



## Full wwPDB EM Validation Report ⓘ

Apr 10, 2024 – 02:20 PM JST

PDB ID : 8J8C  
EMDB ID : EMD-36067  
Title : Cryo-EM structure of Asfv topoisomerase 2 - apo conformer IIIb  
Authors : Chang, C.-W.; Tsai, M.-D.  
Deposited on : 2023-05-01  
Resolution : 2.69 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](mailto: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>.

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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

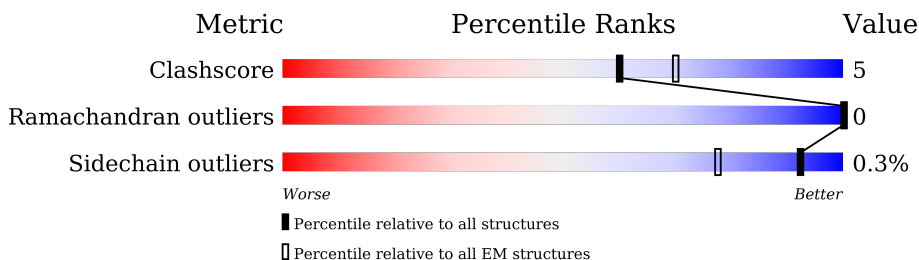
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 2.69 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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1197	
1	B	1197	

## 2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 11650 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

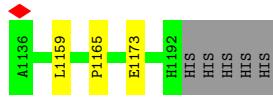
- Molecule 1 is a protein called DNA topoisomerase 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	717	5825	3746	1002	1052	25	0	0
1	B	717	5825	3746	1002	1052	25	0	0

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1193	HIS	-	expression tag	UNP A0A0A1E3Q0
A	1194	HIS	-	expression tag	UNP A0A0A1E3Q0
A	1195	HIS	-	expression tag	UNP A0A0A1E3Q0
A	1196	HIS	-	expression tag	UNP A0A0A1E3Q0
A	1197	HIS	-	expression tag	UNP A0A0A1E3Q0
B	1193	HIS	-	expression tag	UNP A0A0A1E3Q0
B	1194	HIS	-	expression tag	UNP A0A0A1E3Q0
B	1195	HIS	-	expression tag	UNP A0A0A1E3Q0
B	1196	HIS	-	expression tag	UNP A0A0A1E3Q0
B	1197	HIS	-	expression tag	UNP A0A0A1E3Q0





• Molecule 1: DNA topoisomerase 2



MET	GLU	ALA	PHE	ASN	GLU	ILE	SER	ASP	PHE	LYS	GLU	ALA	HIS	HIS	HIS	HIS
LEU	ILE	VAL	ASN	LYS	THR	THR	ASP	HIS	GLU	ALA	ALA	CYS	HIS	HIS	HIS	HIS
VAL	ALA	SER	CYS	PHE	THR	LEU	ALA	ALA	THR	ASN	ASN	LYS	ALA	ALA	ALA	ALA
GLU	PRO	THR	PRO	ILE	THR	PRO	SER	ARG	ARG	MET	VAL	THR	ARG	ILE	GLU	LYS
TYR	ASN	ASP	LYS	PRO	CYS	THR	THR	GLY	VAL	VAL	VAL	ALA	LEU	ALA	ALA	ALA
VAL	SER	ILE	ILE	ASN	GLY	VAL	ASN	VAL	VAL	GLY	GLY	HIS	VAL	VAL	VAL	VAL
ILE	GLU	TRP	THR	THR	GLN	ARG	LYS	ASP	GLU	LEU	SER	ILE	ALA	ALA	ALA	ALA
L452	S495	D463	S469	V473	I474	MET	ASN	ALA	CYS	LYS	VAL	THR	ASN	ASN	ASN	ASN
D643	I651	E658	E663	L664	C665	V668	V682	R683	R684	L700	D701	R705	C728	F729	N732	N733
L871	V872	R873	L886	I890	L897	S902	S919	N930	I934	P938	L939	R940	T943	S953	R956	S967
L1042	Y1043	R1049	L1054	R1057	I1068	ASN	GLU	SER	ALA	GLU	LEU	LEU	ASN	ASN	SER	HIS
L1118	Q1119	G1120	C1121	Y1122	THR	TYR	TYR	GLU	ASP	GLU	LYS	GLU	ALA	SER	ARG	ILE
L1159	P1165	E1173	E1178	H1192	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS
L452	S495	D463	S469	V473	I474	MET	ASN	ALA	CYS	LYS	VAL	THR	ASN	ASN	ASN	ASN
D643	I651	E658	E663	L664	C665	V668	V682	R683	R684	L700	D701	R705	C728	F729	N732	N733
L871	V872	R873	L886	I890	L897	S902	S919	N930	I934	P938	L939	R940	T943	S953	R956	S967
L1042	Y1043	R1049	L1054	R1057	I1068	ASN	GLU	SER	ALA	GLU	LEU	LEU	ASN	ASN	SER	HIS
L1118	Q1119	G1120	C1121	Y1122	THR	TYR	TYR	GLU	ASP	GLU	LYS	GLU	ALA	SER	ARG	ILE
L1159	P1165	E1173	E1178	H1192	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	180474	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.406	Depositor
Minimum map value	-0.159	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.067	Depositor
Map size ( $\text{\AA}$ )	332.0, 332.0, 332.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	0.83, 0.83, 0.83	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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	0.25	0/5962	0.45	0/8050
1	B	0.25	0/5962	0.45	0/8050
All	All	0.25	0/11924	0.45	0/16100

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 [i](#)

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	5825	0	5830	56	0
1	B	5825	0	5830	56	0
All	All	11650	0	11660	109	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 5.

All (109) 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:956:ARG:HH12	1:A:1004:ARG:HE	1.37	0.73
1:B:956:ARG:HH12	1:B:1004:ARG:HE	1.37	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:938:PRO:HB3	1:B:1007:ASN:HD22	1.56	0.71
1:A:938:PRO:HB3	1:A:1007:ASN:OD1	1.90	0.70
1:B:1098:ASN:HB3	1:B:1120:GLY:HA3	1.77	0.67
1:A:790:LEU:HD12	1:A:794:ASP:HB3	1.76	0.67
1:B:919:SER:OG	1:B:1007:ASN:ND2	2.28	0.66
1:B:790:LEU:HD12	1:B:794:ASP:HB3	1.76	0.66
1:A:1098:ASN:HB3	1:A:1120:GLY:HA3	1.77	0.66
1:B:729:PHE:HA	1:B:732:ASN:HB2	1.81	0.62
1:A:729:PHE:HA	1:A:732:ASN:HB2	1.81	0.62
1:A:540:GLN:NE2	1:A:574:THR:O	2.33	0.61
1:B:540:GLN:NE2	1:B:574:THR:O	2.33	0.60
1:B:728:CYS:O	1:B:732:ASN:ND2	2.36	0.59
1:A:728:CYS:O	1:A:732:ASN:ND2	2.36	0.59
1:A:857:LYS:O	1:A:1014:ASN:ND2	2.37	0.58
1:A:996:GLN:NE2	1:A:1000:GLU:O	2.37	0.58
1:A:1049:ARG:NH2	1:A:1106:GLU:O	2.37	0.57
1:A:967:SER:HB3	1:A:973:GLU:H	1.68	0.57
1:B:857:LYS:O	1:B:1014:ASN:ND2	2.37	0.57
1:B:1049:ARG:NH2	1:B:1106:GLU:O	2.37	0.57
1:A:668:VAL:HG23	1:A:700:LEU:HD12	1.87	0.57
1:B:967:SER:HB3	1:B:973:GLU:H	1.68	0.57
1:B:996:GLN:NE2	1:B:1000:GLU:O	2.37	0.56
1:B:668:VAL:HG23	1:B:700:LEU:HD12	1.87	0.56
1:A:1054:LEU:HD23	1:A:1057:ARG:HD2	1.88	0.55
1:B:1054:LEU:HD23	1:B:1057:ARG:HD2	1.88	0.55
1:A:736:ARG:NH2	1:B:747:ASP:OD1	2.38	0.55
1:A:953:SER:OG	1:A:1004:ARG:NH2	2.40	0.54
1:B:953:SER:OG	1:B:1004:ARG:NH2	2.40	0.54
1:A:930:ASN:ND2	1:A:979:LYS:O	2.40	0.53
1:A:845:ILE:HD11	1:A:1031:ILE:HB	1.91	0.53
1:A:473:VAL:HA	1:A:502:ASN:HD21	1.74	0.53
1:B:443:LEU:HD11	1:B:469:SER:HB2	1.90	0.53
1:B:930:ASN:ND2	1:B:979:LYS:O	2.40	0.52
1:A:1159:LEU:HA	1:A:1165:PRO:HB3	1.91	0.52
1:B:845:ILE:HD11	1:B:1031:ILE:HB	1.91	0.52
1:B:545:CYS:HA	1:B:549:LEU:HB2	1.92	0.52
1:A:801:ILE:HD11	1:B:618:ALA:HB1	1.90	0.52
1:B:473:VAL:HA	1:B:502:ASN:HD21	1.74	0.52
1:B:1159:LEU:HA	1:B:1165:PRO:HB3	1.91	0.51
1:A:443:LEU:HD11	1:A:469:SER:HB2	1.90	0.51
1:A:545:CYS:HA	1:A:549:LEU:HB2	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:824:TYR:HA	1:B:834:PRO:HA	1.93	0.51
1:B:509:VAL:HG13	1:B:514:LEU:HB2	1.93	0.50
1:B:943:THR:HG23	1:B:974:ILE:HD11	1.94	0.50
1:A:509:VAL:HG13	1:A:514:LEU:HB2	1.93	0.50
1:A:943:THR:HG23	1:A:974:ILE:HD11	1.94	0.50
1:A:824:TYR:HA	1:A:834:PRO:HA	1.93	0.49
1:A:747:ASP:OD1	1:B:736:ARG:NH2	2.45	0.49
1:A:864:GLN:HB3	1:A:902:SER:HA	1.95	0.49
1:B:1049:ARG:HH22	1:B:1105:PRO:HB2	1.78	0.48
1:A:1049:ARG:HH22	1:A:1105:PRO:HB2	1.78	0.48
1:B:864:GLN:HB3	1:B:902:SER:HA	1.95	0.47
1:B:642:ASP:OD1	1:B:642:ASP:N	2.45	0.46
1:B:422:ARG:NH1	1:B:463:ASP:OD1	2.42	0.46
1:A:953:SER:HB2	1:A:956:ARG:HB2	1.97	0.46
1:A:438:GLU:HB2	1:A:538:VAL:HG12	1.98	0.46
1:B:979:LYS:HB2	1:B:982:SER:HB3	1.98	0.46
1:A:979:LYS:HB2	1:A:982:SER:HB3	1.97	0.46
1:A:775:LEU:N	1:A:847:GLU:OE1	2.44	0.45
1:B:953:SER:HB2	1:B:956:ARG:HB2	1.97	0.45
1:A:642:ASP:OD1	1:A:642:ASP:N	2.46	0.45
1:B:794:ASP:OD1	1:B:794:ASP:N	2.48	0.45
1:A:871:LEU:HD23	1:A:897:LEU:HD12	1.99	0.44
1:B:997:ASP:OD1	1:B:998:SER:N	2.50	0.44
1:B:787:SER:OG	1:B:794:ASP:OD2	2.29	0.44
1:A:934:ILE:HD11	1:A:1003:LEU:HD13	1.99	0.44
1:A:787:SER:OG	1:A:794:ASP:OD2	2.29	0.44
1:B:438:GLU:HB2	1:B:538:VAL:HG12	1.98	0.44
1:B:651:ILE:HG21	1:B:663:GLU:HG3	1.99	0.44
1:B:871:LEU:HD23	1:B:897:LEU:HD12	1.99	0.44
1:B:838:VAL:HG12	1:B:1039:ARG:HD2	1.99	0.44
1:A:651:ILE:HG21	1:A:663:GLU:HG3	1.99	0.44
1:A:997:ASP:OD1	1:A:998:SER:N	2.50	0.43
1:B:848:TYR:HB3	1:B:940:ARG:NH1	2.33	0.43
1:A:503:LYS:HE2	1:A:503:LYS:HB2	1.89	0.43
1:A:848:TYR:HB3	1:A:940:ARG:NH1	2.33	0.43
1:B:520:TYR:HB3	1:B:526:ARG:HG2	2.00	0.43
1:A:520:TYR:HB3	1:A:526:ARG:HG2	2.00	0.43
1:A:838:VAL:HG12	1:A:1039:ARG:HD2	1.99	0.43
1:A:886:LEU:O	1:A:890:ILE:HG12	2.19	0.43
1:A:1043:TYR:OH	1:A:1173:GLU:OE1	2.25	0.43
1:B:851:ASN:HB2	1:B:858:TYR:HB3	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:934:ILE:HD11	1:B:1003:LEU:HD13	1.99	0.43
1:B:563:LEU:HB3	1:B:568:PHE:HB3	2.00	0.43
1:B:886:LEU:O	1:B:890:ILE:HG12	2.19	0.43
1:A:665:CYS:HA	1:A:1022:ILE:H	1.84	0.42
1:A:422:ARG:NH1	1:A:463:ASP:OD1	2.42	0.42
1:B:1043:TYR:OH	1:B:1173:GLU:OE1	2.25	0.42
1:A:563:LEU:HB3	1:A:568:PHE:HB3	2.00	0.42
1:B:665:CYS:HA	1:B:1022:ILE:H	1.84	0.42
1:A:851:ASN:HB2	1:A:858:TYR:HB3	2.01	0.42
1:B:968:SER:OG	1:B:971:THR:HB	2.20	0.42
1:B:701:ASP:OD2	1:B:705:ARG:NH1	2.54	0.41
1:A:701:ASP:OD2	1:A:705:ARG:NH1	2.54	0.41
1:B:682:VAL:O	1:B:684:ARG:N	2.52	0.41
1:B:452:LEU:O	1:B:455:SER:OG	2.34	0.41
1:A:968:SER:OG	1:A:971:THR:HB	2.20	0.41
1:A:938:PRO:CB	1:A:1007:ASN:OD1	2.64	0.41
1:B:643:ASP:OD1	1:B:643:ASP:N	2.54	0.41
1:A:982:SER:O	1:A:986:ILE:HG12	2.21	0.41
1:B:982:SER:O	1:B:986:ILE:HG12	2.21	0.41
1:A:682:VAL:O	1:A:684:ARG:N	2.52	0.40
1:A:956:ARG:NH1	1:A:1004:ARG:HE	2.13	0.40
1:A:951:LYS:HE3	1:A:951:LYS:HB2	1.89	0.40
1:A:540:GLN:HG2	1:A:571:ARG:HH22	1.87	0.40
1:B:766:ALA:HB2	1:B:779:PHE:HB2	2.03	0.40
1:B:873:ARG:NH2	1:B:1178:GLU:OE1	2.45	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	709/1197 (59%)	677 (96%)	32 (4%)	0	100   100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	709/1197 (59%)	676 (95%)	33 (5%)	0	100	100
All	All	1418/2394 (59%)	1353 (95%)	65 (5%)	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	628/1048 (60%)	626 (100%)	2 (0%)	92	98
1	B	628/1048 (60%)	626 (100%)	2 (0%)	92	98
All	All	1256/2096 (60%)	1252 (100%)	4 (0%)	92	98

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	549	LEU
1	A	1042	LEU
1	B	549	LEU
1	B	1042	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	1007	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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

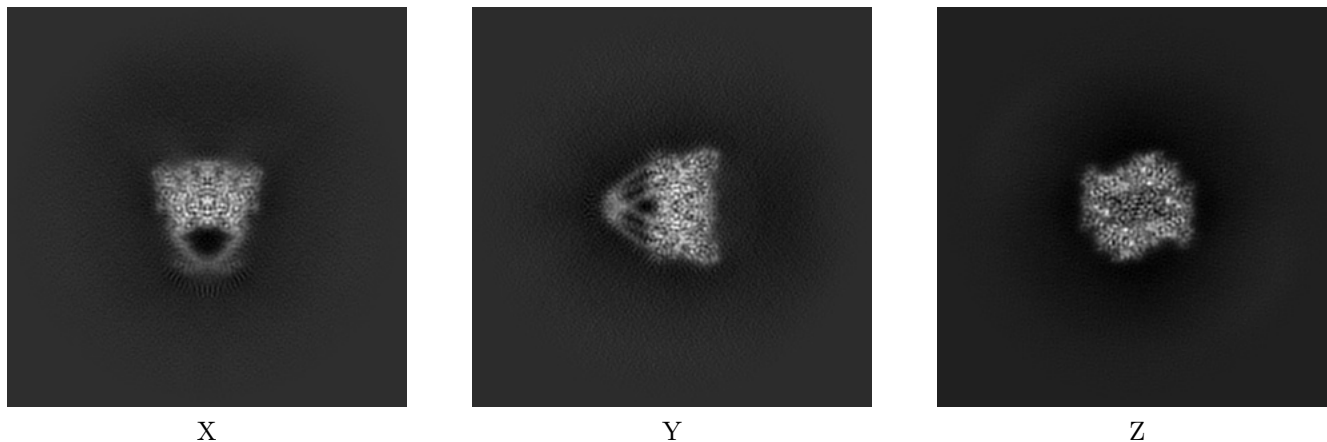
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-36067. These allow visual inspection of the internal detail of the map and identification of artifacts.

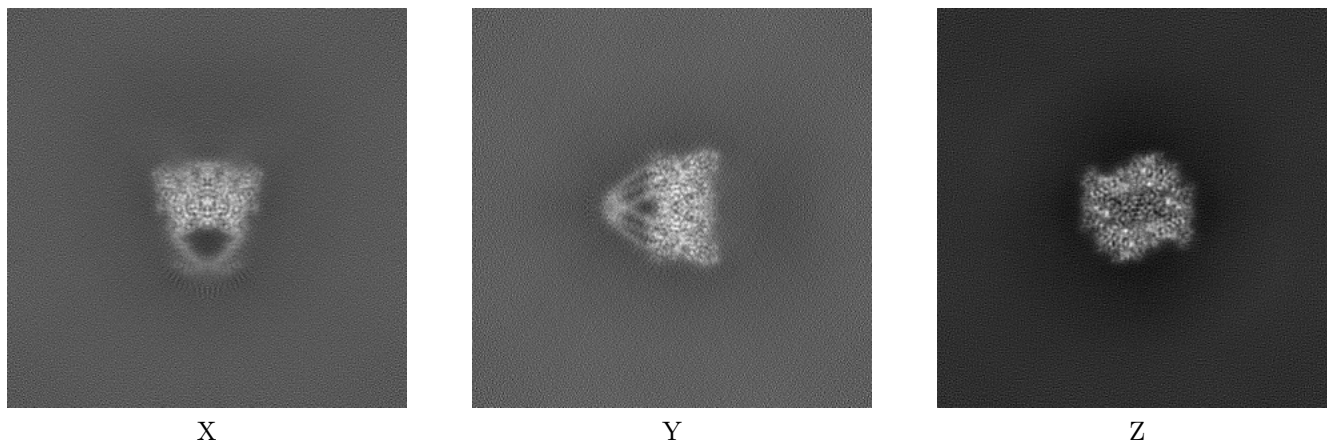
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

#### 6.1.1 Primary map



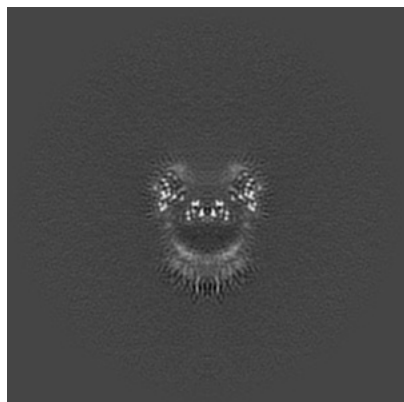
#### 6.1.2 Raw map



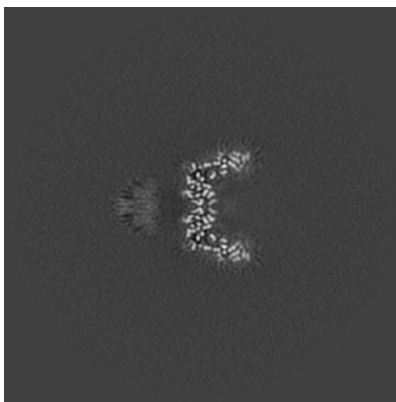
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

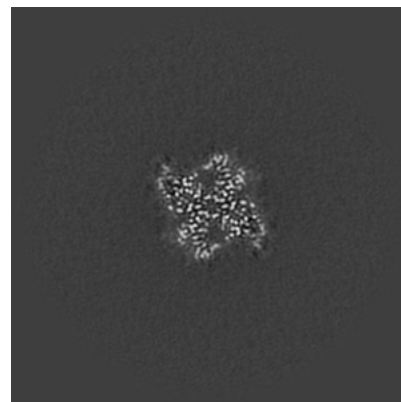
### 6.2.1 Primary map



X Index: 200

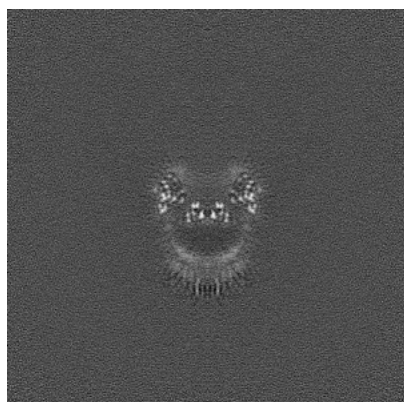


Y Index: 200

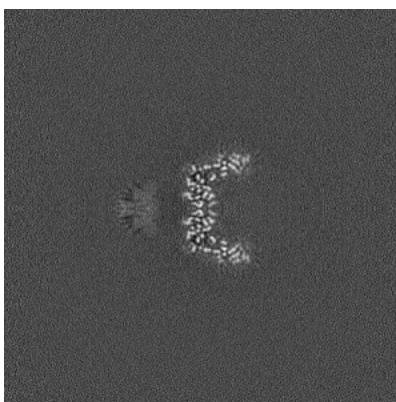


Z Index: 200

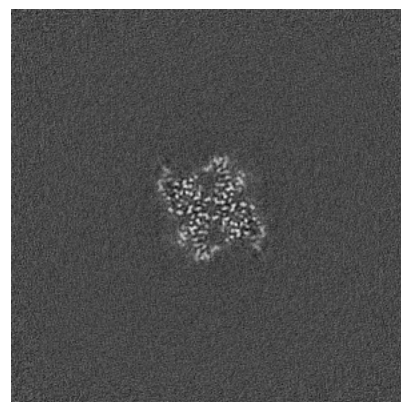
### 6.2.2 Raw map



X Index: 200



Y Index: 200

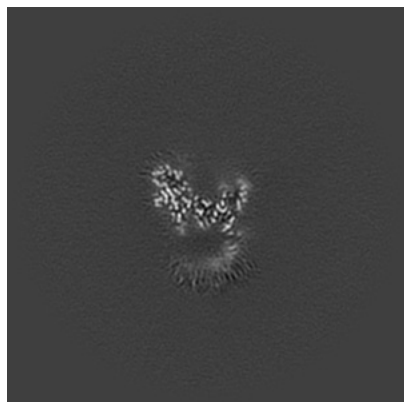


Z Index: 200

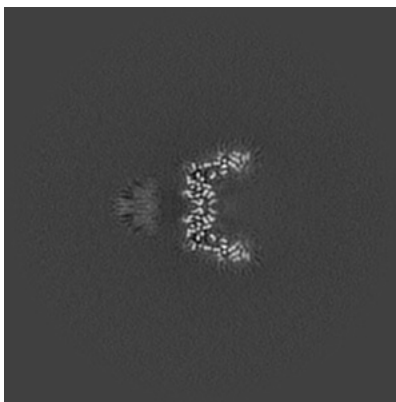
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

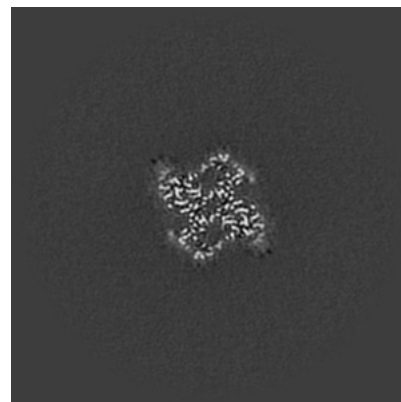
### 6.3.1 Primary map



X Index: 184

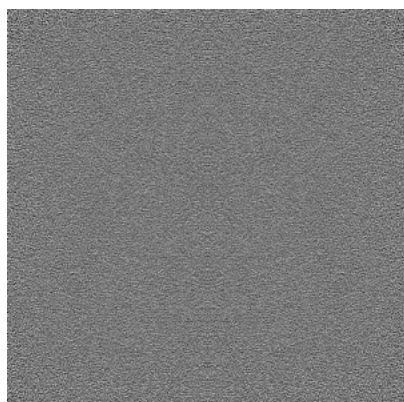


Y Index: 200

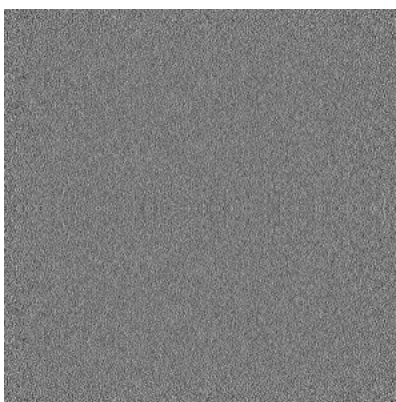


Z Index: 202

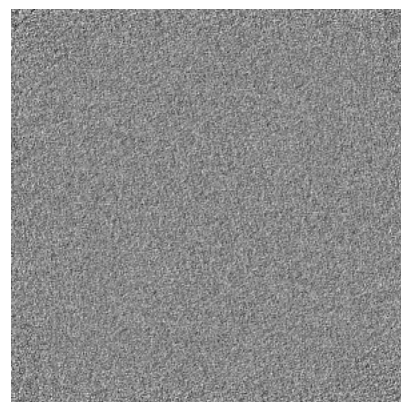
### 6.3.2 Raw map



X Index: 0



Y Index: 0

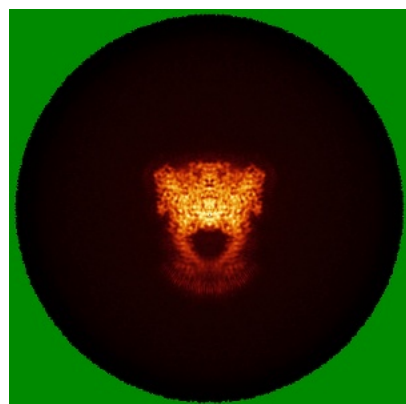


Z Index: 0

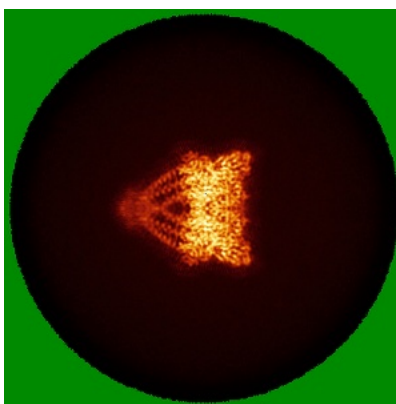
The images above show the largest variance slices of the map in three orthogonal directions.

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

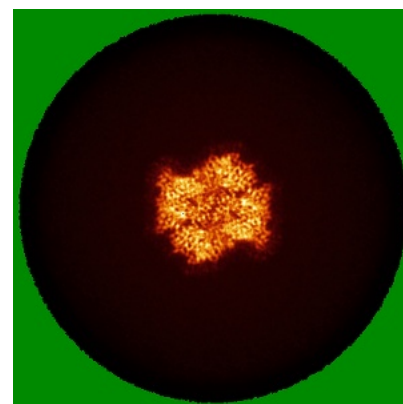
### 6.4.1 Primary map



X

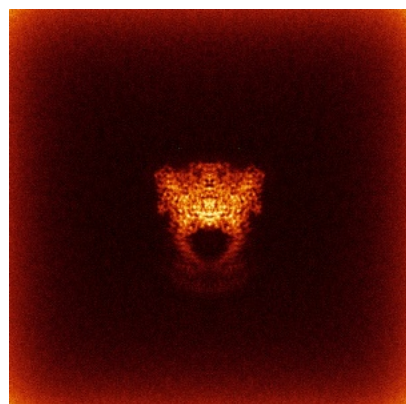


Y

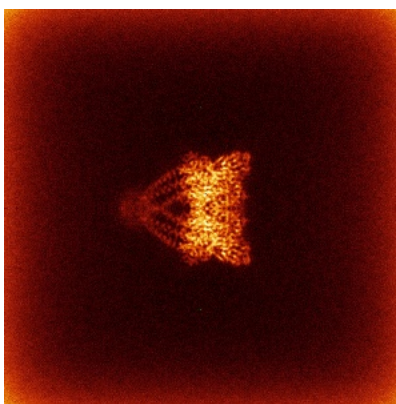


Z

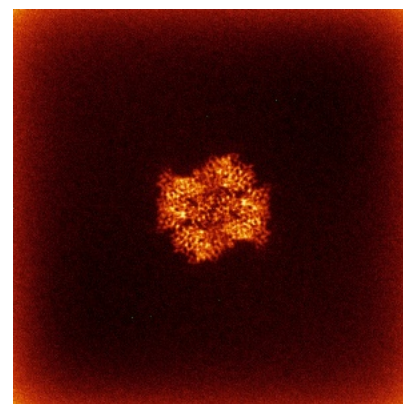
### 6.4.2 Raw map



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](#)

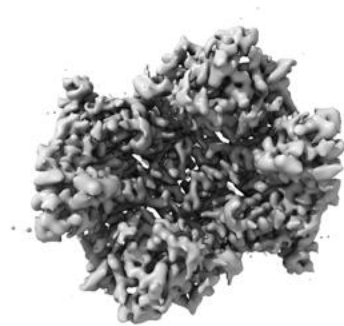
### 6.5.1 Primary map



X



Y



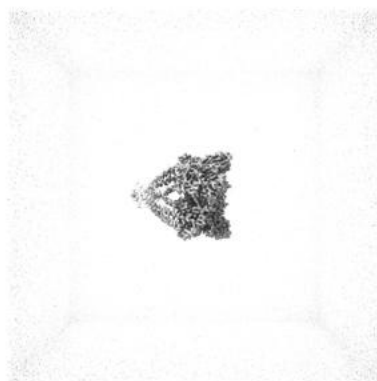
Z

The images above show the 3D surface view of the map at the recommended contour level 0.067. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

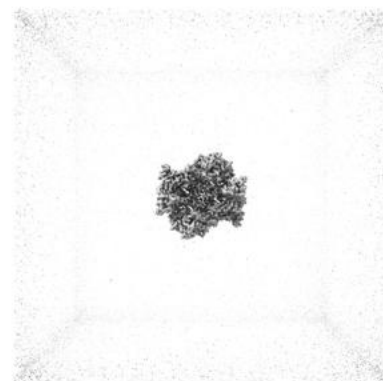
### 6.5.2 Raw map



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.

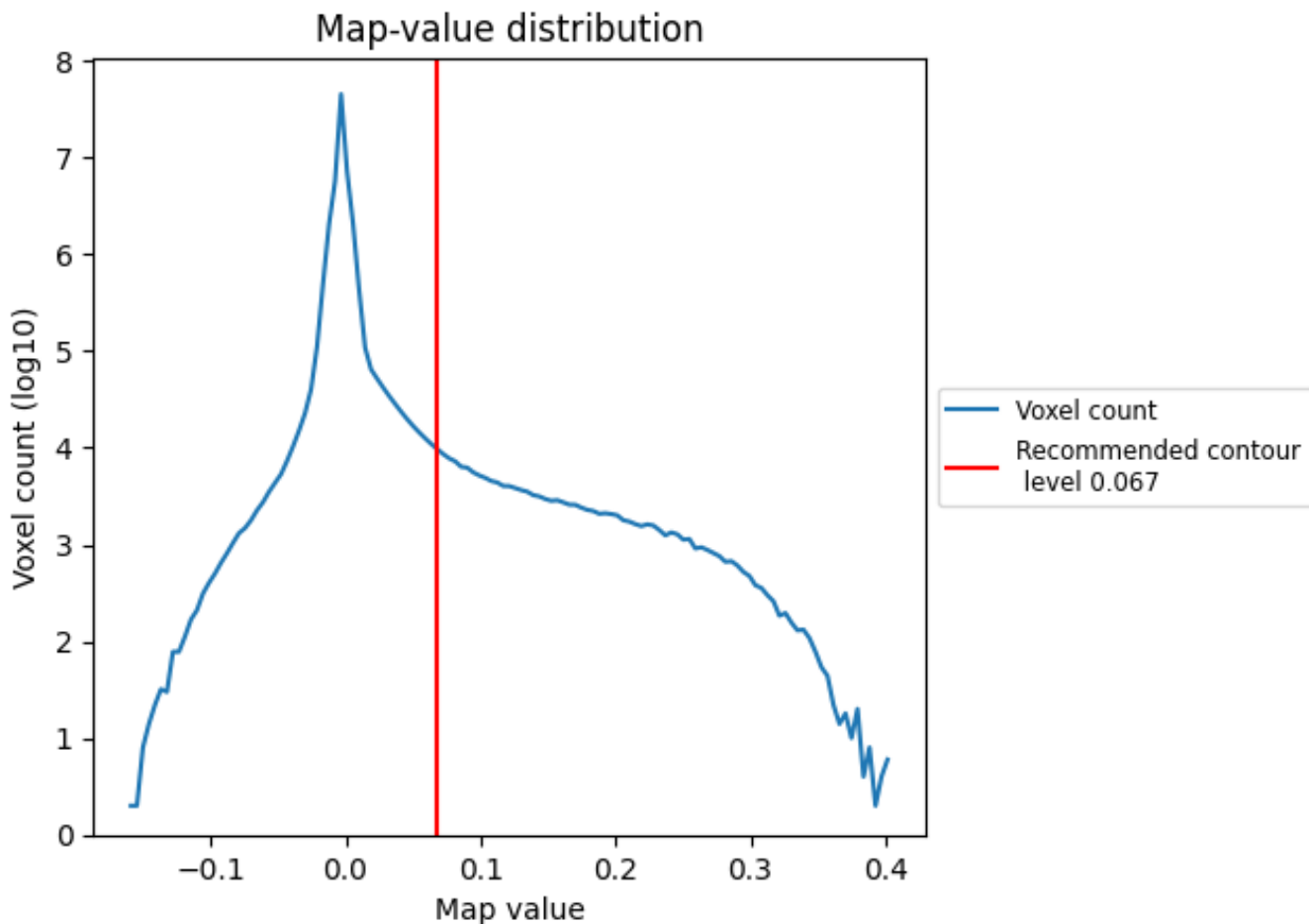
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

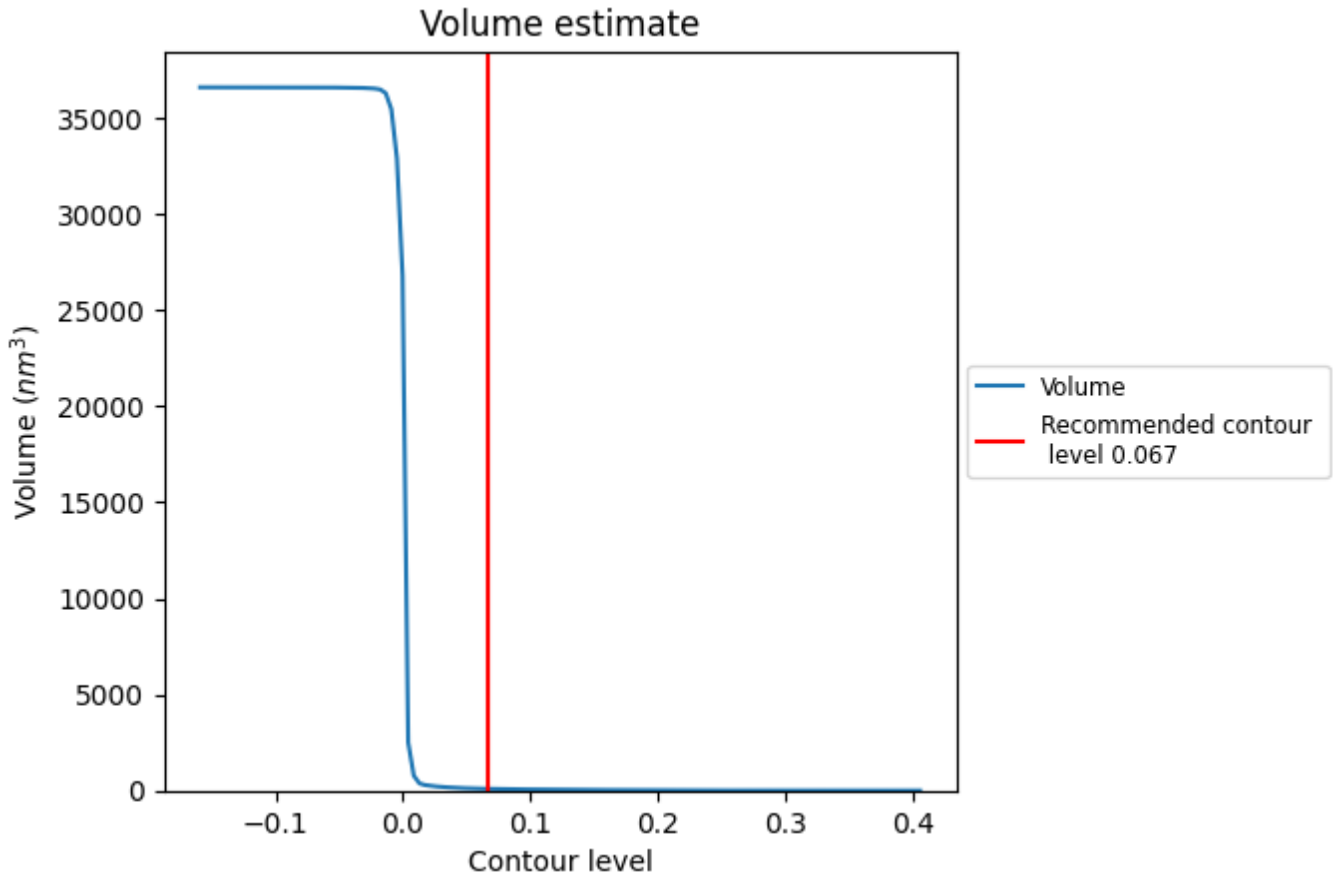
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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

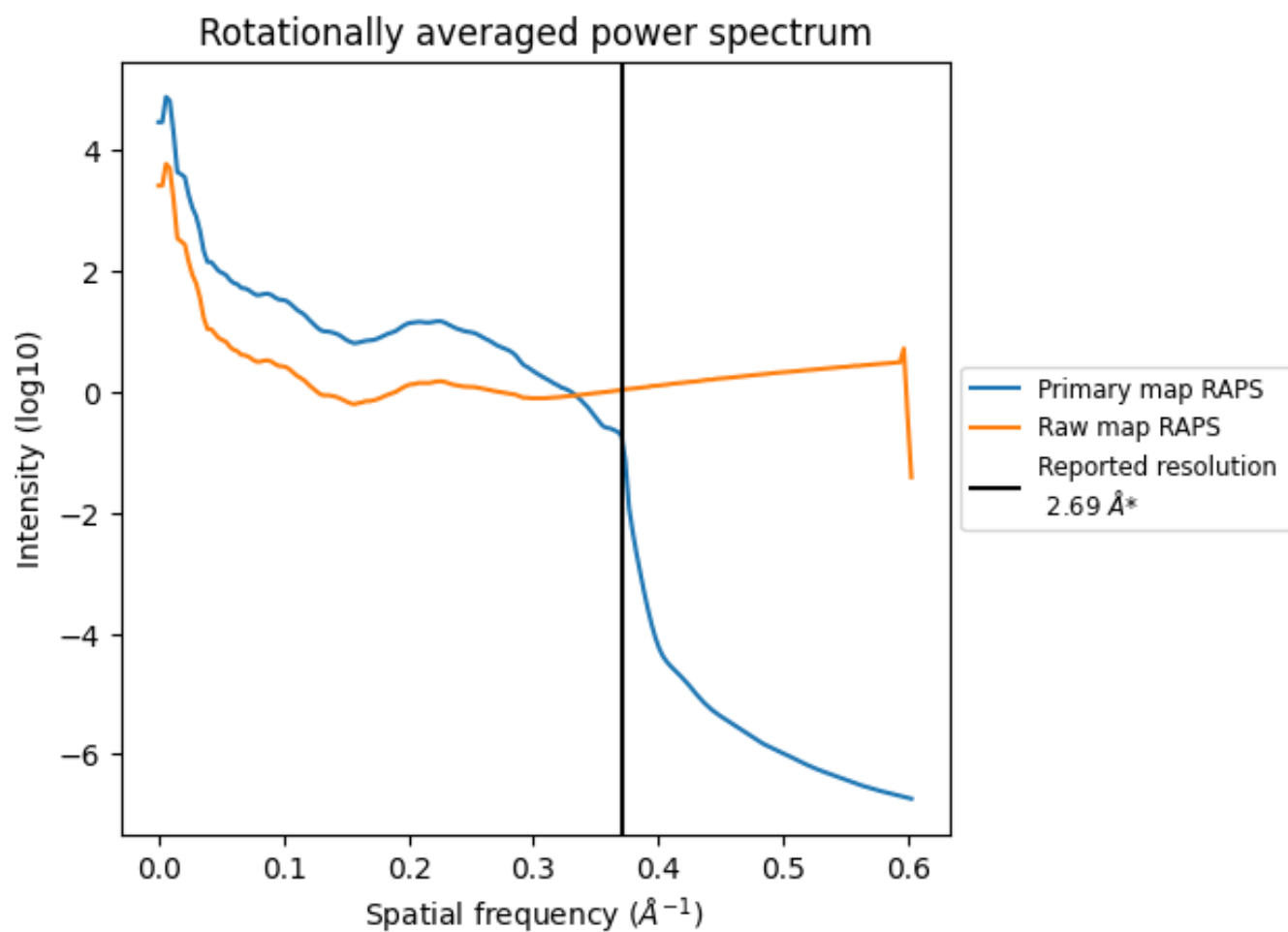
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 90 nm<sup>3</sup>; this corresponds to an approximate mass of 81 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

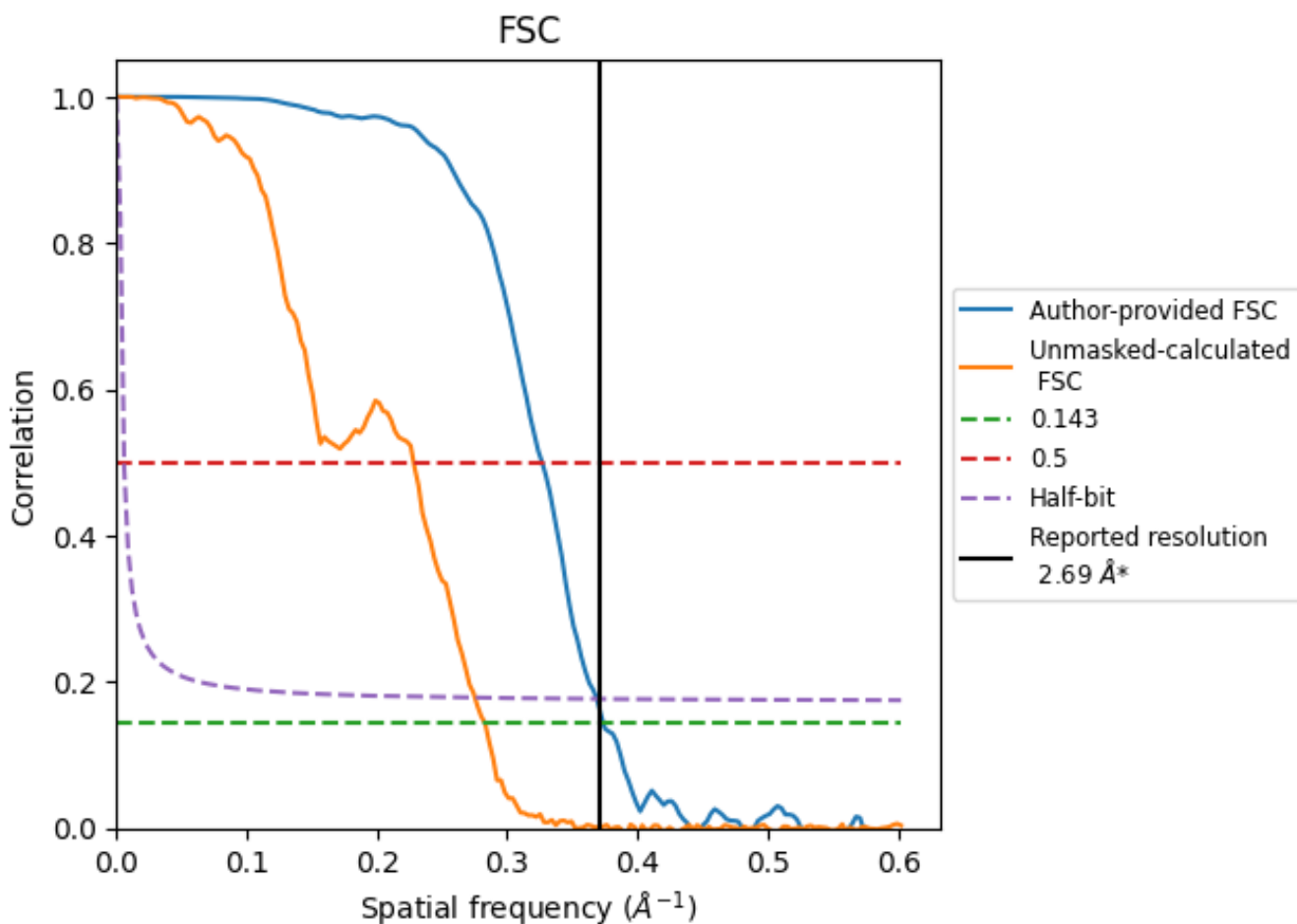


\*Reported resolution corresponds to spatial frequency of 0.372 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

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 [i](#)



\*Reported resolution corresponds to spatial frequency of 0.372 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

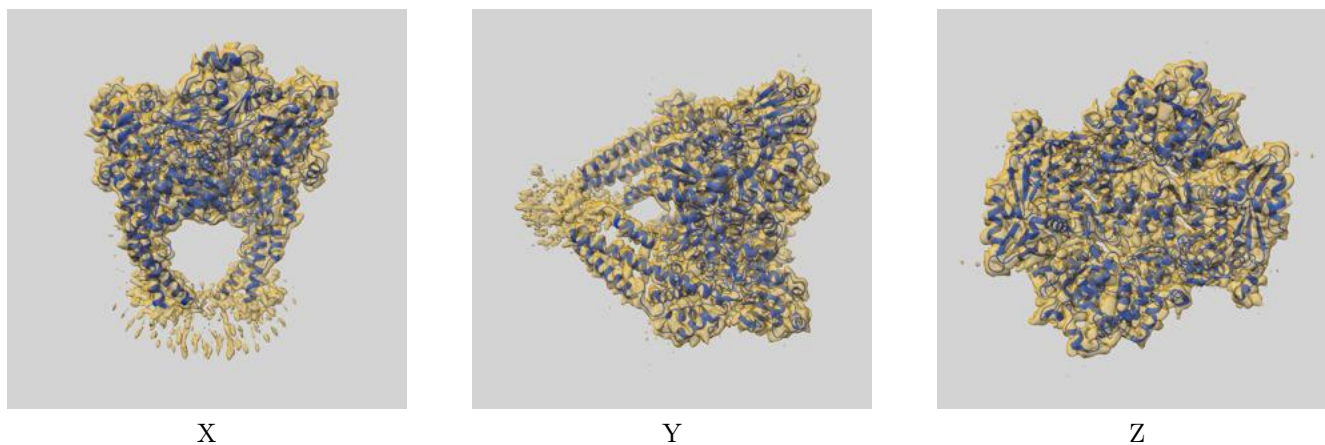
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.69	-	-
Author-provided FSC curve	2.68	3.06	2.71
Unmasked-calculated*	3.53	4.38	3.63

\*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 2.69 by more than 10 %

## 9 Map-model fit [i](#)

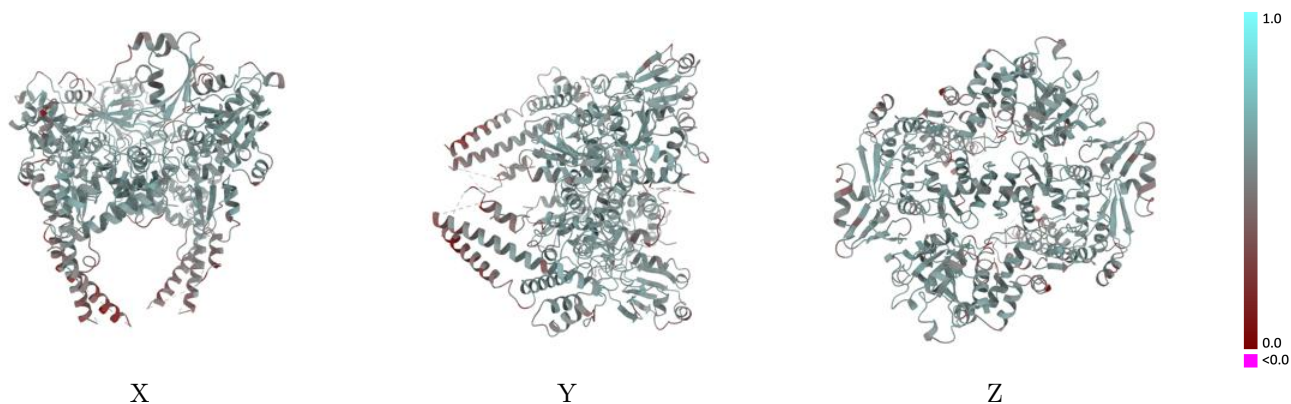
This section contains information regarding the fit between EMDB map EMD-36067 and PDB model 8J8C. Per-residue inclusion information can be found in section 3 on page 4.

### 9.1 Map-model overlay [i](#)



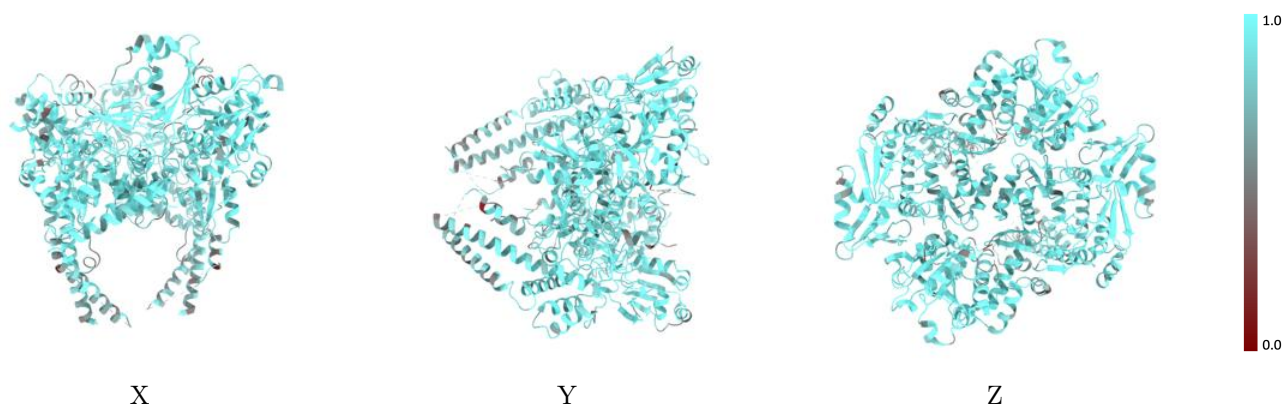
The images above show the 3D surface view of the map at the recommended contour level 0.067 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



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

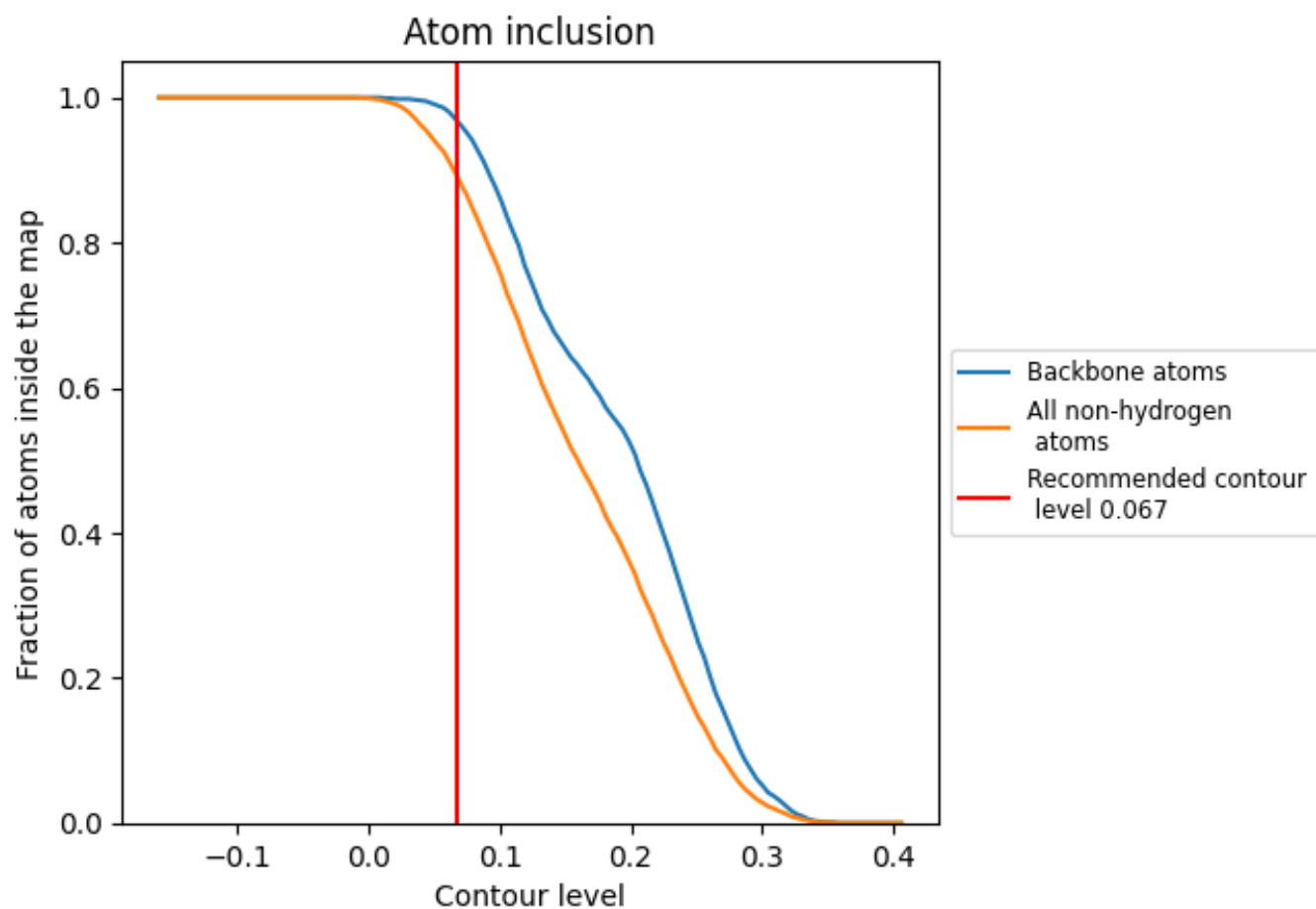
## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.067).






## 9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 89% 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 (0.067) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8940	 0.5340
A	 0.8930	 0.5340
B	 0.8950	 0.5340

