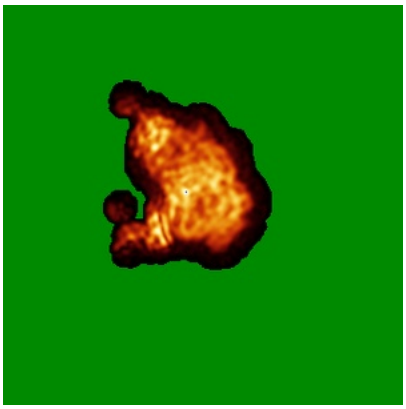
6.4.1 Primary map



X

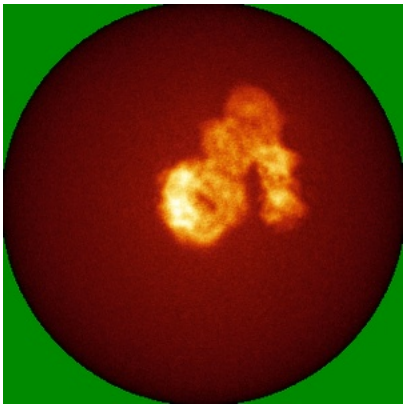


Y

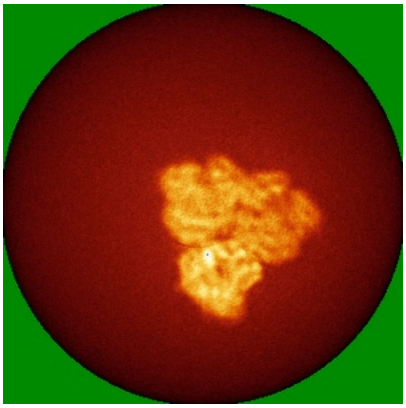


Z

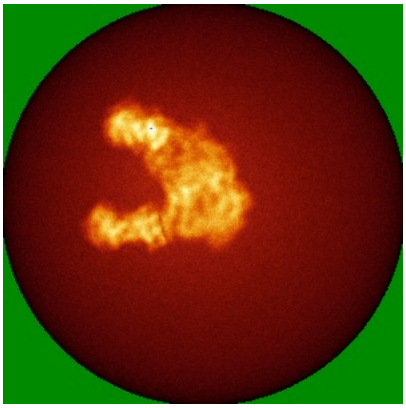
6.4.2 Raw map



X



Y

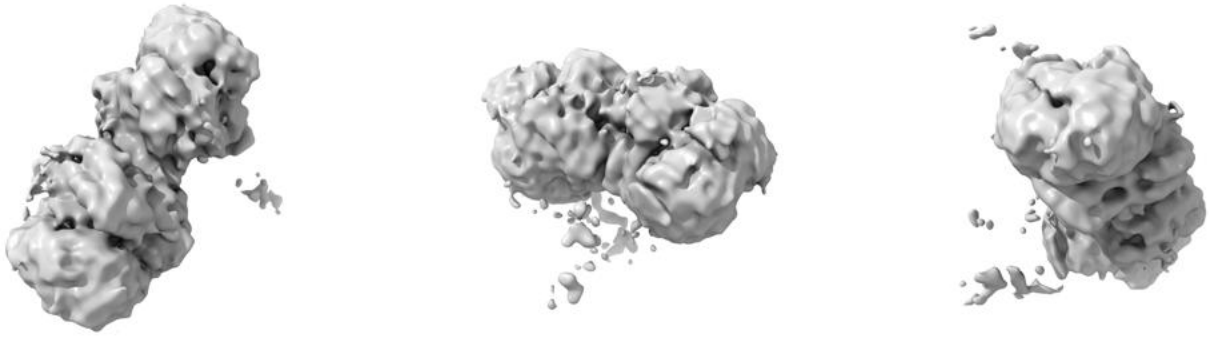


Z

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 0.017. 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.

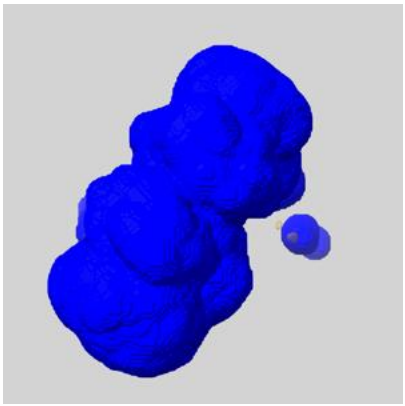
6.6 Mask visualisation (i)

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

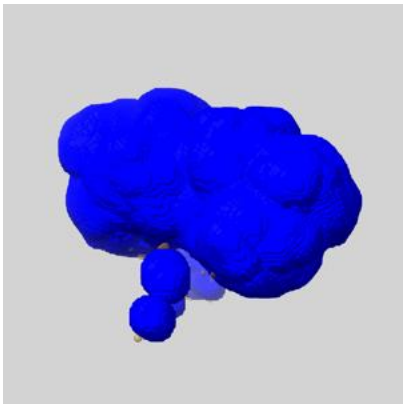
A mask typically either:

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

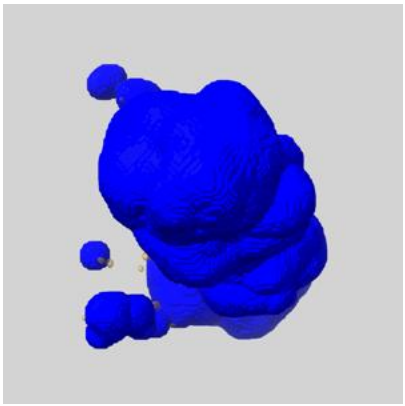
6.6.1 emd_7090_msk_1.map (i)



X



Y

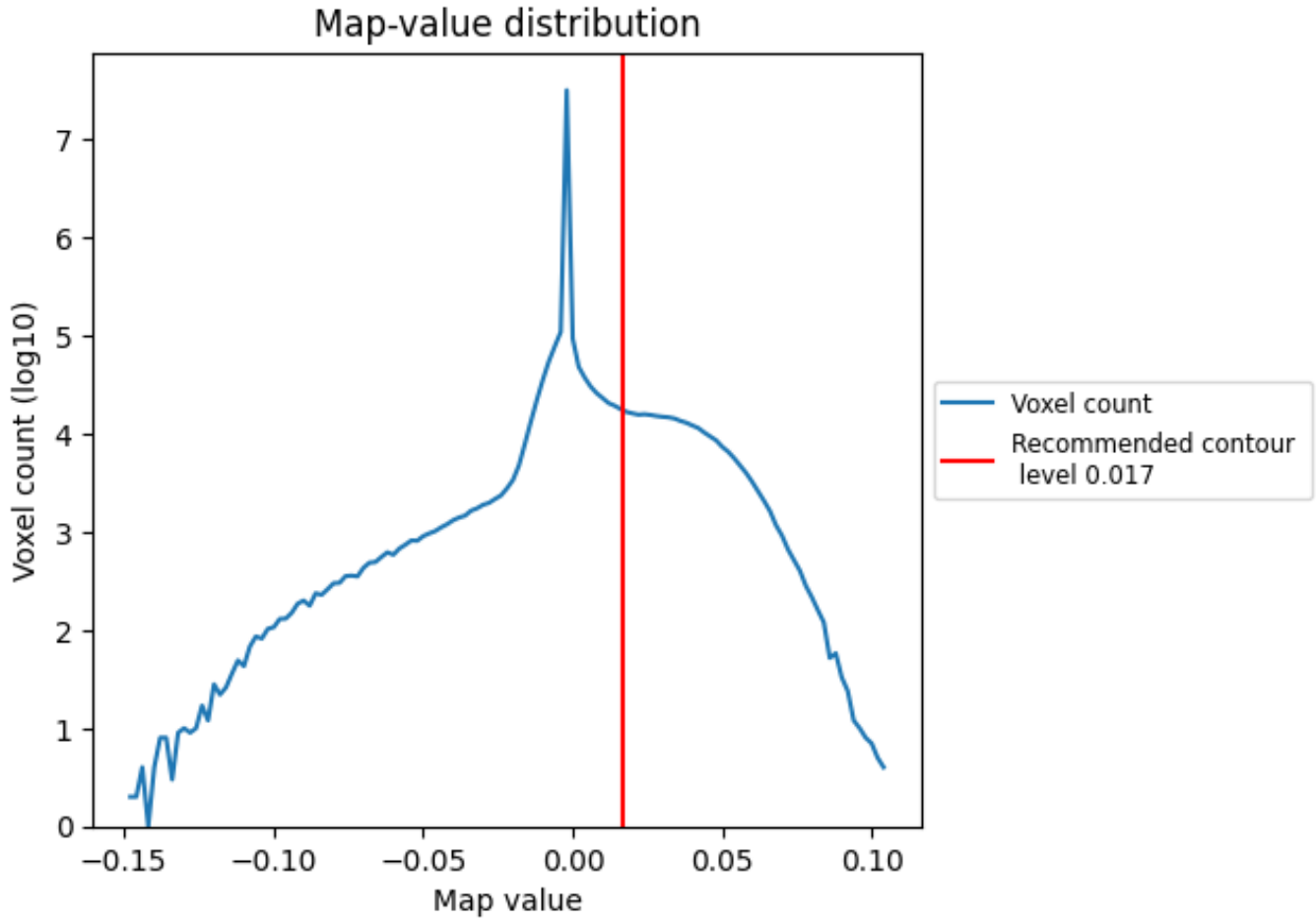


Z

7 Map analysis

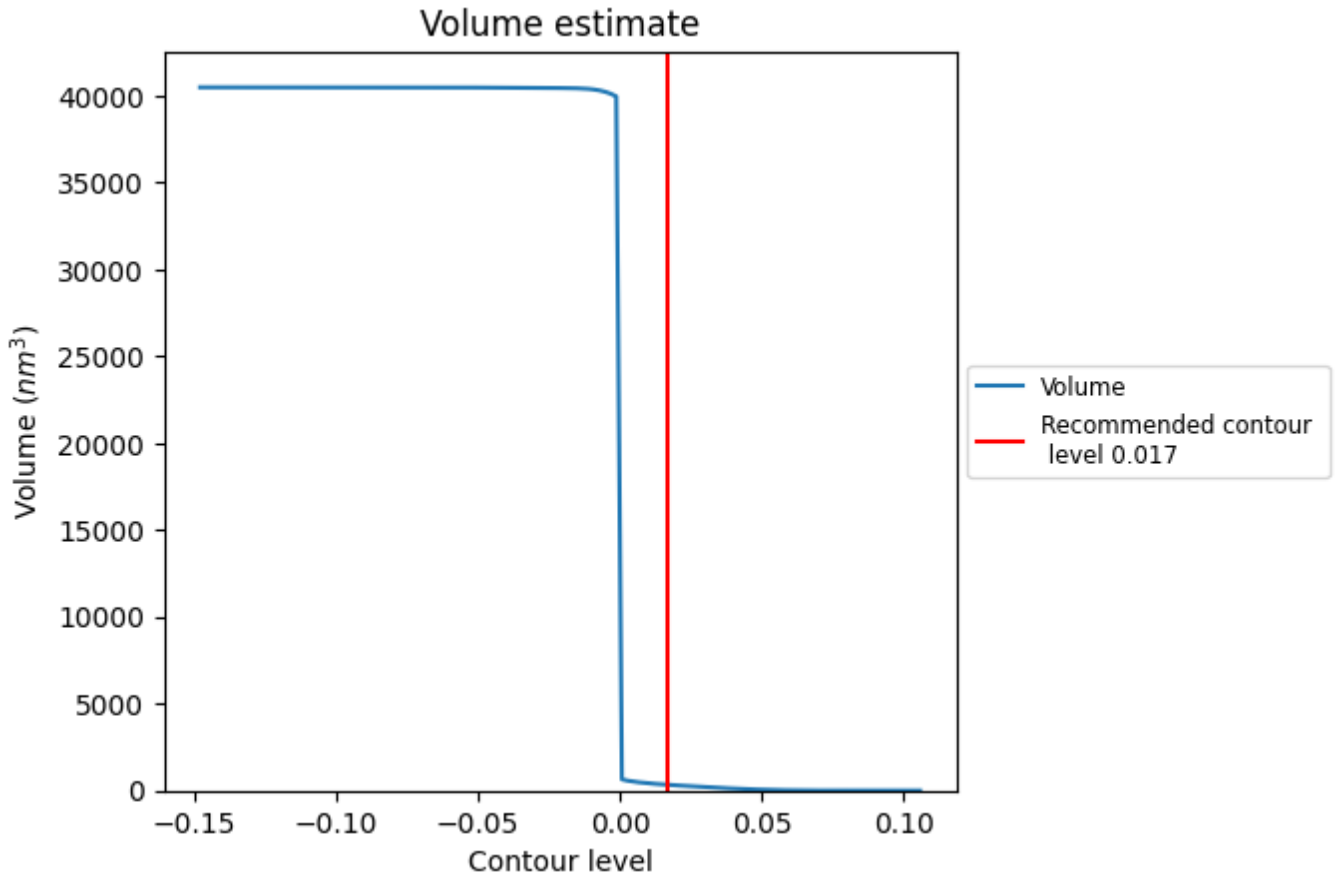
This section contains the results of statistical analysis of the map.

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.

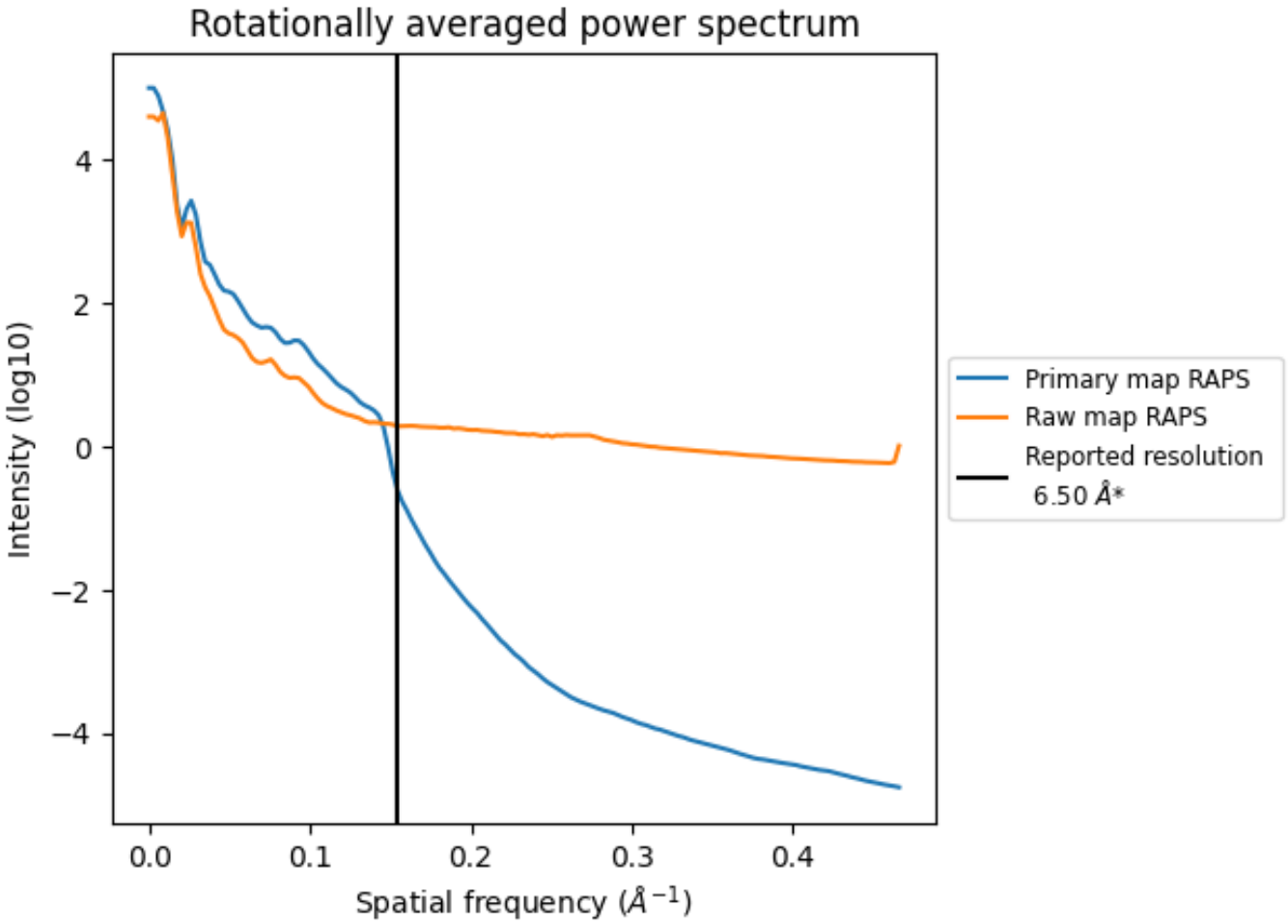
7.2 Volume estimate



The volume at the recommended contour level is 333 nm^3; this corresponds to an approximate mass of 300 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)

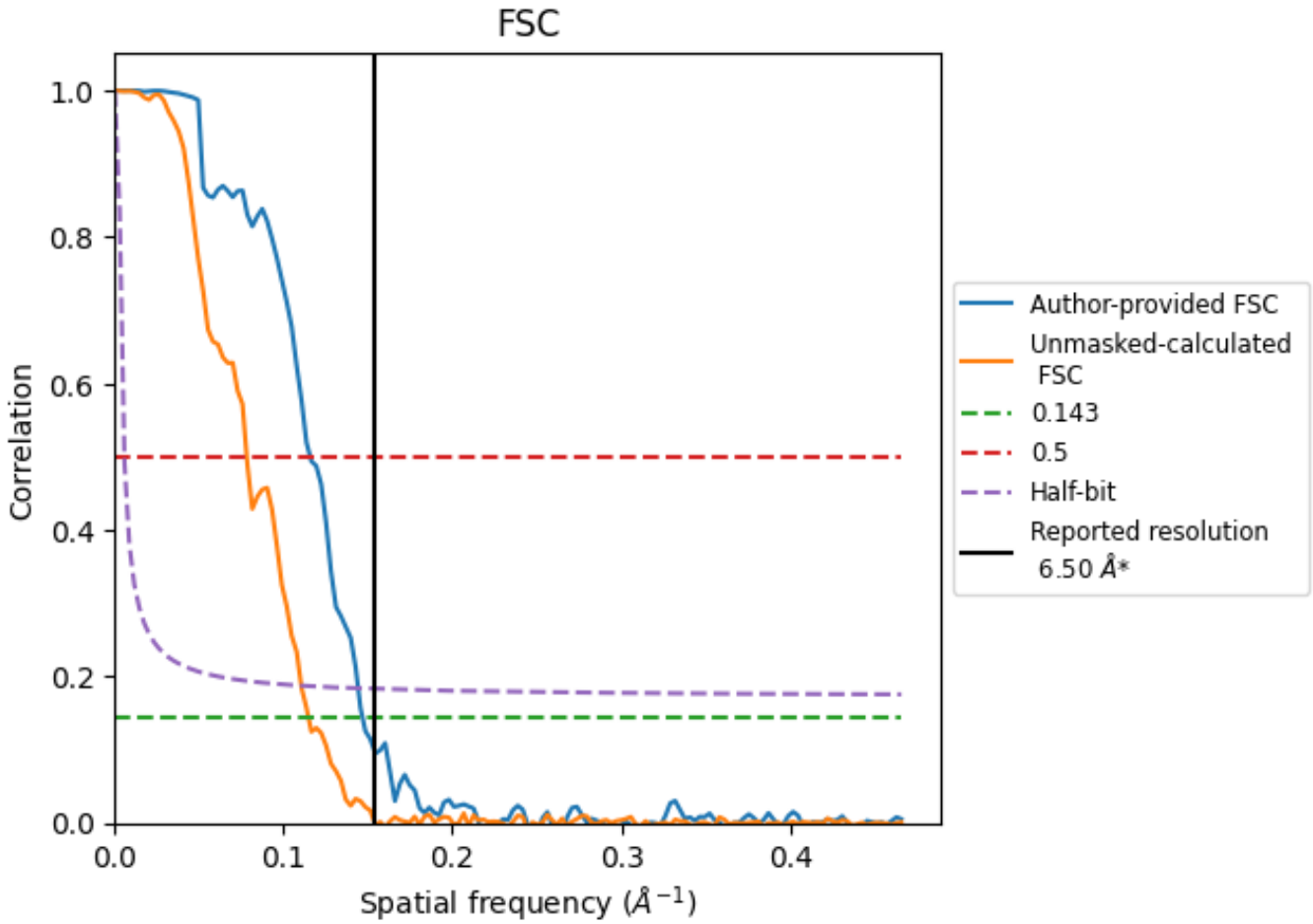


*Reported resolution corresponds to spatial frequency of 0.154 Å^{-1}

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 0.154 Å^{-1}

8.2 Resolution estimates (i)

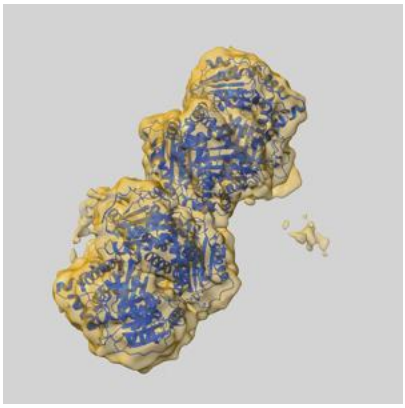
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	6.50	-	-
Author-provided FSC curve	6.81	8.64	6.93
Unmasked-calculated*	8.71	12.79	9.05

*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 8.71 differs from the reported value 6.5 by more than 10 %

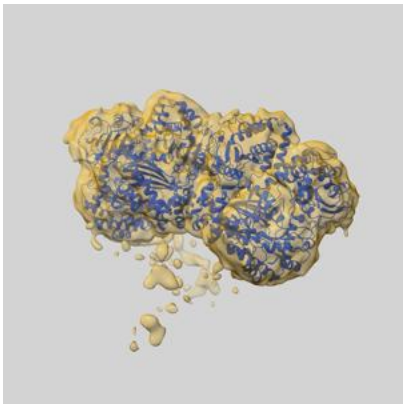
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-7090 and PDB model 6BF6. Per-residue inclusion information can be found in section 3 on page 4.

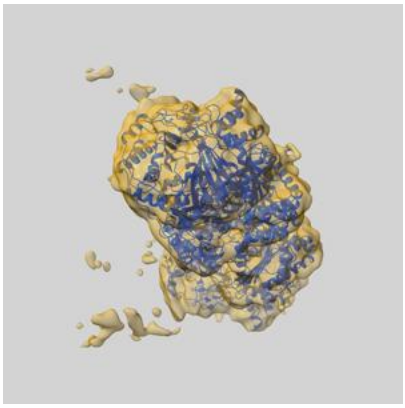
9.1 Map-model overlay



X



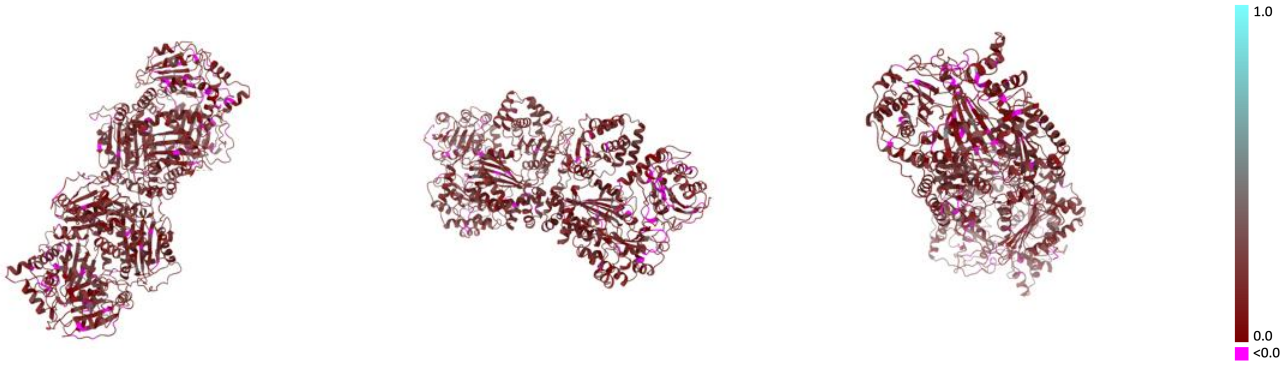
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.017 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.

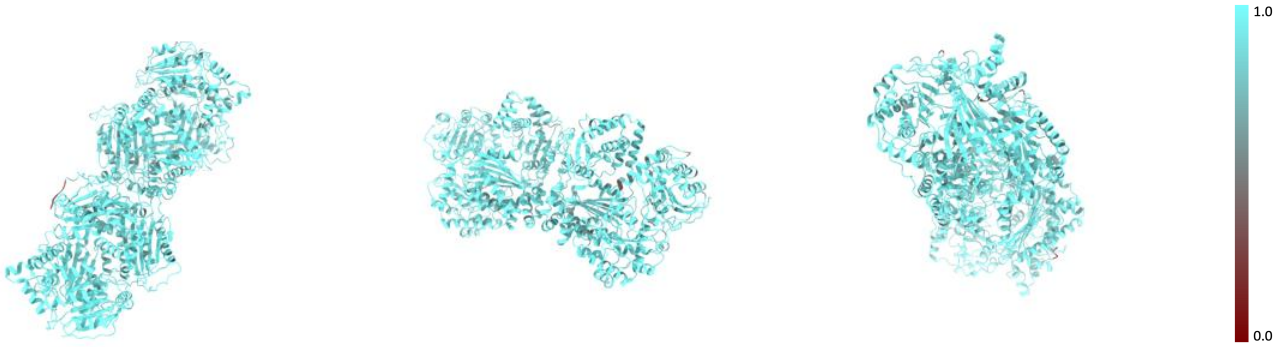
9.2 Q-score mapped to coordinate model (i)



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.

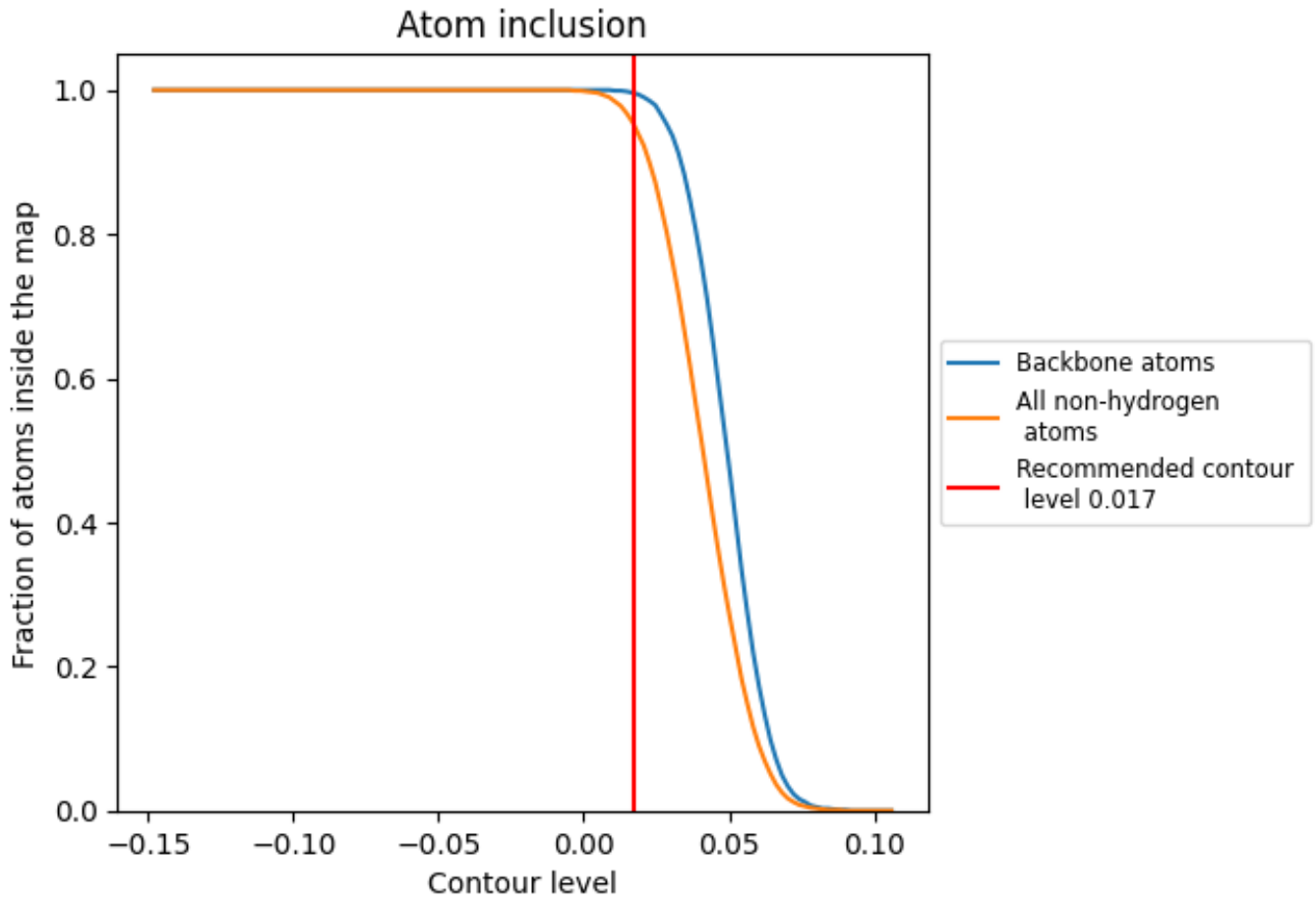
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.017).

9.4 Atom inclusion (i)



At the recommended contour level, 100% of all backbone atoms, 95% 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 (0.017) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9540	0.1620
A	0.9720	0.1660
B	0.9360	0.1580