Full wwPDB EM Validation Report

Oct 30, 2025 – 06:43 pm GMT

PDB ID	:	9I0G / pdb_00009i0g
EMDB ID	:	EMD-52557
Title	:	CryoEM structure of holo-GmNifEN
Authors	:	Paya Tormo, L.; Nguyen, T.Q.; Fyfe, C.; Basbous, H.; Dobrzynska, K.; Echavarri-Erasun, C.; Martin, L.; Caserta, G.; Legrand, P.; Thorn, A.; Amara, P.; Schoehn, G.; Cherrier, M.V.; Rubio, L.M.; Nicolet, Y.
Deposited on	:	2025-01-15
Resolution	:	2.86 Å(reported)
Based on initial model	:	.

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:

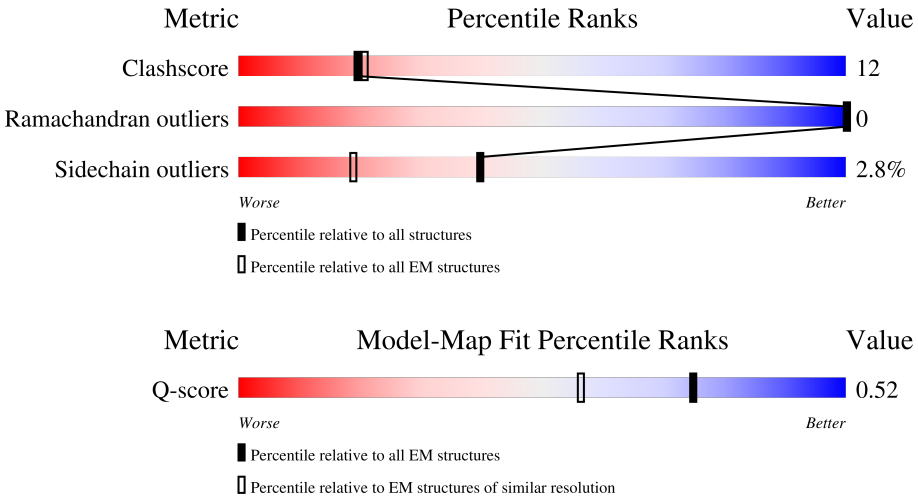
EMDB validation analysis	:	0.0.1.dev129
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up 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)	:	2.46

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 2.86 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	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	12017 (2.36 - 3.36)

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	919	68% 28%
1	B	919	68% 28%

2 Entry composition

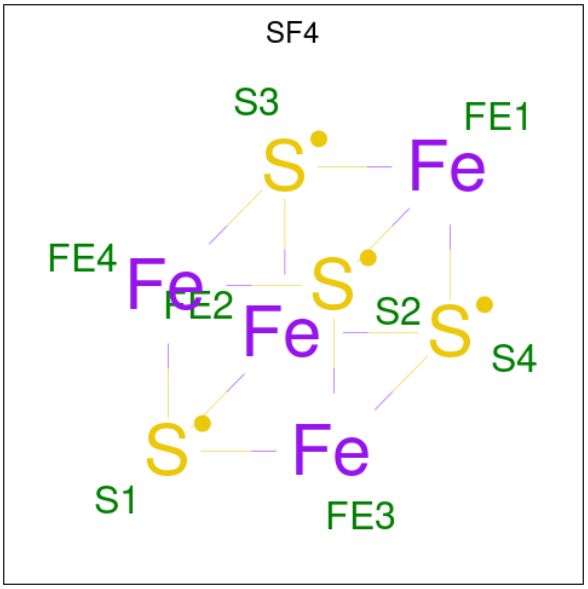
There are 3 unique types of molecules in this entry. The entry contains 13600 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Nitrogenase iron-molybdenum cofactor biosynthesis protein NifE.

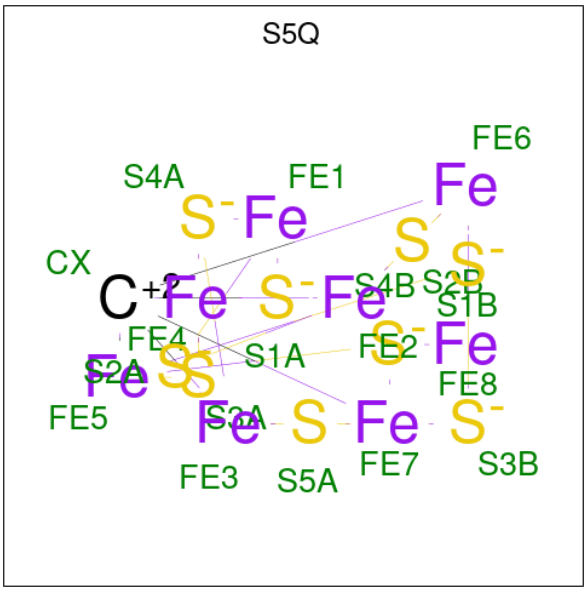
Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	887	Total	C	N	O	S	0	0
			6774	4278	1179	1276	41		
1	B	887	Total	C	N	O	S	0	0
			6774	4278	1179	1276	41		

- Molecule 2 is IRON/SULFUR CLUSTER (CCD ID: SF4) (formula: Fe_4S_4).



Mol	Chain	Residues	Atoms				AltConf
2	A	1	Total	Fe	S		0
			8	4	4		
2	B	1	Total	Fe	S		0
			8	4	4		

- Molecule 3 is FeFe cofactor (CCD ID: S5Q) (formula: CFe_8S_9).



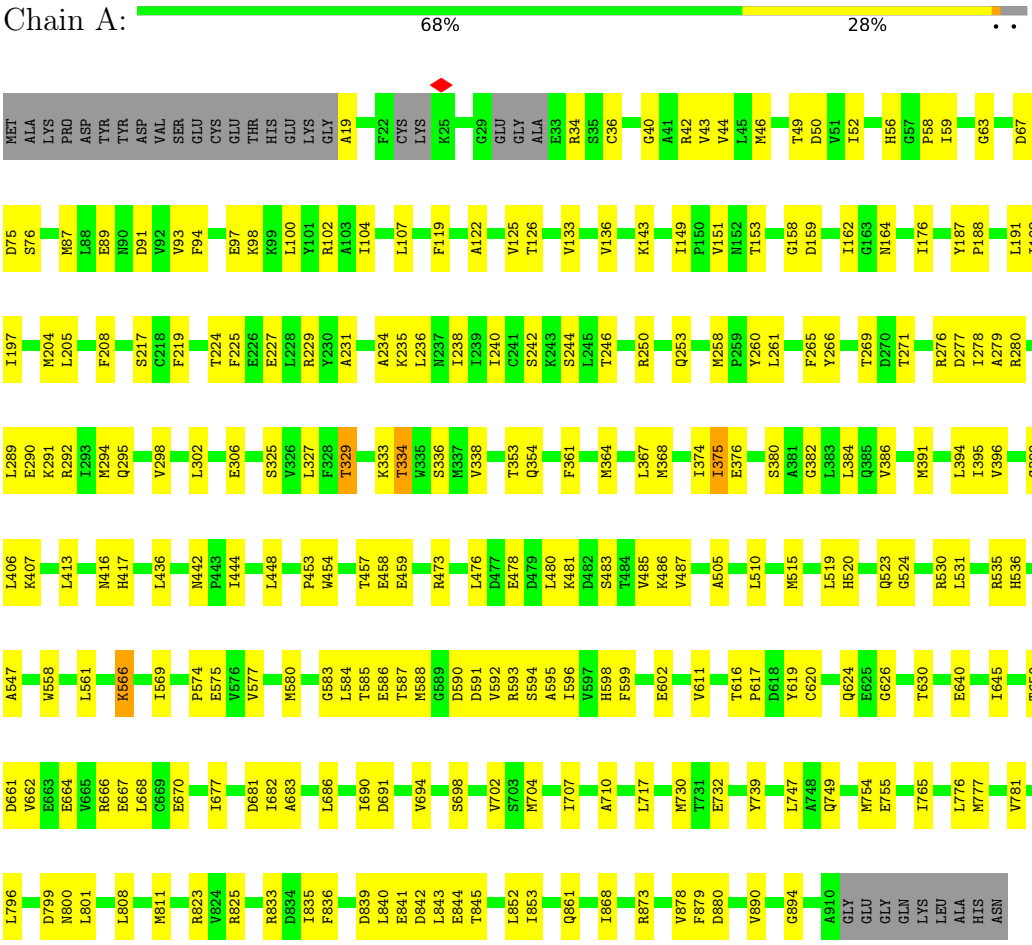
Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total	C	Fe	S	0
			18	1	8	9	
3	B	1	Total	C	Fe	S	0
			18	1	8	9	

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.

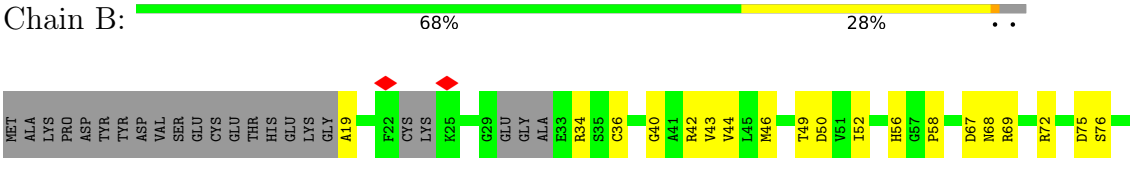
• Molecule 1: Nitrogenase iron-molybdenum cofactor biosynthesis protein NifE

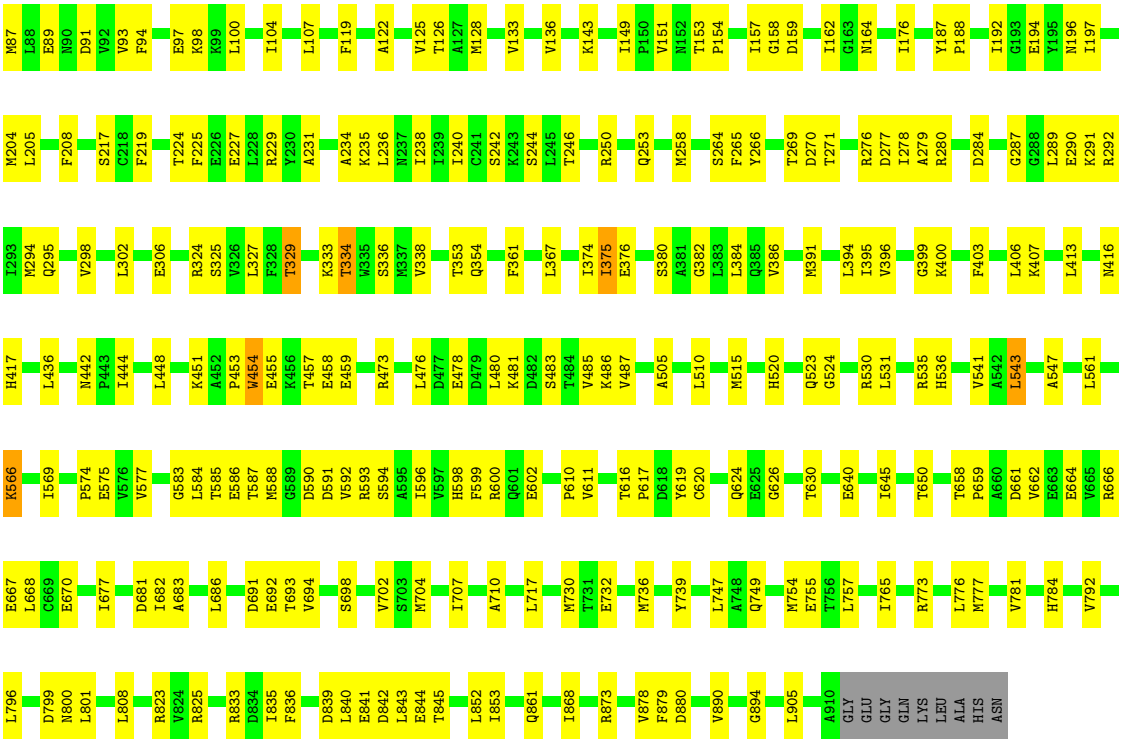
Chain A:



• Molecule 1: Nitrogenase iron-molybdenum cofactor biosynthesis protein NifE

Chain B:




M87 L88 E89 N90 D91 V92 V93 F94 E97 K98 K99 L100 I104 L107 F119 A122 V125 T126 A127 M128 V133 V136 K143 I149 P150 V151 N152 T153 P154 I157 G158 D159 I162 G163 N164 I176 Y187 P188 I192 G193 E194 Y195 N196 I197
M204 L205 F208 S217 C218 F219 T224 F225 E226 E227 L228 R229 Y230 A231 A234 K235 L236 N237 I238 I239 I240 C241 S242 K243 S244 L245 T246 R250 Q253 M258 S264 F265 Y266 T269 D270 T271 R276 D277 I278 A279 R280 D284 G287 G288 L289 E290 K291 R292
I293 M294 Q295 V298 L302 E306 R324 S325 V326 L327 F328 T329 K333 T334 W335 S336 M337 V338 T353 Q354 F361 L367 I374 I375 E376 S380 A381 G382 L383 L384 Q385 V386 M391 L394 I395 V396 G399 K400 F403 L406 K407 L413 N416
H417 L436 N442 P443 I444 L448 K451 A452 P453 W454 E455 K456 T457 E458 E459 R473 L476 D477 E478 D479 L480 K481 D482 S483 T484 V485 K486 V487 A505 L510 M515 H520 Q523 G524 R530 L531 R535 H536 V541 A542 L543 A547 L561
K566 I569 P574 E575 V576 V577 G583 L584 T585 E586 T587 M588 G589 D590 D591 V592 R593 S594 A595 I596 V597 H598 F599 R600 Q601 E602 P610 V611 T616 P617 D618 Y619 C620 Q624 E625 G626 T630 E640 I645 T650 T658 P659 A660 D661 V662 E663 E664 V665 R666
E667 L668 C669 E670 I677 D681 I682 A683 L686 D691 E692 T693 V694 S698 V702 S703 M704 I707 A710 L717 M730 T731 E732 M736 Y739 L747 A748 Q749 M754 E755 T756 L757 I765 R773 L776 M777 V781 H784 V792
L796 D799 N800 L801 L808 R823 V824 R825 R833 D834 I835 F836 D839 L840 E841 D842 L843 E844 T845 L852 I853 Q861 I868 R873 V878 F879 D880 V890 G894 L905 A910 GLY GLU GLY GLN LYS LEU ALA HIS ASN

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	178282	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	36000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	21.309	Depositor
Minimum map value	-0.746	Depositor
Average map value	-0.011	Depositor
Map value standard deviation	0.634	Depositor
Recommended contour level	0.9	Depositor
Map size (Å)	280.44, 280.44, 280.44	wwPDB
Map dimensions	246, 246, 246	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.14, 1.14, 1.14	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SF4, S5Q

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	0.16	0/6900	0.37	0/9341
1	B	0.16	0/6900	0.37	0/9341
All	All	0.16	0/13800	0.37	0/18682

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	6774	0	6788	176	0
1	B	6774	0	6788	176	0
2	A	8	0	0	1	0
2	B	8	0	0	1	0
3	A	18	0	0	1	0
3	B	18	0	0	1	0
All	All	13600	0	13576	335	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 (335) 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:406:LEU:HD12	1:A:781:VAL:HB	1.65	0.77
1:B:406:LEU:HD12	1:B:781:VAL:HB	1.65	0.77
1:A:459:GLU:N	1:A:459:GLU:OE1	2.23	0.71
1:B:459:GLU:OE1	1:B:459:GLU:N	2.23	0.71
1:A:396:VAL:HG12	1:A:413:LEU:HB3	1.73	0.71
1:B:396:VAL:HG12	1:B:413:LEU:HB3	1.73	0.71
1:A:473:ARG:HA	1:A:473:ARG:HH11	1.58	0.69
1:B:458:GLU:N	1:B:458:GLU:OE1	2.27	0.68
1:B:577:VAL:HB	1:B:611:VAL:HG12	1.76	0.68
1:A:34:ARG:HB3	1:A:159:ASP:HB2	1.76	0.67
1:B:473:ARG:HH11	1:B:473:ARG:HA	1.58	0.67
1:A:458:GLU:OE1	1:A:458:GLU:N	2.27	0.67
1:A:481:LYS:HE2	1:A:481:LYS:N	2.10	0.66
1:A:577:VAL:HB	1:A:611:VAL:HG12	1.76	0.65
1:B:481:LYS:N	1:B:481:LYS:HE2	2.10	0.65
1:B:34:ARG:HB3	1:B:159:ASP:HB2	1.76	0.65
1:A:662:VAL:HB	1:A:683:ALA:HB2	1.79	0.63
1:B:662:VAL:HB	1:B:683:ALA:HB2	1.79	0.63
1:B:97:GLU:OE1	1:B:97:GLU:N	2.18	0.62
1:B:72:ARG:O	1:B:196:ASN:ND2	2.33	0.62
1:A:158:GLY:HA3	1:A:162:ILE:HG13	1.82	0.61
1:A:97:GLU:OE1	1:A:97:GLU:N	2.18	0.61
1:A:72:ARG:O	1:A:196:ASN:ND2	2.33	0.61
1:B:391:MET:HE3	1:B:391:MET:HA	1.82	0.61
1:B:194:GLU:HB2	1:B:240:ILE:HD12	1.83	0.60
1:A:391:MET:HE3	1:A:391:MET:HA	1.82	0.60
1:B:158:GLY:HA3	1:B:162:ILE:HG13	1.82	0.60
1:B:302:LEU:O	1:B:306:GLU:HB2	2.01	0.60
1:A:302:LEU:O	1:A:306:GLU:HB2	2.01	0.60
1:A:197:ILE:HD13	1:A:417:HIS:HA	1.84	0.59
1:B:505:ALA:HB2	1:B:616:THR:HG21	1.85	0.59
1:B:197:ILE:HD13	1:B:417:HIS:HA	1.84	0.59
1:A:194:GLU:HB2	1:A:240:ILE:HD12	1.83	0.59
1:A:505:ALA:HB2	1:A:616:THR:HG21	1.85	0.58
1:B:523:GLN:HB2	1:B:547:ALA:HA	1.86	0.58
1:B:234:ALA:HB3	1:B:258:MET:HE1	1.86	0.58
1:B:290:GLU:O	1:B:291:LYS:HG2	2.05	0.57
1:A:234:ALA:HB3	1:A:258:MET:HE1	1.86	0.57
1:A:523:GLN:HB2	1:A:547:ALA:HA	1.86	0.57
1:A:276:ARG:O	1:A:280:ARG:HG3	2.05	0.57
1:A:478:GLU:O	1:A:825:ARG:NH1	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:796:LEU:HD13	1:B:800:ASN:HD22	1.70	0.57
1:A:91:ASP:OD1	1:A:91:ASP:N	2.37	0.57
1:A:290:GLU:O	1:A:291:LYS:HG2	2.05	0.57
1:A:796:LEU:HD13	1:A:800:ASN:HD22	1.70	0.57
1:A:873:ARG:NH1	1:A:880:ASP:OD2	2.37	0.57
1:B:873:ARG:NH1	1:B:880:ASP:OD2	2.37	0.57
1:A:593:ARG:HB3	1:A:593:ARG:CZ	2.35	0.56
1:A:67:ASP:OD2	1:B:861:GLN:NE2	2.38	0.56
1:A:448:LEU:HD22	1:A:777:MET:HG2	1.88	0.56
1:B:478:GLU:O	1:B:825:ARG:NH1	2.37	0.56
1:B:276:ARG:O	1:B:280:ARG:HG3	2.05	0.56
1:A:640:GLU:N	1:A:640:GLU:OE1	2.38	0.56
1:A:861:GLN:NE2	1:B:67:ASP:OD2	2.38	0.56
1:B:593:ARG:HB3	1:B:593:ARG:CZ	2.35	0.56
1:A:530:ARG:HH11	1:B:400:LYS:HD2	1.71	0.56
1:B:487:VAL:HG23	1:B:823:ARG:HH21	1.71	0.56
1:B:640:GLU:N	1:B:640:GLU:OE1	2.38	0.56
1:B:34:ARG:NE	1:B:354:GLN:HE22	2.04	0.56
1:B:284:ASP:OD1	1:B:284:ASP:C	2.50	0.55
1:B:717:LEU:HD23	1:B:739:TYR:HB2	1.89	0.55
1:A:34:ARG:NE	1:A:354:GLN:HE22	2.04	0.55
1:B:334:THR:HG21	1:B:353:THR:HG21	1.89	0.55
1:A:284:ASP:C	1:A:284:ASP:OD1	2.50	0.55
1:A:400:LYS:HD2	1:B:530:ARG:HH11	1.71	0.55
1:B:19:ALA:N	1:B:376:GLU:OE1	2.40	0.55
1:B:448:LEU:HD22	1:B:777:MET:HG2	1.88	0.55
1:B:510:LEU:HD11	1:B:541:VAL:HG13	1.90	0.55
1:A:19:ALA:N	1:A:376:GLU:OE1	2.40	0.54
1:A:487:VAL:HG23	1:A:823:ARG:HH21	1.71	0.54
1:B:836:PHE:HE2	1:B:842:ASP:HB3	1.72	0.54
1:A:836:PHE:HE2	1:A:842:ASP:HB3	1.72	0.54
1:B:266:TYR:HB2	1:B:336:SER:HB2	1.89	0.54
1:A:510:LEU:HD11	1:A:541:VAL:HG13	1.90	0.54
1:B:43:VAL:O	1:B:69:ARG:NH2	2.38	0.54
1:A:266:TYR:HB2	1:A:336:SER:HB2	1.89	0.54
1:A:334:THR:HG21	1:A:353:THR:HG21	1.89	0.54
1:B:626:GLY:O	1:B:630:THR:HG22	2.08	0.53
1:A:717:LEU:HD23	1:A:739:TYR:HB2	1.89	0.53
1:A:279:ALA:HB2	1:A:298:VAL:HG21	1.90	0.53
1:A:400:LYS:HD2	1:B:530:ARG:NH1	2.24	0.53
1:B:839:ASP:N	1:B:839:ASP:OD1	2.39	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:626:GLY:O	1:A:630:THR:HG22	2.08	0.53
1:B:853:ILE:HD11	1:B:868:ILE:HD12	1.90	0.53
1:A:242:SER:O	1:A:246:THR:OG1	2.24	0.53
1:B:279:ALA:HB2	1:B:298:VAL:HG21	1.90	0.53
1:A:853:ILE:HD11	1:A:868:ILE:HD12	1.90	0.53
1:A:505:ALA:HA	1:A:630:THR:HG21	1.91	0.53
1:B:591:ASP:OD2	1:B:594:SER:N	2.37	0.52
1:A:457:THR:HG1	1:A:459:GLU:CD	2.17	0.52
1:A:588:MET:HE1	1:A:590:ASP:HB3	1.90	0.52
1:B:224:THR:HB	1:B:227:GLU:HB3	1.91	0.52
1:B:505:ALA:HA	1:B:630:THR:HG21	1.91	0.52
1:A:43:VAL:O	1:A:69:ARG:NH2	2.38	0.52
1:A:530:ARG:NH1	1:B:400:LYS:HD2	2.24	0.52
1:B:242:SER:O	1:B:246:THR:OG1	2.24	0.52
1:B:575:GLU:N	1:B:575:GLU:OE1	2.42	0.52
1:A:375:ILE:HD13	1:A:386:VAL:HG11	1.92	0.52
1:A:575:GLU:OE1	1:A:575:GLU:N	2.42	0.52
1:B:375:ILE:HD13	1:B:386:VAL:HG11	1.92	0.52
1:A:125:VAL:HG13	1:B:587:THR:HG21	1.90	0.52
1:B:91:ASP:N	1:B:91:ASP:OD1	2.37	0.52
1:A:399:GLY:H	1:A:416:ASN:HD22	1.58	0.52
1:A:587:THR:HG21	1:B:125:VAL:HG13	1.90	0.52
1:B:217:SER:HA	1:B:227:GLU:OE1	2.10	0.52
1:B:583:GLY:O	1:B:587:THR:HG23	2.10	0.52
1:A:217:SER:HA	1:A:227:GLU:OE1	2.10	0.51
1:B:586:GLU:HG3	1:B:617:PRO:HB3	1.91	0.51
1:A:224:THR:HB	1:A:227:GLU:HB3	1.91	0.51
1:A:586:GLU:HG3	1:A:617:PRO:HB3	1.91	0.51
1:A:453:PRO:HB3	1:A:755:GLU:OE2	2.10	0.51
1:A:583:GLY:O	1:A:587:THR:HG23	2.10	0.51
1:B:485:VAL:O	1:B:823:ARG:NH2	2.42	0.51
1:B:588:MET:HE1	1:B:590:ASP:HB3	1.90	0.51
1:B:561:LEU:HD21	1:B:592:VAL:HG13	1.93	0.51
1:A:485:VAL:O	1:A:823:ARG:NH2	2.42	0.51
1:B:399:GLY:H	1:B:416:ASN:HD22	1.58	0.50
1:A:192:ILE:HA	1:A:219:PHE:HB2	1.94	0.50
1:A:840:LEU:O	1:A:843:LEU:HB3	2.12	0.50
1:B:840:LEU:O	1:B:843:LEU:HB3	2.12	0.50
1:A:176:ILE:HD12	1:A:231:ALA:HB3	1.94	0.50
1:A:617:PRO:HG2	1:A:620:CYS:HB2	1.94	0.50
1:A:89:GLU:HG2	1:B:619:TYR:CD1	2.47	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:658:THR:OG1	1:A:661:ASP:OD2	2.27	0.50
1:B:842:ASP:HA	1:B:845:THR:HG22	1.93	0.50
1:A:561:LEU:HD21	1:A:592:VAL:HG13	1.93	0.49
1:B:453:PRO:HB3	1:B:755:GLU:OE2	2.10	0.49
1:B:833:ARG:HG3	1:B:833:ARG:HH11	1.77	0.49
1:B:617:PRO:HG2	1:B:620:CYS:HB2	1.94	0.49
1:A:842:ASP:HA	1:A:845:THR:HG22	1.93	0.49
1:B:192:ILE:HA	1:B:219:PHE:HB2	1.94	0.49
1:B:664:GLU:HA	1:B:667:GLU:HB2	1.95	0.49
1:B:87:MET:HA	1:B:87:MET:HE3	1.94	0.49
1:B:287:GLY:HA3	1:B:291:LYS:HZ3	1.78	0.49
1:B:176:ILE:HD12	1:B:231:ALA:HB3	1.94	0.49
1:B:792:VAL:HG22	1:B:852:LEU:HB3	1.95	0.49
1:A:681:ASP:HB2	1:A:702:VAL:HG13	1.95	0.48
1:A:329:THR:O	1:A:334:THR:OG1	2.32	0.48
1:B:480:LEU:O	1:B:483:SER:OG	2.31	0.48
1:A:515:MET:O	1:A:698:SER:OG	2.20	0.48
1:A:619:TYR:CD1	1:B:89:GLU:HG2	2.47	0.48
1:A:833:ARG:HG3	1:A:833:ARG:HH11	1.77	0.48
1:A:238:ILE:HD11	1:A:278:ILE:HG12	1.96	0.48
1:A:591:ASP:OD2	1:A:594:SER:N	2.37	0.48
1:B:403:PHE:O	1:B:407:LYS:HG2	2.14	0.48
1:A:677:ILE:HG21	1:A:710:ALA:HB2	1.96	0.48
1:A:792:VAL:HG22	1:A:852:LEU:HB3	1.95	0.47
1:A:87:MET:HE3	1:A:87:MET:HA	1.94	0.47
1:A:100:LEU:O	1:A:104:ILE:HG12	2.14	0.47
1:B:187:TYR:CE2	1:B:294:MET:HE3	2.49	0.47
1:B:265:PHE:HA	1:B:271:THR:HG22	1.96	0.47
1:A:187:TYR:CE2	1:A:294:MET:HE3	2.49	0.47
1:A:664:GLU:HA	1:A:667:GLU:HB2	1.95	0.47
1:A:682:ILE:HD12	1:A:686:LEU:HD12	1.96	0.47
1:B:238:ILE:HD11	1:B:278:ILE:HG12	1.96	0.47
1:A:747:LEU:HD13	1:A:776:LEU:HD23	1.96	0.47
1:B:681:ASP:HB2	1:B:702:VAL:HG13	1.95	0.47
1:A:265:PHE:HA	1:A:271:THR:HG22	1.96	0.47
1:A:403:PHE:O	1:A:407:LYS:HG2	2.14	0.47
1:A:799:ASP:C	1:A:801:LEU:H	2.22	0.47
1:B:566:LYS:HG2	1:B:599:PHE:HE1	1.80	0.47
1:B:658:THR:OG1	1:B:661:ASP:OD2	2.28	0.47
1:B:451:LYS:NZ	1:B:455:GLU:OE1	2.46	0.47
1:A:566:LYS:HG2	1:A:599:PHE:HE1	1.80	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:677:ILE:HG21	1:B:710:ALA:HB2	1.96	0.47
1:A:292:ARG:NH1	1:A:295:GLN:HB2	2.30	0.46
1:B:280:ARG:HH11	1:B:280:ARG:HG2	1.80	0.46
1:B:747:LEU:HD13	1:B:776:LEU:HD23	1.96	0.46
1:A:280:ARG:HG2	1:A:295:GLN:HE22	1.81	0.46
1:B:122:ALA:HB2	1:B:133:VAL:HG21	1.97	0.46
1:B:329:THR:O	1:B:334:THR:OG1	2.32	0.46
1:A:98:LYS:HB3	1:A:98:LYS:HZ1	1.80	0.46
1:B:100:LEU:O	1:B:104:ILE:HG12	2.14	0.46
1:B:250:ARG:HG2	1:B:250:ARG:HH11	1.81	0.46
1:B:799:ASP:C	1:B:801:LEU:H	2.22	0.46
1:A:40:GLY:O	1:A:43:VAL:HG12	2.16	0.46
1:A:280:ARG:HG2	1:A:280:ARG:HH11	1.80	0.46
1:B:287:GLY:HA3	1:B:291:LYS:NZ	2.30	0.46
1:B:736:MET:HE2	1:B:736:MET:HB3	1.79	0.46
1:A:588:MET:HE2	1:A:588:MET:C	2.40	0.46
1:B:143:LYS:NZ	1:B:143:LYS:HB3	2.31	0.46
1:A:250:ARG:HH11	1:A:250:ARG:HG2	1.81	0.46
1:A:289:LEU:O	1:A:292:ARG:HG2	2.16	0.46
1:A:585:THR:HA	1:A:588:MET:SD	2.56	0.46
1:B:289:LEU:O	1:B:292:ARG:HG2	2.16	0.46
1:B:682:ILE:HD12	1:B:686:LEU:HD12	1.96	0.46
1:A:100:LEU:HD23	1:A:136:VAL:HG11	1.98	0.46
1:B:49:THR:OG1	1:B:50:ASP:N	2.49	0.46
1:B:128:MET:HE2	1:B:128:MET:HB2	1.84	0.46
1:A:382:GLY:O	1:A:386:VAL:HG12	2.16	0.46
1:B:382:GLY:O	1:B:386:VAL:HG12	2.16	0.46
1:A:49:THR:OG1	1:A:50:ASP:N	2.49	0.45
1:A:287:GLY:HA3	1:A:291:LYS:NZ	2.30	0.45
1:B:280:ARG:HG2	1:B:295:GLN:HE22	1.81	0.45
1:B:588:MET:C	1:B:588:MET:HE2	2.40	0.45
1:B:650:THR:HG21	1:B:730:MET:HE1	1.98	0.45
1:B:585:THR:HA	1:B:588:MET:SD	2.56	0.45
1:A:841:GLU:HA	1:A:844:GLU:OE2	2.16	0.45
1:B:292:ARG:NH1	1:B:295:GLN:HB2	2.30	0.45
1:A:143:LYS:HB3	1:A:143:LYS:NZ	2.31	0.45
1:A:543:LEU:HD13	1:A:543:LEU:O	2.17	0.45
1:A:569:ILE:HA	1:A:574:PRO:HD2	1.98	0.45
1:B:361:PHE:CZ	1:B:374:ILE:HG21	2.52	0.45
1:B:841:GLU:HA	1:B:844:GLU:OE2	2.16	0.45
1:A:98:LYS:HB3	1:A:98:LYS:NZ	2.32	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:122:ALA:HB2	1:A:133:VAL:HG21	1.97	0.45
1:A:624:GLN:OE1	1:A:799:ASP:N	2.50	0.45
1:B:98:LYS:NZ	1:B:98:LYS:HB3	2.32	0.45
1:B:624:GLN:OE1	1:B:799:ASP:N	2.50	0.45
1:A:666:ARG:O	1:A:670:GLU:HG3	2.17	0.45
1:A:668:LEU:HD13	1:A:754:MET:HE1	1.98	0.45
1:B:93:VAL:HG23	1:B:94:PHE:CD1	2.52	0.45
1:B:100:LEU:HD23	1:B:136:VAL:HG11	1.98	0.45
1:A:93:VAL:HG23	1:A:94:PHE:CD1	2.52	0.45
1:B:600:ARG:HD3	1:B:600:ARG:HA	1.70	0.45
1:B:668:LEU:HD13	1:B:754:MET:HE1	1.98	0.45
1:A:361:PHE:CZ	1:A:374:ILE:HG21	2.52	0.45
1:B:543:LEU:HD13	1:B:543:LEU:O	2.17	0.45
1:B:520:HIS:O	1:B:585:THR:HG21	2.17	0.44
1:B:536:HIS:CD2	1:B:878:VAL:H	2.36	0.44
1:B:569:ILE:HA	1:B:574:PRO:HD2	1.98	0.44
1:B:749:GLN:N	1:B:749:GLN:OE1	2.50	0.44
1:A:42:ARG:HB2	1:A:46:MET:HE3	2.00	0.44
1:A:44:VAL:HG21	1:A:164:ASN:HA	1.99	0.44
1:A:704:MET:HA	1:A:707:ILE:HG22	1.99	0.44
1:B:40:GLY:O	1:B:43:VAL:HG12	2.16	0.44
1:B:50:ASP:N	1:B:50:ASP:OD1	2.46	0.44
1:B:333:LYS:HE2	3:B:1002:S5Q:S2B	2.57	0.44
1:B:792:VAL:HG11	1:B:808:LEU:HD13	1.99	0.44
1:A:650:THR:HG21	1:A:730:MET:HE1	1.98	0.44
1:B:42:ARG:HB2	1:B:46:MET:HE3	2.00	0.44
1:A:56:HIS:ND1	1:A:126:THR:OG1	2.37	0.44
1:A:59:ILE:O	1:A:63:GLY:N	2.40	0.44
1:A:333:LYS:HE2	3:A:1002:S5Q:S2B	2.57	0.44
1:B:666:ARG:O	1:B:670:GLU:HG3	2.17	0.44
1:B:704:MET:HA	1:B:707:ILE:HG22	1.99	0.44
1:A:596:ILE:HD12	1:A:611:VAL:HG21	2.00	0.44
1:A:50:ASP:N	1:A:50:ASP:OD1	2.46	0.44
1:A:520:HIS:O	1:A:585:THR:HG21	2.17	0.44
1:A:749:GLN:OE1	1:A:749:GLN:N	2.50	0.44
1:A:792:VAL:HG11	1:A:808:LEU:HD13	1.99	0.44
1:A:536:HIS:CD2	1:A:878:VAL:H	2.36	0.44
1:A:659:PRO:HG3	1:A:682:ILE:HG22	2.00	0.44
1:B:486:LYS:HD2	1:B:487:VAL:O	2.18	0.44
1:B:598:HIS:O	1:B:602:GLU:HG2	2.17	0.44
1:B:659:PRO:HG3	1:B:682:ILE:HG22	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:596:ILE:HD12	1:B:611:VAL:HG21	2.00	0.44
1:A:598:HIS:O	1:A:602:GLU:HG2	2.17	0.43
1:B:36:CYS:HB3	2:B:1001:SF4:S2	2.58	0.43
1:B:44:VAL:HG21	1:B:164:ASN:HA	1.99	0.43
1:A:58:PRO:HG2	1:A:125:VAL:HG21	2.01	0.43
1:A:486:LYS:HD2	1:A:487:VAL:O	2.18	0.43
1:B:487:VAL:CG2	1:B:823:ARG:HH21	2.31	0.43
1:B:58:PRO:HG2	1:B:125:VAL:HG21	2.01	0.43
1:B:204:MET:HB2	1:B:204:MET:HE2	1.76	0.43
1:A:46:MET:HE3	1:A:46:MET:HB2	1.87	0.43
1:A:68:ASN:ND2	1:B:531:LEU:HD21	2.34	0.43
1:A:839:ASP:OD1	1:A:839:ASP:N	2.39	0.43
1:A:98:LYS:HZ3	1:A:102:ARG:HH12	1.66	0.43
1:A:204:MET:HB2	1:A:204:MET:HE2	1.76	0.43
1:A:664:GLU:O	1:A:668:LEU:HG	2.18	0.43
1:B:457:THR:HG1	1:B:459:GLU:CD	2.27	0.43
1:A:52:ILE:HG21	1:A:107:LEU:HD13	2.01	0.43
1:A:294:MET:HE2	1:A:294:MET:HA	2.01	0.43
1:A:327:LEU:HD21	1:A:338:VAL:HG22	2.01	0.43
1:B:176:ILE:HD11	1:B:219:PHE:CZ	2.53	0.43
1:A:487:VAL:CG2	1:A:823:ARG:HH21	2.31	0.43
1:A:36:CYS:HB3	2:A:1001:SF4:S2	2.58	0.42
1:A:754:MET:HB3	1:A:765:ILE:HD13	2.01	0.42
1:B:515:MET:O	1:B:698:SER:OG	2.20	0.42
1:A:524:GLY:HA3	1:B:36:CYS:HB3	2.01	0.42
1:B:119:PHE:CE2	1:B:149:ILE:HD12	2.55	0.42
1:A:176:ILE:HD11	1:A:219:PHE:CZ	2.53	0.42
1:A:531:LEU:HD21	1:B:68:ASN:ND2	2.34	0.42
1:B:52:ILE:HG21	1:B:107:LEU:HD13	2.01	0.42
1:B:327:LEU:HD21	1:B:338:VAL:HG22	2.01	0.42
1:A:535:ARG:HG3	1:A:879:PHE:HB3	2.01	0.42
1:B:485:VAL:HG23	1:B:835:ILE:O	2.20	0.42
1:B:905:LEU:HD23	1:B:905:LEU:HA	1.87	0.42
1:B:225:PHE:HE2	1:B:229:ARG:HH11	1.67	0.42
1:B:664:GLU:O	1:B:668:LEU:HG	2.18	0.42
1:A:225:PHE:HE2	1:A:229:ARG:HH11	1.67	0.42
1:A:485:VAL:HG23	1:A:835:ILE:O	2.20	0.42
1:B:253:GLN:HA	1:B:258:MET:H	1.84	0.42
1:B:413:LEU:HD22	1:B:436:LEU:HD13	2.02	0.42
1:A:119:PHE:CE2	1:A:149:ILE:HD12	2.55	0.42
1:A:253:GLN:HA	1:A:258:MET:H	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:535:ARG:HG3	1:B:879:PHE:HB3	2.01	0.42
1:B:56:HIS:ND1	1:B:126:THR:OG1	2.37	0.41
1:B:294:MET:HE2	1:B:294:MET:HA	2.01	0.41
1:B:754:MET:HB3	1:B:765:ILE:HD13	2.01	0.41
1:A:364:MET:O	1:A:368:MET:N	2.50	0.41
1:A:413:LEU:HD22	1:A:436:LEU:HD13	2.02	0.41
1:B:264:SER:OG	1:B:270:ASP:OD2	2.35	0.41
1:B:324:ARG:H	1:B:324:ARG:HG2	1.64	0.41
1:A:36:CYS:HB3	1:B:524:GLY:HA3	2.01	0.41
1:A:325:SER:HA	1:A:394:LEU:O	2.21	0.41
1:A:188:PRO:HD2	1:A:235:LYS:HG3	2.02	0.41
1:A:384:LEU:HD11	1:B:694:VAL:HB	2.03	0.41
1:A:811:MET:HE2	1:A:811:MET:HB3	1.71	0.41
1:A:151:VAL:HG12	1:A:153:THR:HG23	2.02	0.41
1:A:261:LEU:HD12	1:A:261:LEU:HA	1.93	0.41
1:A:442:ASN:ND2	1:A:784:HIS:HB2	2.36	0.41
1:A:558:TRP:HB2	1:A:595:ALA:HB2	2.03	0.41
1:A:566:LYS:HE2	1:A:566:LYS:HB3	1.91	0.41
1:A:890:VAL:N	1:A:894:GLY:HA3	2.36	0.41
1:B:436:LEU:HD12	1:B:436:LEU:HA	1.89	0.41
1:B:454:TRP:CZ2	1:B:773:ARG:HD3	2.56	0.41
1:A:280:ARG:HG2	1:A:295:GLN:NE2	2.35	0.41
1:B:75:ASP:CG	1:B:76:SER:H	2.28	0.41
1:B:154:PRO:HD2	1:B:157:ILE:HD13	2.03	0.41
1:B:280:ARG:HG2	1:B:295:GLN:NE2	2.35	0.41
1:B:442:ASN:ND2	1:B:784:HIS:HB2	2.36	0.41
1:B:575:GLU:O	1:B:610:PRO:HD2	2.22	0.40
1:B:890:VAL:N	1:B:894:GLY:HA3	2.36	0.40
1:A:34:ARG:HG3	1:A:354:GLN:NE2	2.37	0.40
1:A:260:TYR:CD1	1:A:260:TYR:C	2.99	0.40
1:B:151:VAL:HG12	1:B:153:THR:HG23	2.02	0.40
1:B:188:PRO:HD2	1:B:235:LYS:HG3	2.02	0.40
1:A:176:ILE:HD11	1:A:219:PHE:HZ	1.86	0.40
1:A:191:LEU:HD13	1:A:191:LEU:HA	1.99	0.40
1:A:584:LEU:H	1:A:584:LEU:HD23	1.86	0.40
1:A:666:ARG:HH22	1:A:681:ASP:CG	2.30	0.40
1:B:325:SER:HA	1:B:394:LEU:O	2.21	0.40
1:B:692:GLU:OE1	1:B:693:THR:N	2.55	0.40
1:B:757:LEU:HD23	1:B:757:LEU:HA	1.90	0.40
1:A:75:ASP:CG	1:A:76:SER:H	2.28	0.40
1:A:596:ILE:HD13	1:A:596:ILE:HA	1.87	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:690:ILE:HD12	1:B:777:MET:HB3	2.03	0.40
1:A:694:VAL:HB	1:B:384:LEU:HD11	2.03	0.40
1:A:480:LEU:O	1:A:483:SER:OG	2.31	0.40
1:A:519:LEU:HB2	1:A:580:MET:HE3	2.04	0.40
1:B:480:LEU:HB2	1:B:481:LYS:HE2	2.04	0.40
1:B:584:LEU:HD23	1:B:584:LEU:H	1.86	0.40
1:B:666:ARG:HH22	1:B:681:ASP:CG	2.30	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	881/919 (96%)	844 (96%)	37 (4%)	0	100	100
1	B	881/919 (96%)	844 (96%)	37 (4%)	0	100	100
All	All	1762/1838 (96%)	1688 (96%)	74 (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	707/732 (97%)	687 (97%)	20 (3%)	38	64

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	B	707/732 (97%)	687 (97%)	20 (3%)	38 64
All	All	1414/1464 (97%)	1374 (97%)	40 (3%)	40 64

All (40) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	205	LEU
1	A	208	PHE
1	A	236	LEU
1	A	244	SER
1	A	269	THR
1	A	277	ASP
1	A	329	THR
1	A	334	THR
1	A	367	LEU
1	A	375	ILE
1	A	380	SER
1	A	395	ILE
1	A	444	ILE
1	A	454	TRP
1	A	476	LEU
1	A	543	LEU
1	A	566	LYS
1	A	645	ILE
1	A	691	ASP
1	A	732	GLU
1	B	205	LEU
1	B	208	PHE
1	B	236	LEU
1	B	244	SER
1	B	269	THR
1	B	277	ASP
1	B	329	THR
1	B	334	THR
1	B	367	LEU
1	B	375	ILE
1	B	380	SER
1	B	395	ILE
1	B	444	ILE
1	B	454	TRP
1	B	476	LEU
1	B	543	LEU

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Mol	Chain	Res	Type
1	B	566	LYS
1	B	645	ILE
1	B	691	ASP
1	B	732	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	68	ASN
1	A	164	ASN
1	A	295	GLN
1	A	354	GLN
1	A	499	ASN
1	A	532	GLN
1	A	897	ASN
1	B	68	ASN
1	B	164	ASN
1	B	295	GLN
1	B	354	GLN
1	B	897	ASN
1	B	904	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

4 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	SF4	A	1001	1	0,12,12	-	-	-		
2	SF4	B	1001	1	0,12,12	-	-	-		
3	S5Q	A	1002	1	18,30,30	2.13	10 (55%)	-		
3	S5Q	B	1002	1	18,30,30	2.13	10 (55%)	-		

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	SF4	A	1001	1	-	-	0/6/5/5
2	SF4	B	1001	1	-	-	0/6/5/5

All (20) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1002	S5Q	S4A-FE4	-3.44	2.23	2.32
3	B	1002	S5Q	S4A-FE4	-3.44	2.23	2.32
3	A	1002	S5Q	S1B-FE5	-2.97	2.25	2.32
3	B	1002	S5Q	S1B-FE5	-2.97	2.25	2.32
3	A	1002	S5Q	S2A-FE3	-2.86	2.25	2.32
3	B	1002	S5Q	S2A-FE3	-2.86	2.25	2.32
3	A	1002	S5Q	S3A-FE4	-2.85	2.18	2.24
3	B	1002	S5Q	S3A-FE4	-2.85	2.18	2.24
3	A	1002	S5Q	S3B-FE6	-2.80	2.25	2.32
3	B	1002	S5Q	S3B-FE6	-2.80	2.25	2.32
3	A	1002	S5Q	S1A-FE2	-2.62	2.25	2.32
3	B	1002	S5Q	S1A-FE2	-2.62	2.25	2.32
3	A	1002	S5Q	S4A-FE3	-2.36	2.26	2.32
3	B	1002	S5Q	S4A-FE3	-2.36	2.26	2.32
3	A	1002	S5Q	S4B-FE5	-2.27	2.26	2.32
3	B	1002	S5Q	S4B-FE5	-2.27	2.26	2.32
3	A	1002	S5Q	S1B-FE6	-2.15	2.27	2.32

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	1002	S5Q	S1B-FE6	-2.15	2.27	2.32
3	A	1002	S5Q	S3A-FE5	-2.05	2.20	2.24
3	B	1002	S5Q	S3A-FE5	-2.05	2.20	2.24

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

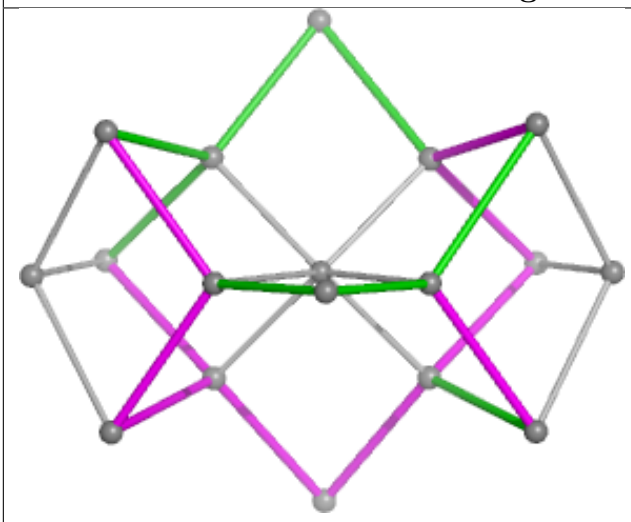
There are no ring outliers.

4 monomers are involved in 4 short contacts:

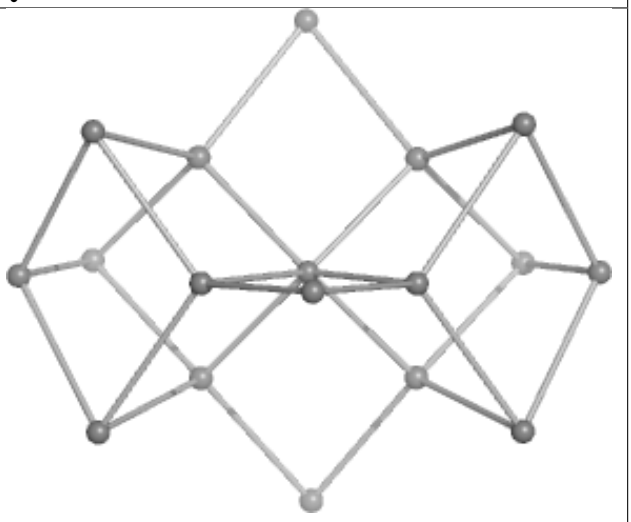
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1001	SF4	1	0
2	B	1001	SF4	1	0
3	A	1002	S5Q	1	0
3	B	1002	S5Q	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

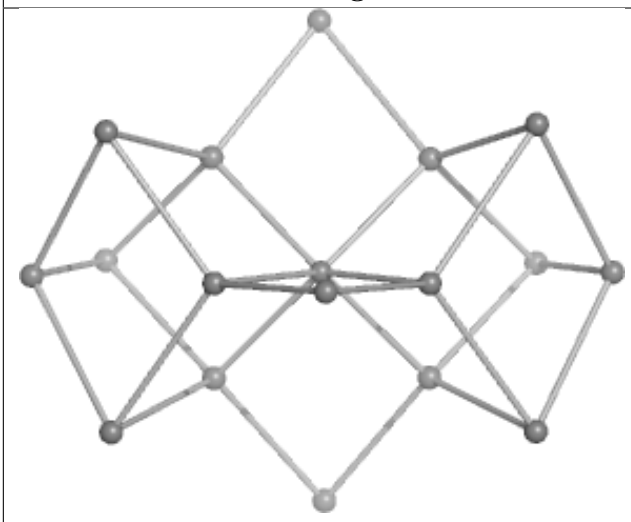
Ligand S5Q A 1002



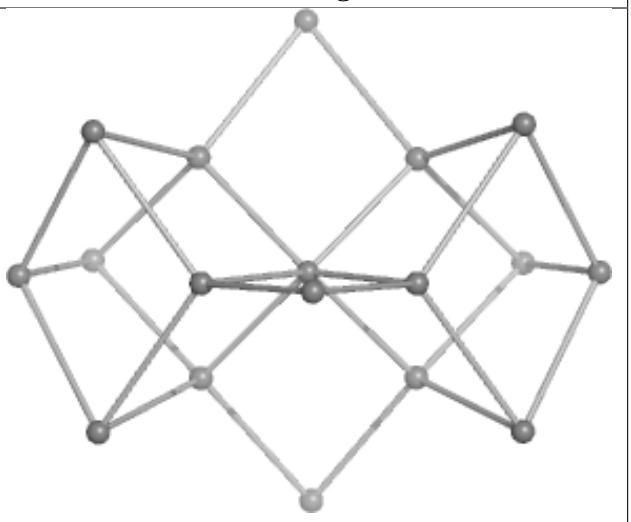
Bond lengths



Bond angles

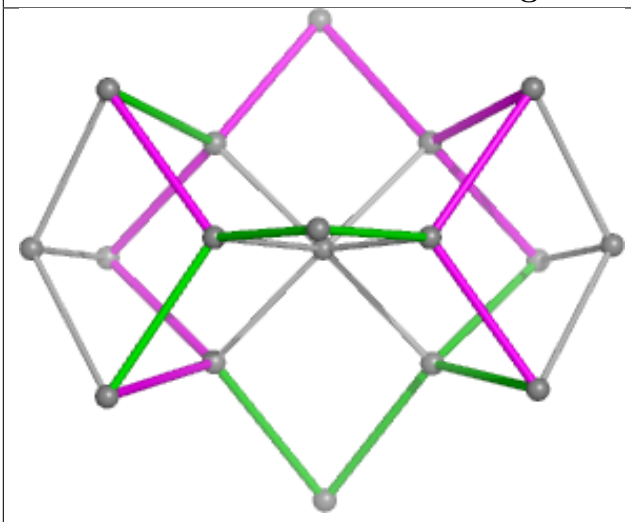


Torsions

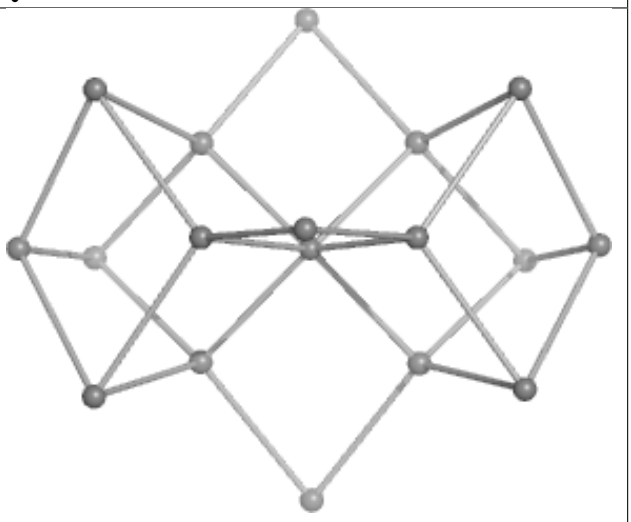


Rings

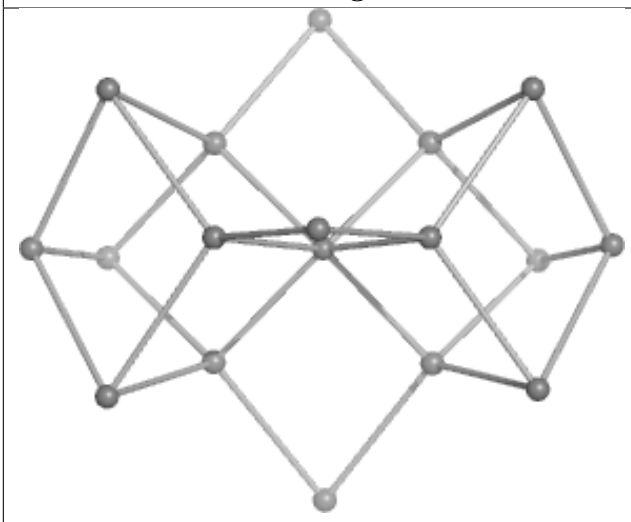
Ligand S5Q B 1002



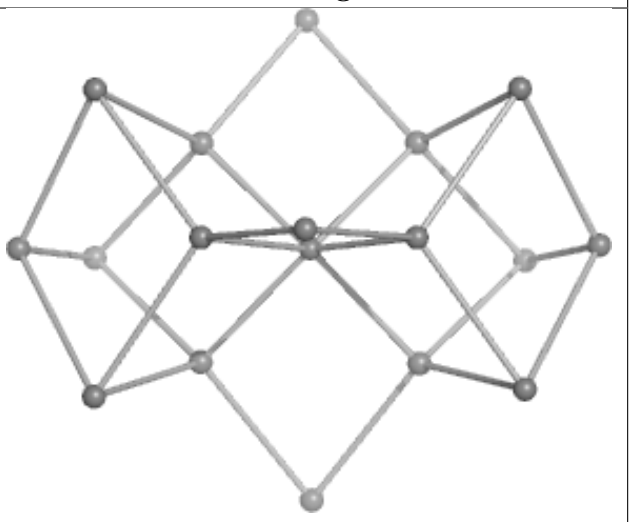
Bond lengths



Bond angles



Torsions



Rings

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.

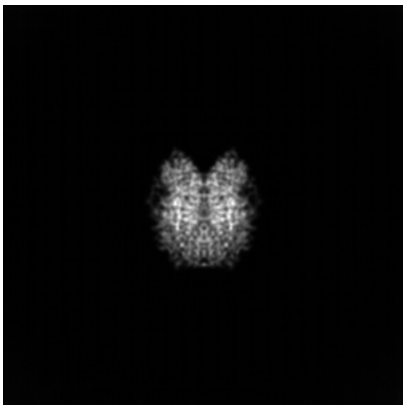
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-52557. These allow visual inspection of the internal detail of the map and identification of artifacts.

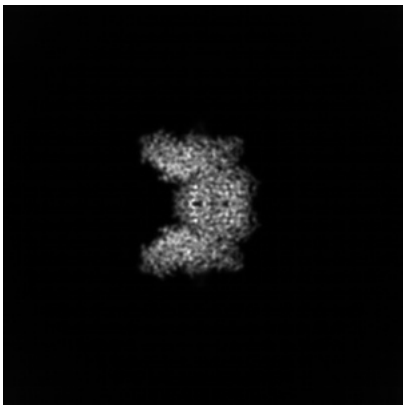
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

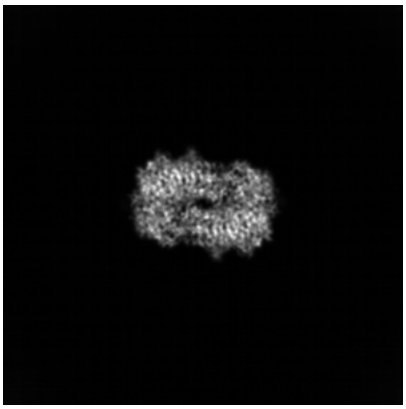
6.1.1 Primary map



X

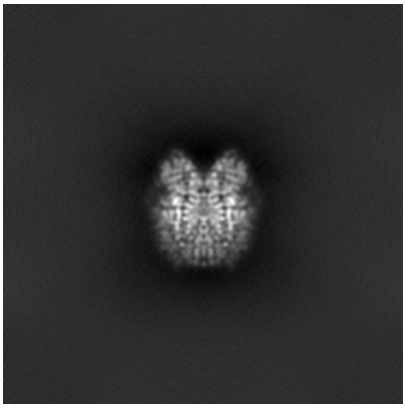


Y

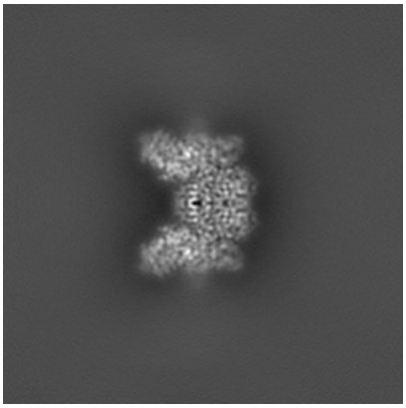


Z

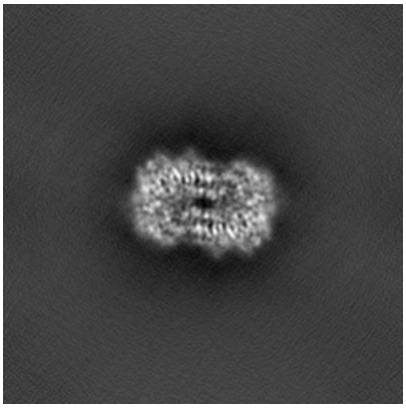
6.1.2 Raw map



X



Y

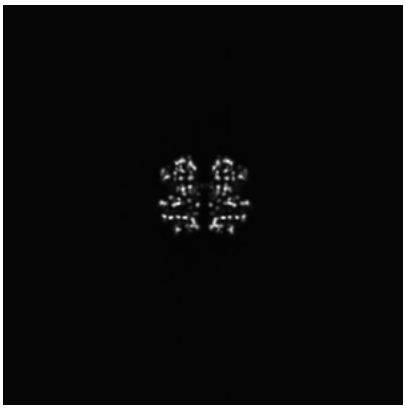


Z

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

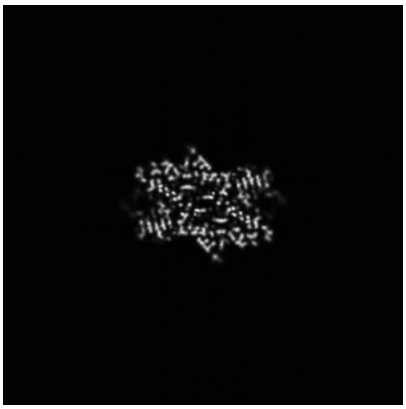
6.2 Central slices (i)

6.2.1 Primary map



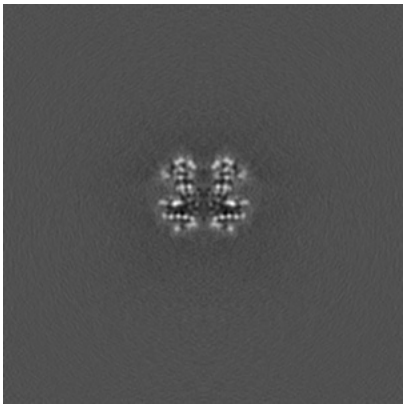
X Index: 123

Y Index: 123

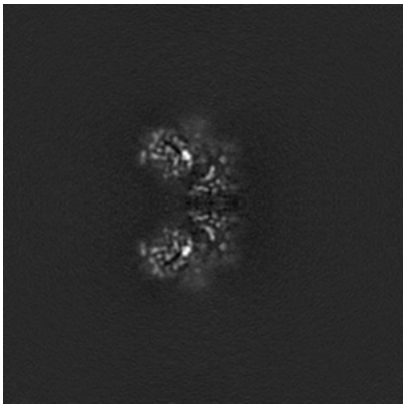


Z Index: 123

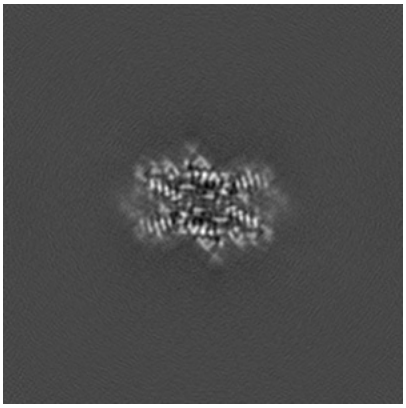
6.2.2 Raw map



X Index: 123



Y Index: 123

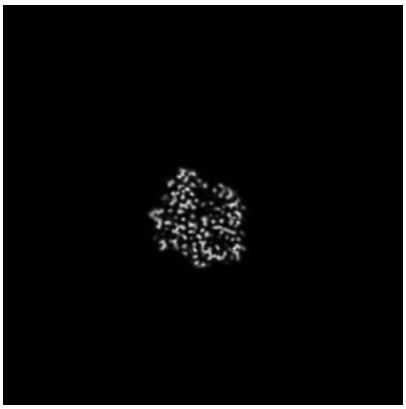


Z Index: 123

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

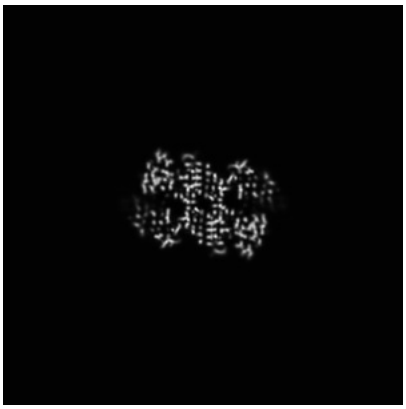
6.3 Largest variance slices (i)

6.3.1 Primary map



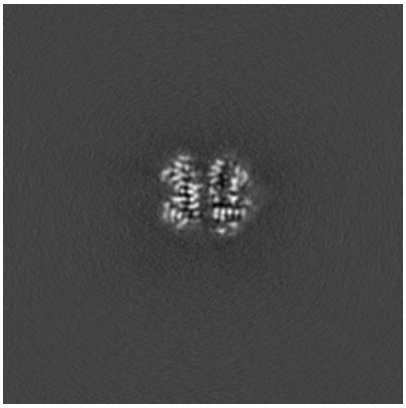
X Index: 151

Y Index: 107

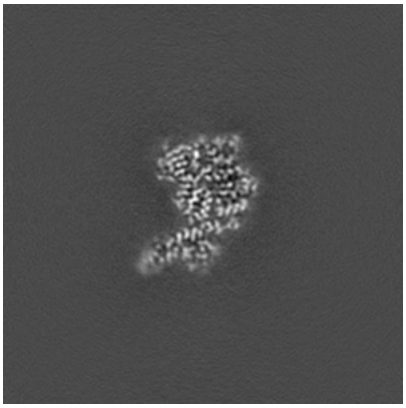


Z Index: 118

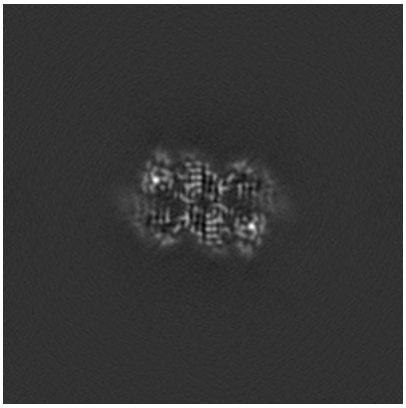
6.3.2 Raw map



X Index: 120



Y Index: 107

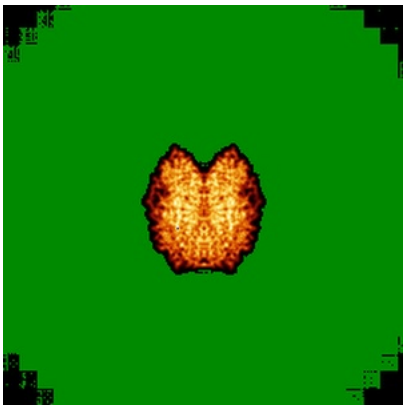


Z Index: 118

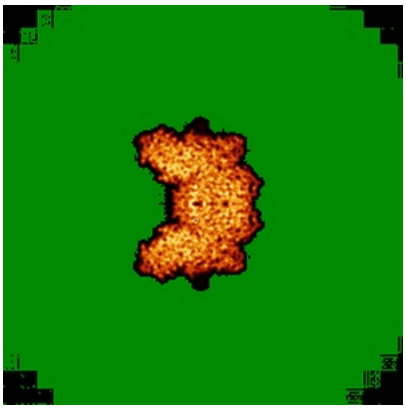
The images above show the largest variance slices of the map in three orthogonal directions.

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

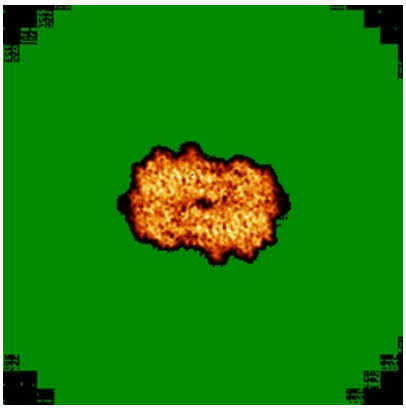
6.4.1 Primary map



X

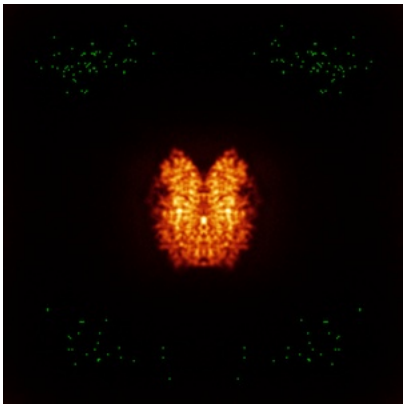


Y

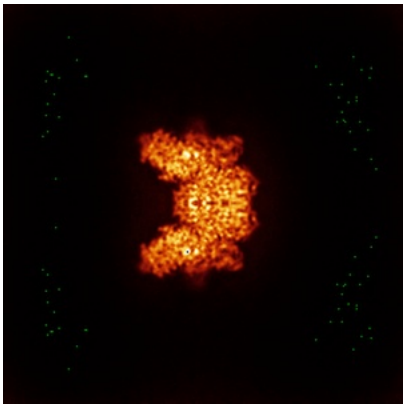


Z

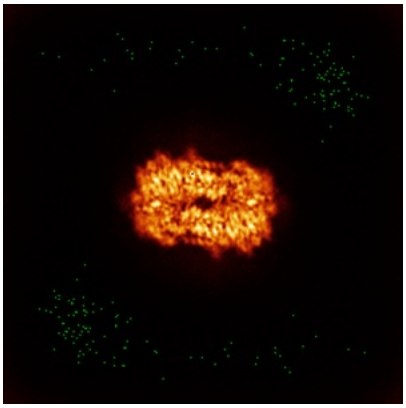
6.4.2 Raw map



X



Y

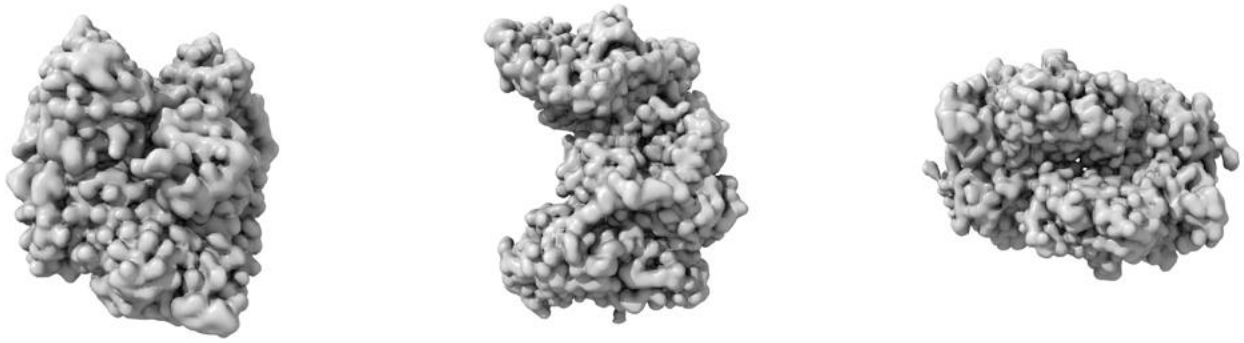


Z

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 0.9. 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.

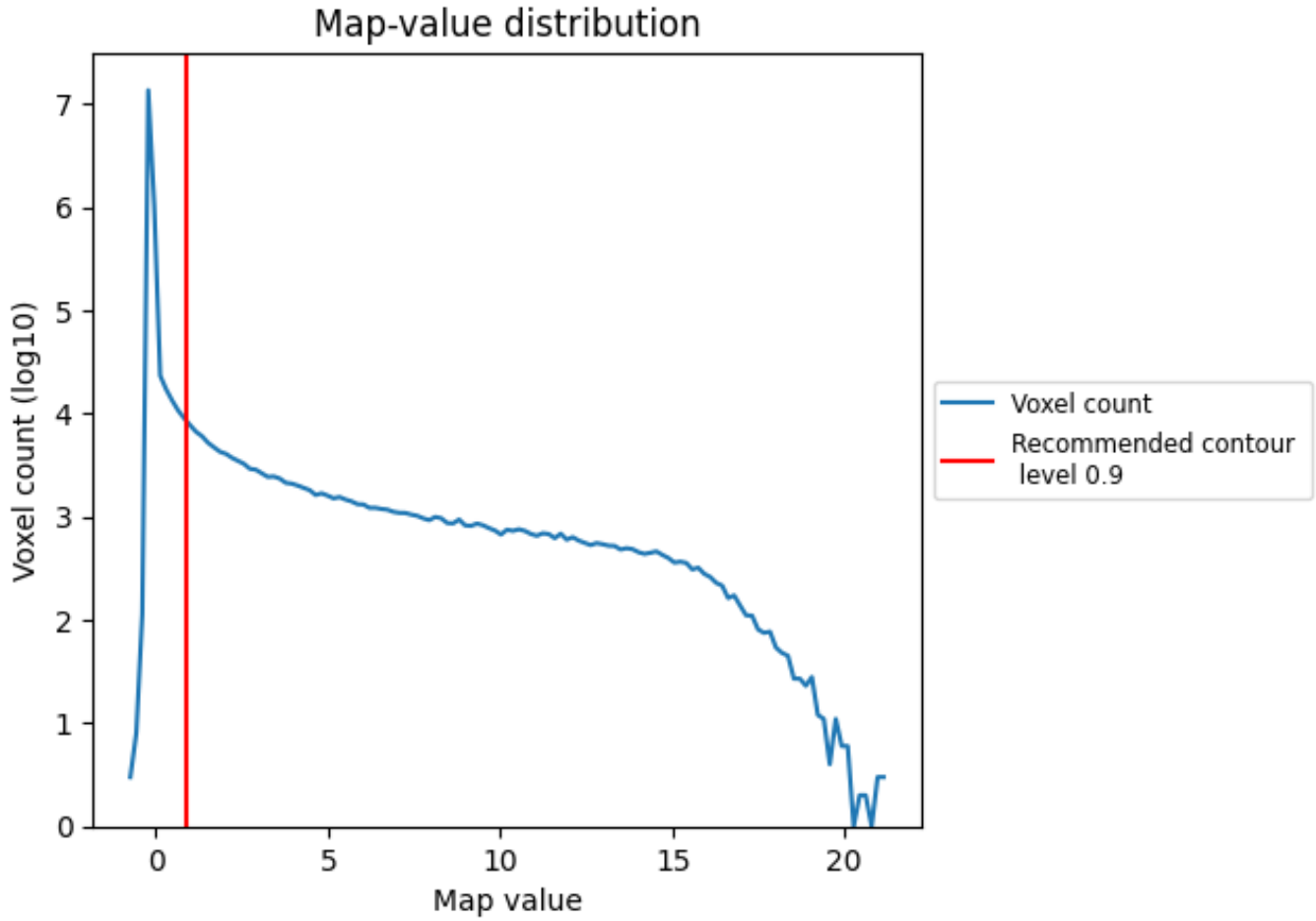
6.6 Mask visualisation (i)

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

7 Map analysis

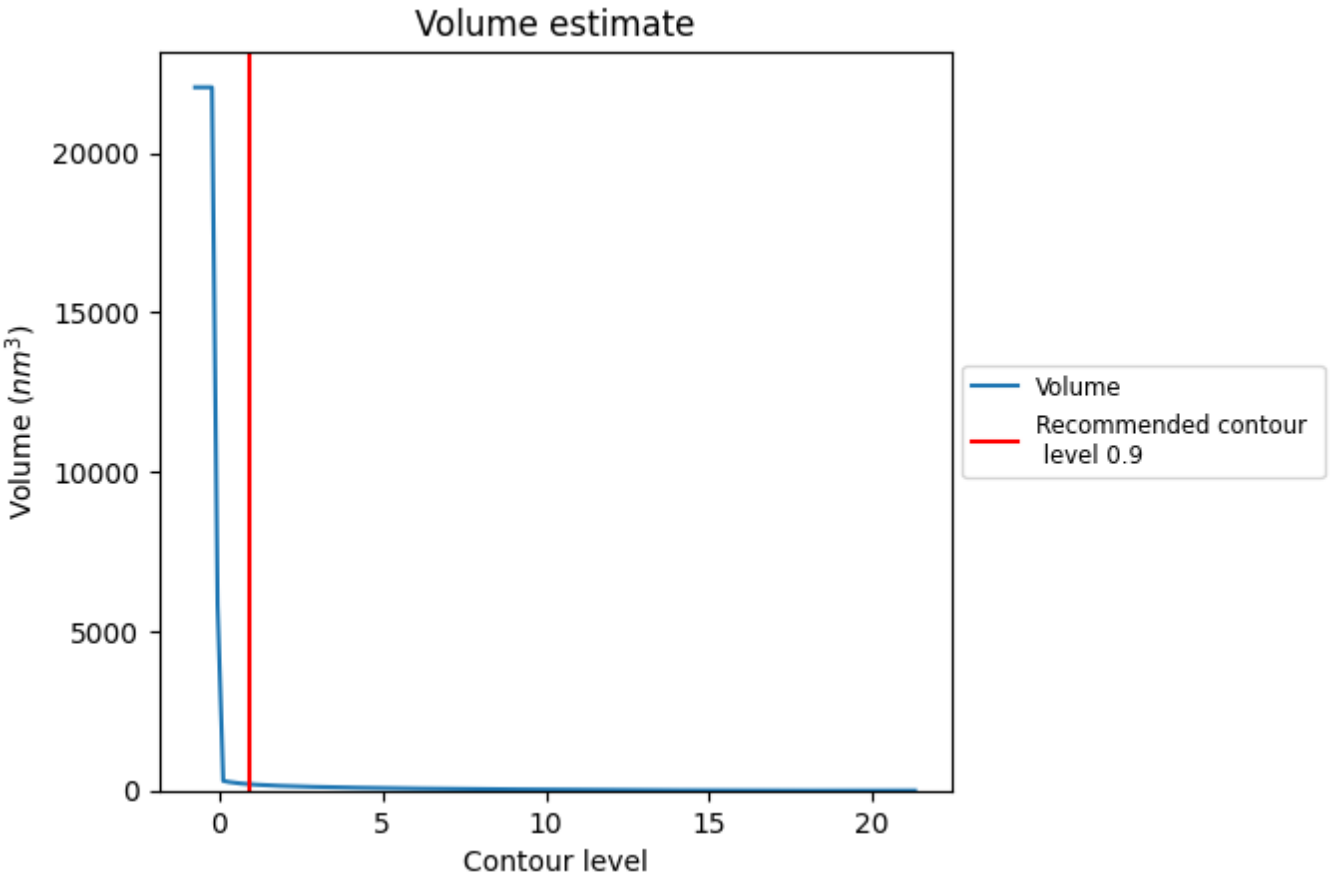
This section contains the results of statistical analysis of the map.

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.

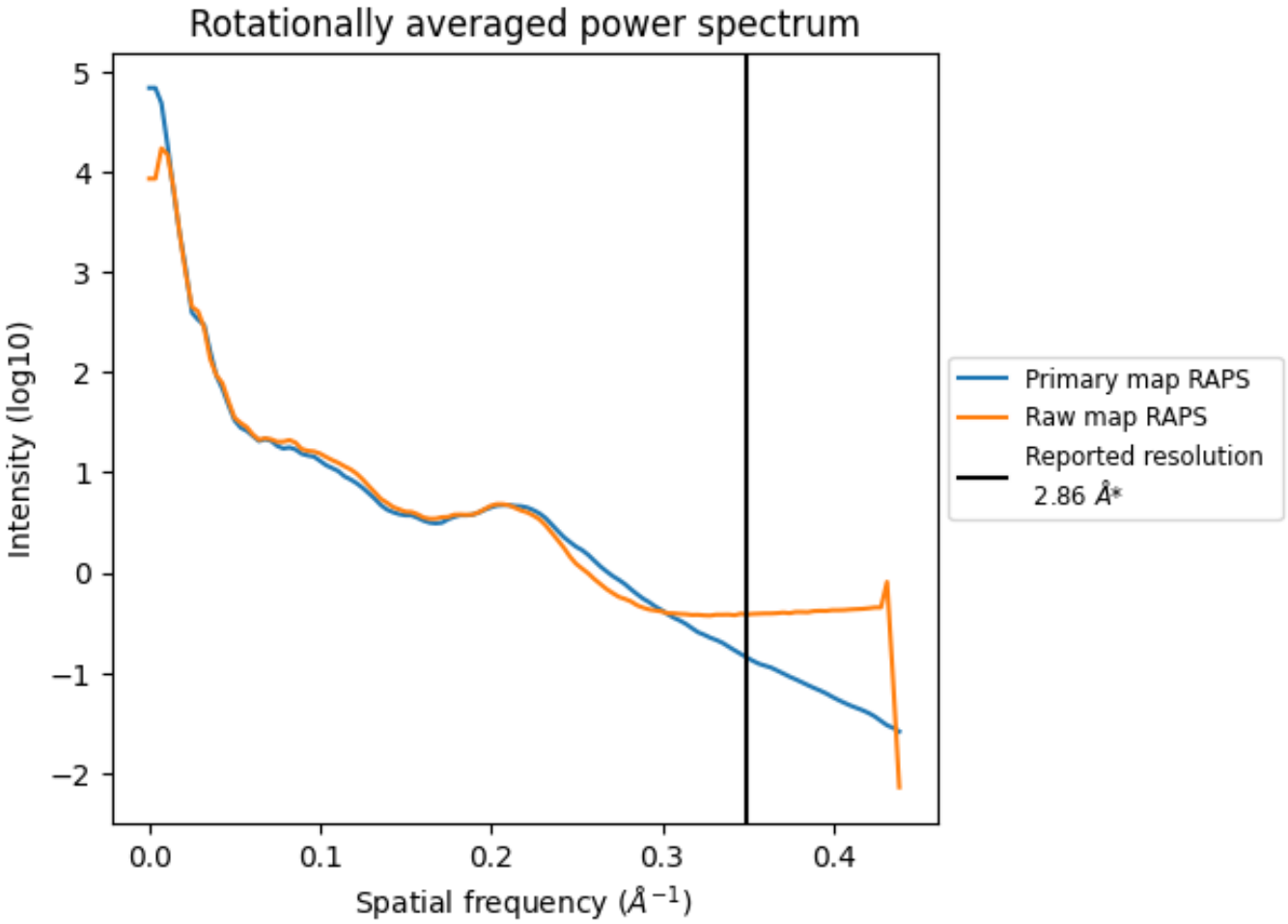
7.2 Volume estimate



The volume at the recommended contour level is 201 nm^3; this corresponds to an approximate mass of 181 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)

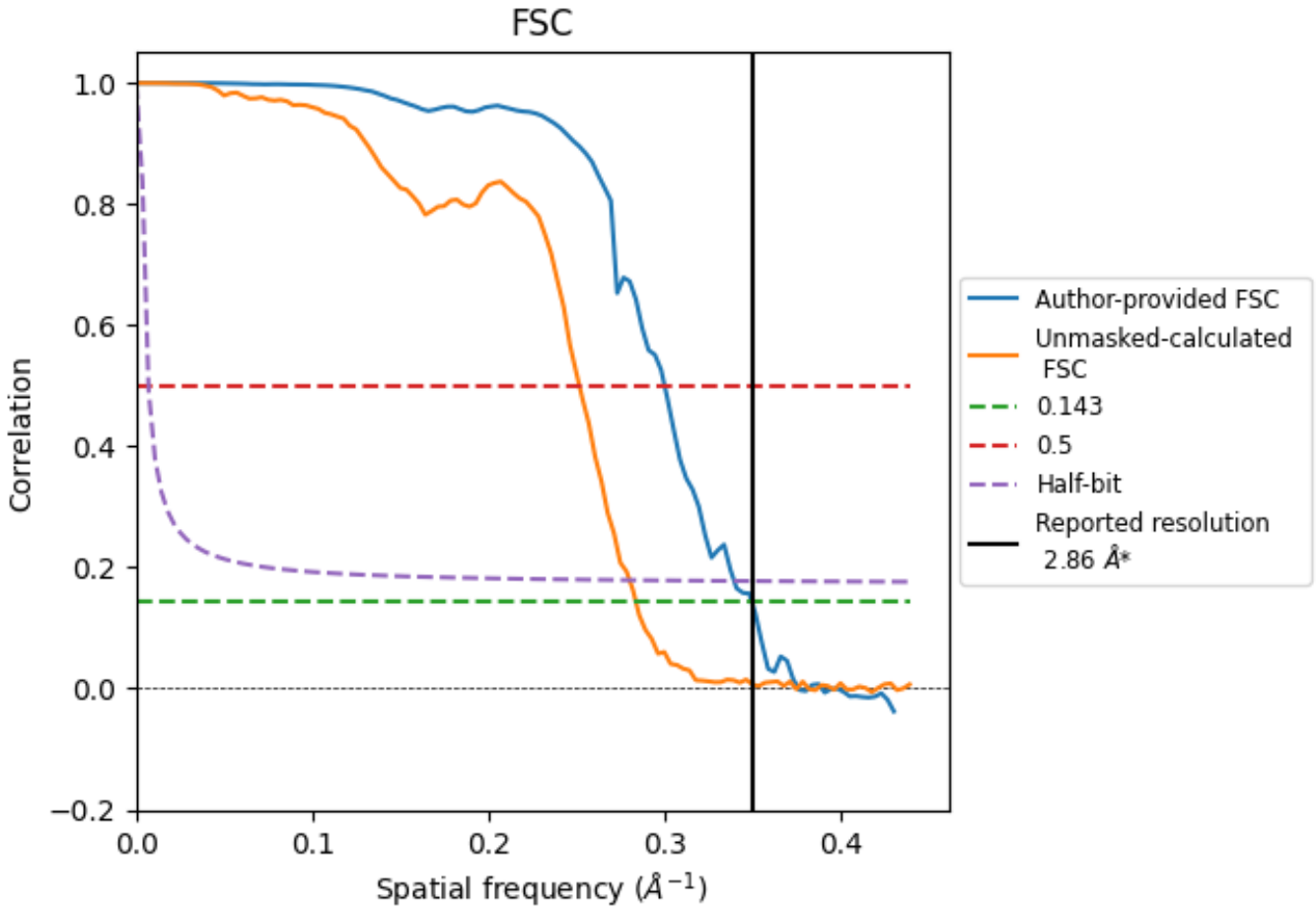


*Reported resolution corresponds to spatial frequency of 0.350 Å^{-1}

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 0.350 Å^{-1}

8.2 Resolution estimates (i)

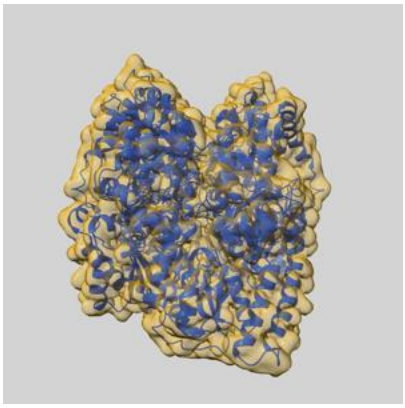
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.86	-	-
Author-provided FSC curve	2.86	3.34	2.95
Unmasked-calculated*	3.53	3.98	3.57

*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 3.53 differs from the reported value 2.86 by more than 10 %

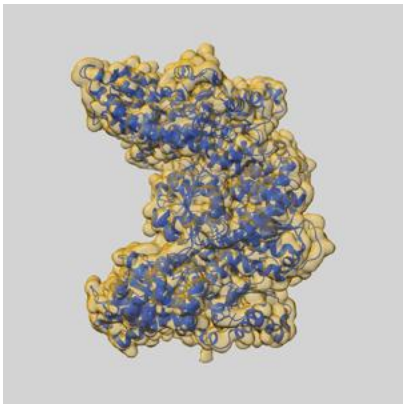
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-52557 and PDB model 9I0G. Per-residue inclusion information can be found in section 3 on page 5.

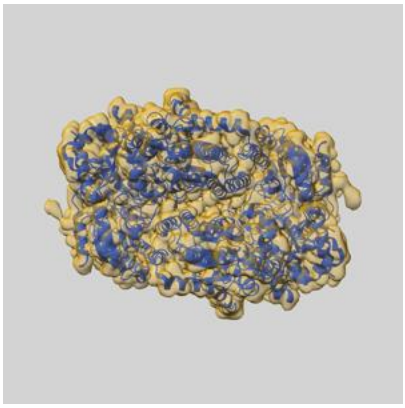
9.1 Map-model overlay



X



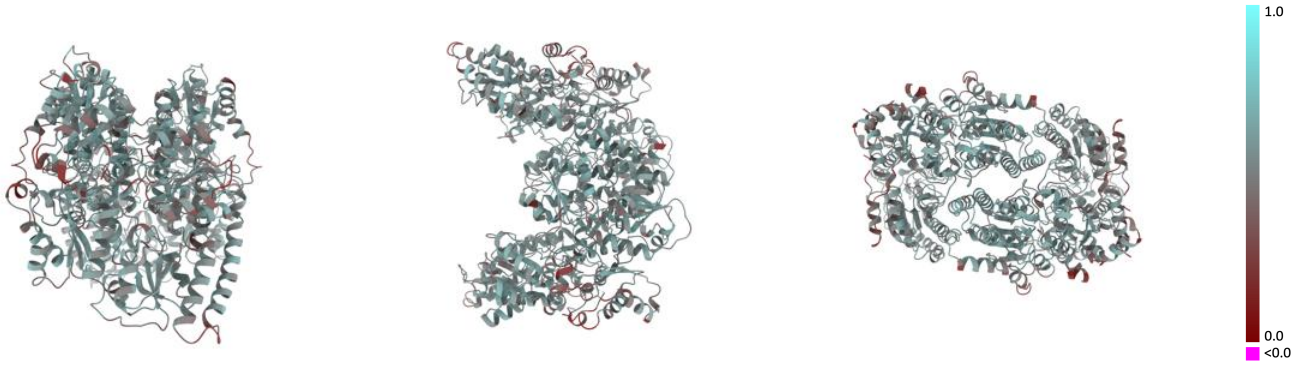
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.9 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.

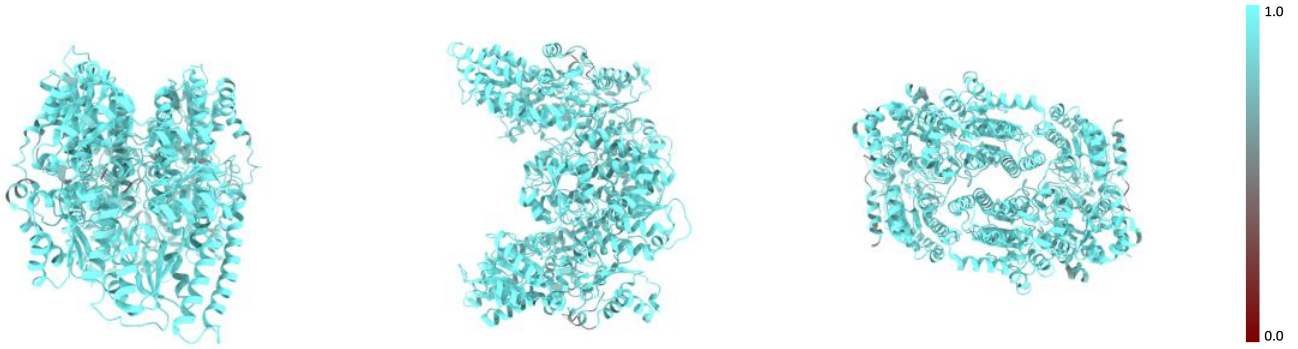
9.2 Q-score mapped to coordinate model (i)



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.

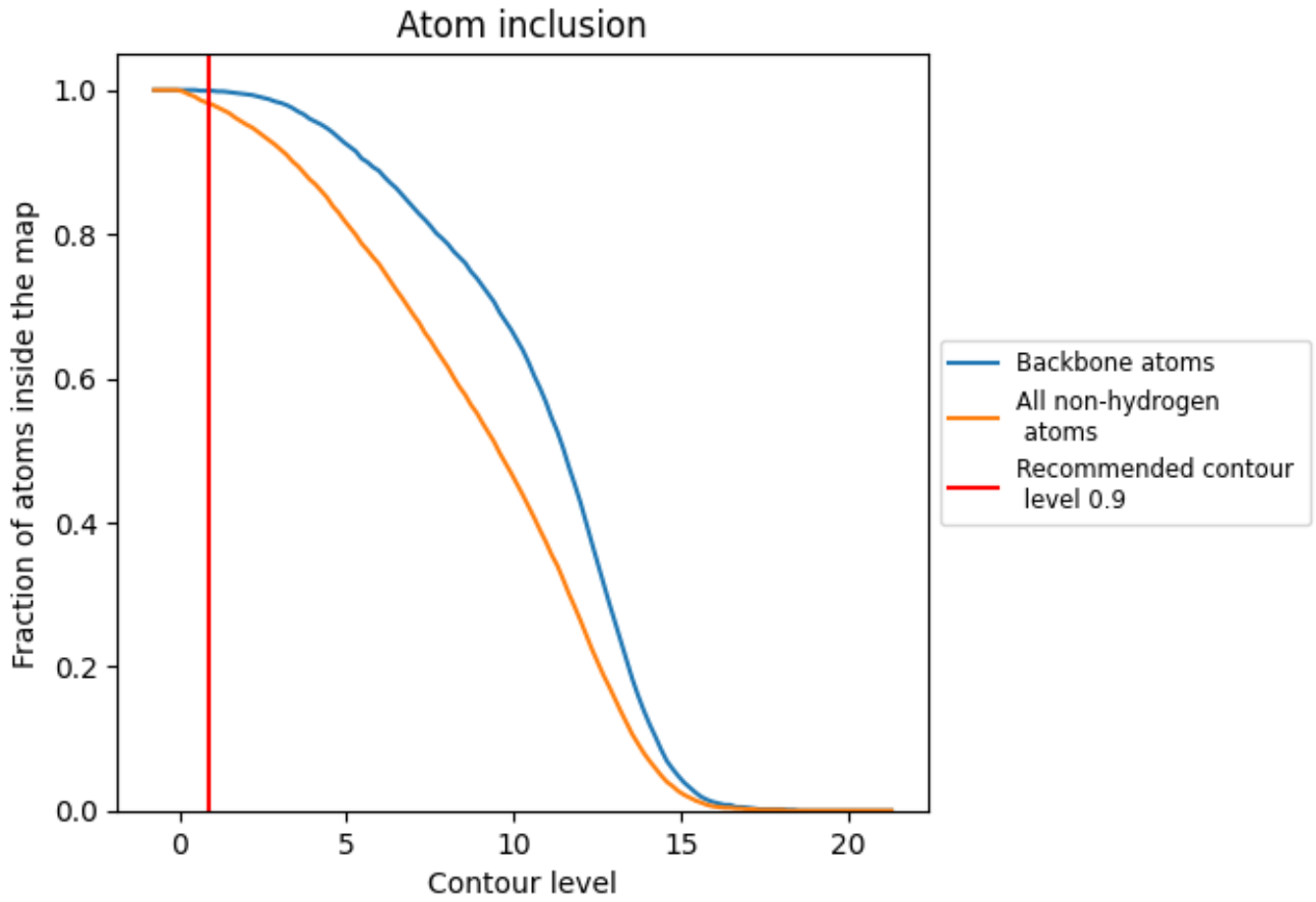
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.9).

9.4 Atom inclusion (i)



At the recommended contour level, 100% of all backbone atoms, 98% 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 (0.9) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9810	0.5200
A	0.9820	0.5240
B	0.9810	0.5160