Full wwPDB EM Validation Report ⓘ

Jun 30, 2025 – 12:25 PM JST

PDB ID	:	9UMH / pdb_00009umh
EMDB ID	:	EMD-64274
Title	:	V-type (V2-type) amyloid fibril (40) of Tottori (D7N) mutant
Authors	:	Burton-Smith, R.N.; Murata, K.
Deposited on	:	2025-04-22
Resolution	:	3.10 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.dev118
MolProbity	:	FAILED
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

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 3.10 Å.

There are no overall percentile quality scores available for this entry.

MolProbity failed to run properly - the sequence quality summary graphics cannot be shown.

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 8421 atoms, of which 4263 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 Amyloid-beta protein 40.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	AL	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AM	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AN	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AO	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AP	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AQ	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AR	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AS	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AT	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AU	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AV	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AW	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AX	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AY	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	AZ	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	Aa	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	Ab	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		

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Mol	Chain	Residues	Atoms						AltConf	Trace
1	Ac	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	Ad	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	Ae	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		
1	Af	27	Total	C	H	N	O	S	0	0
			401	128	203	35	34	1		

There are 21 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AL	7	ASN	ASP	variant	UNP P05067
AM	7	ASN	ASP	variant	UNP P05067
AN	7	ASN	ASP	variant	UNP P05067
AO	7	ASN	ASP	variant	UNP P05067
AP	7	ASN	ASP	variant	UNP P05067
AQ	7	ASN	ASP	variant	UNP P05067
AR	7	ASN	ASP	variant	UNP P05067
AS	7	ASN	ASP	variant	UNP P05067
AT	7	ASN	ASP	variant	UNP P05067
AU	7	ASN	ASP	variant	UNP P05067
AV	7	ASN	ASP	variant	UNP P05067
AW	7	ASN	ASP	variant	UNP P05067
AX	7	ASN	ASP	variant	UNP P05067
AY	7	ASN	ASP	variant	UNP P05067
AZ	7	ASN	ASP	variant	UNP P05067
Aa	7	ASN	ASP	variant	UNP P05067
Ab	7	ASN	ASP	variant	UNP P05067
Ac	7	ASN	ASP	variant	UNP P05067
Ad	7	ASN	ASP	variant	UNP P05067
Ae	7	ASN	ASP	variant	UNP P05067
Af	7	ASN	ASP	variant	UNP P05067

MolProbity failed to run properly - this section is therefore empty.

3 Experimental information (i)

Property	Value	Source
EM reconstruction method	HELICAL	Depositor
Imposed symmetry	HELICAL, twist=179.149°, rise=2.415 Å, axial sym=C1	Depositor
Number of segments used	218123	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1400	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.106	Depositor
Minimum map value	-0.047	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.024	Depositor
Map size (Å)	426.24, 426.24, 426.24	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.11, 1.11, 1.11	Depositor

4 Model quality

4.1 Standard geometry

MolProbity failed to run properly - this section is therefore empty.

4.2 Too-close contacts

MolProbity failed to run properly - this section is therefore empty.

4.3 Torsion angles

4.3.1 Protein backbone

MolProbity failed to run properly - this section is therefore empty.

4.3.2 Protein sidechains

MolProbity failed to run properly - this section is therefore empty.

4.3.3 RNA

MolProbity failed to run properly - this section is therefore empty.

4.4 Non-standard residues in protein, DNA, RNA chains

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

4.5 Carbohydrates

There are no oligosaccharides in this entry.

4.6 Ligand geometry

There are no ligands in this entry.

4.7 Other polymers

There are no such residues in this entry.

4.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

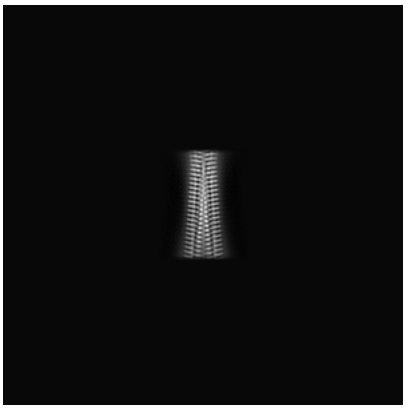
5 Map visualisation

This section contains visualisations of the EMDB entry EMD-64274. These allow visual inspection of the internal detail of the map and identification of artifacts.

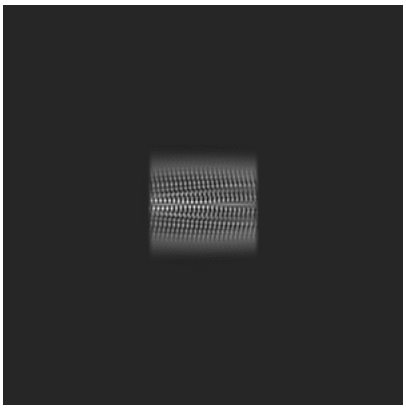
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

5.1 Orthogonal projections

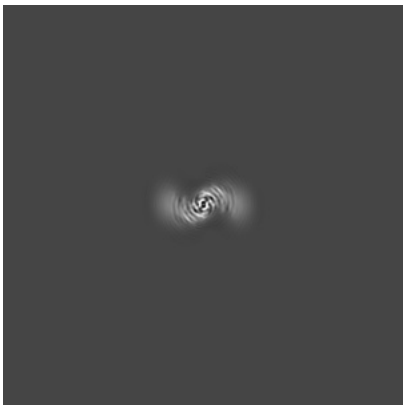
5.1.1 Primary map



X

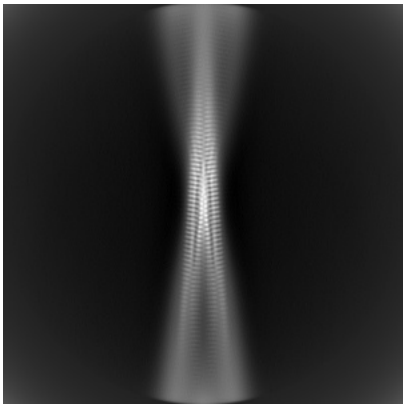


Y

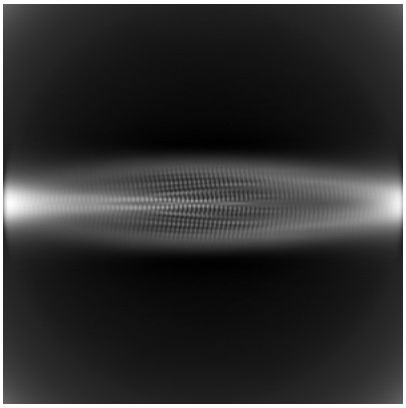


Z

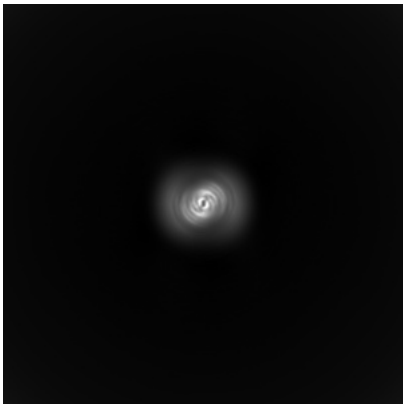
5.1.2 Raw map



X



Y

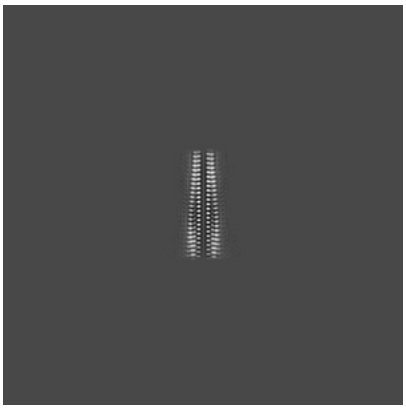


Z

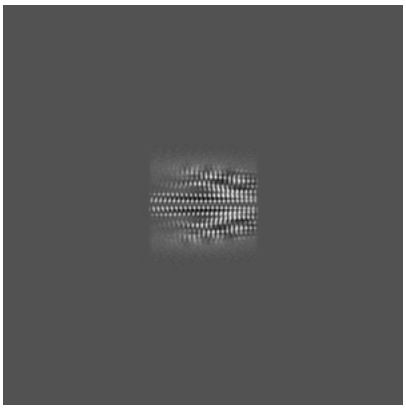
The images above show the map projected in three orthogonal directions.

5.2 Central slices (i)

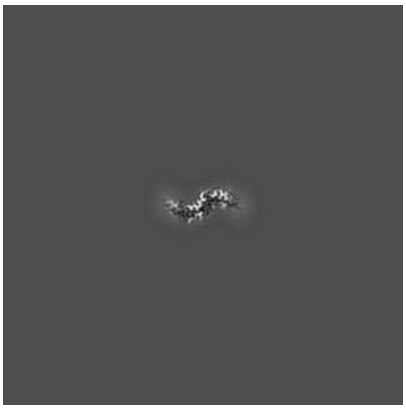
5.2.1 Primary map



X Index: 192

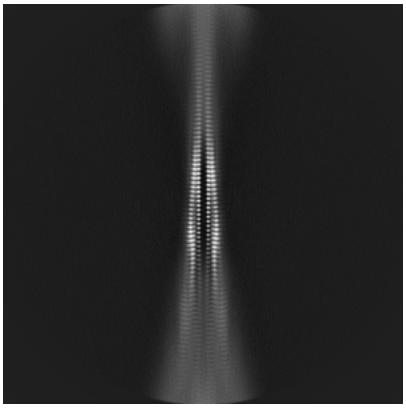


Y Index: 192

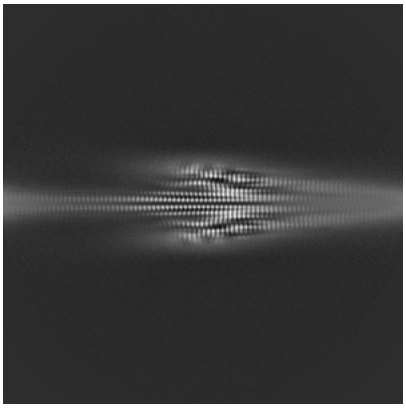


Z Index: 192

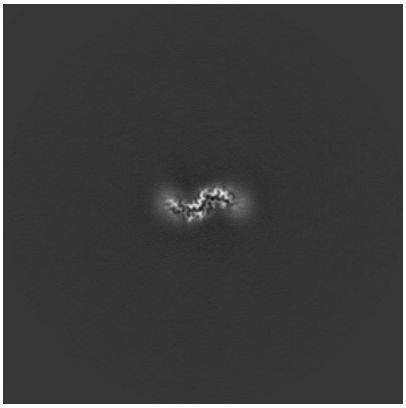
5.2.2 Raw map



X Index: 192



Y Index: 192

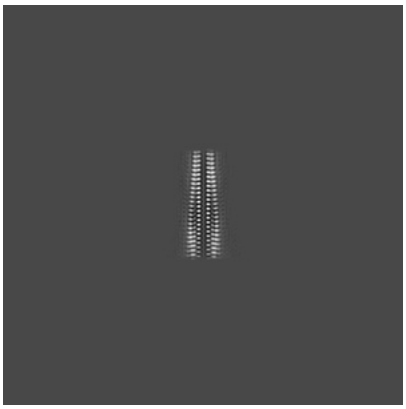


Z Index: 192

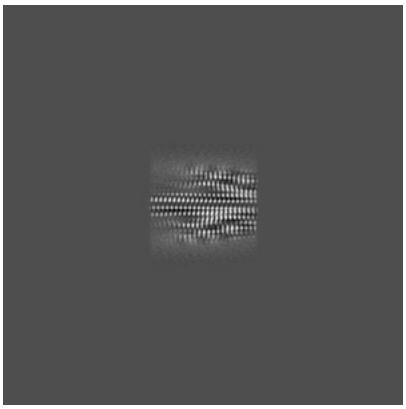
The images above show central slices of the map in three orthogonal directions.

5.3 Largest variance slices (i)

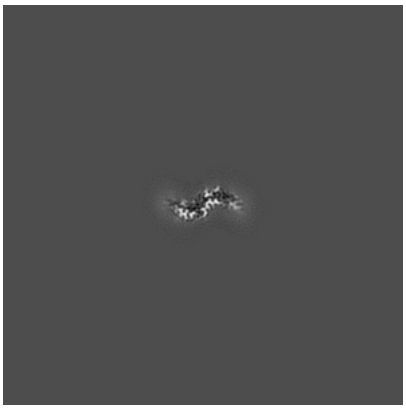
5.3.1 Primary map



X Index: 192

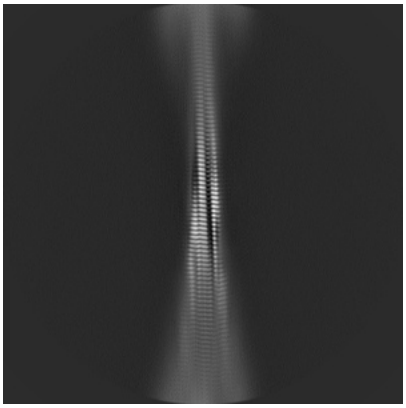


Y Index: 191

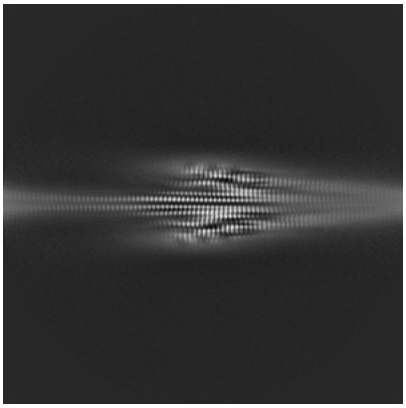


Z Index: 194

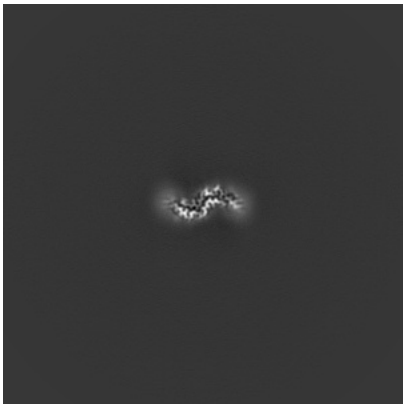
5.3.2 Raw map



X Index: 195



Y Index: 191

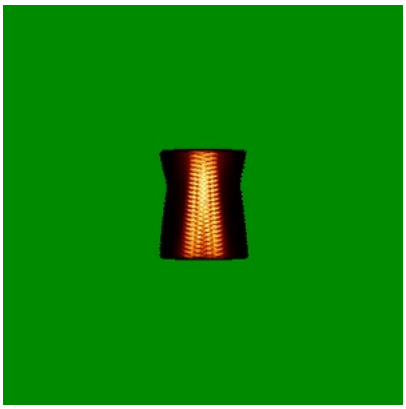


Z Index: 194

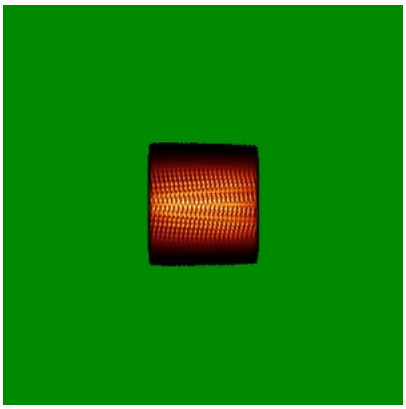
The images above show the largest variance slices of the map in three orthogonal directions.

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

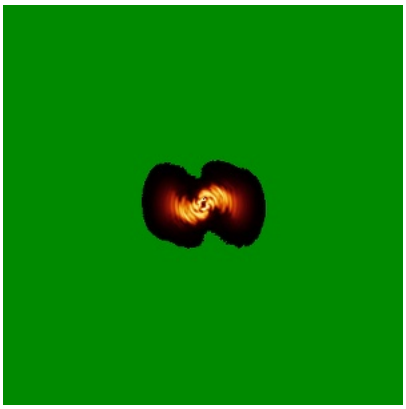
5.4.1 Primary map



X

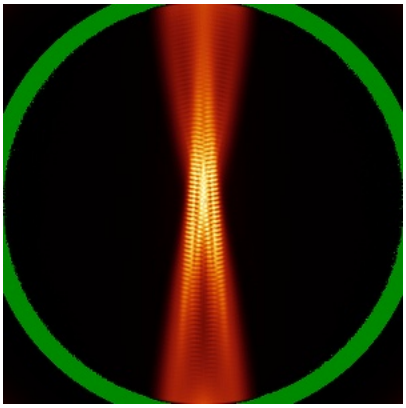


Y

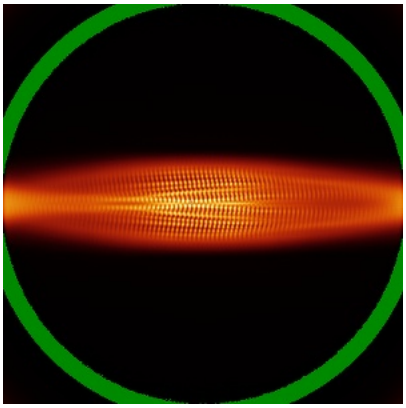


Z

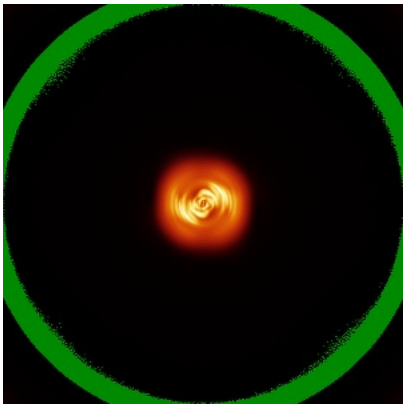
5.4.2 Raw map



X



Y

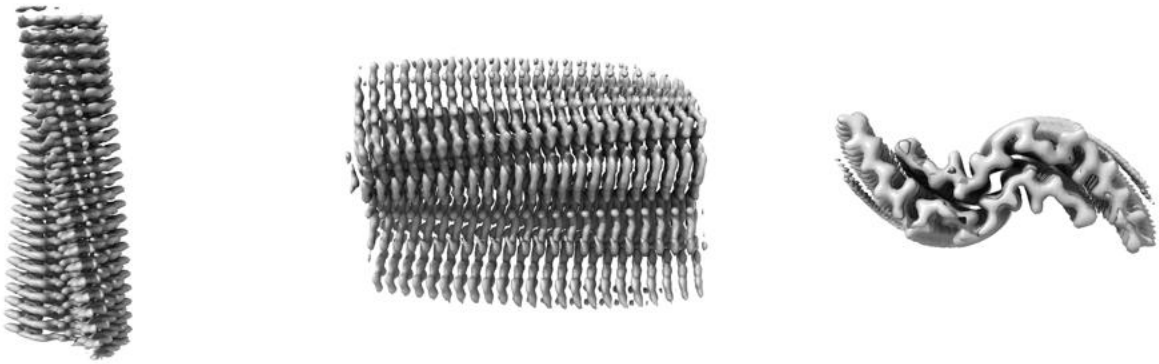


Z

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.

5.5 Orthogonal surface views (i)

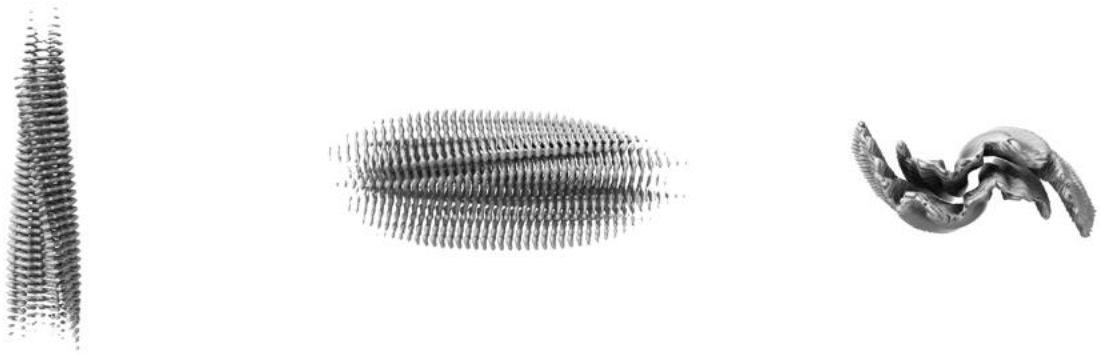
5.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.024. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

5.5.2 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.

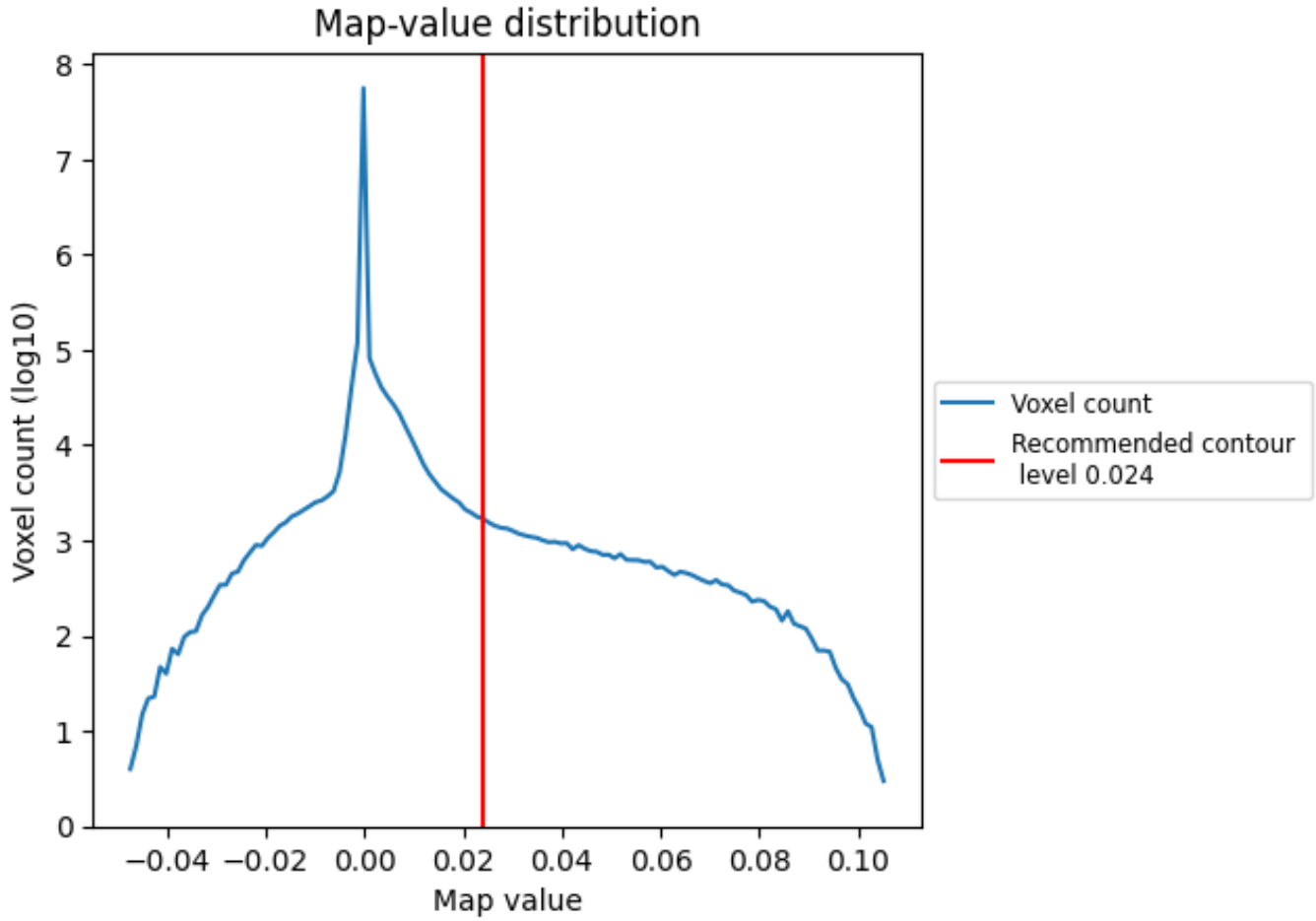
5.6 Mask visualisation (i)

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

6 Map analysis

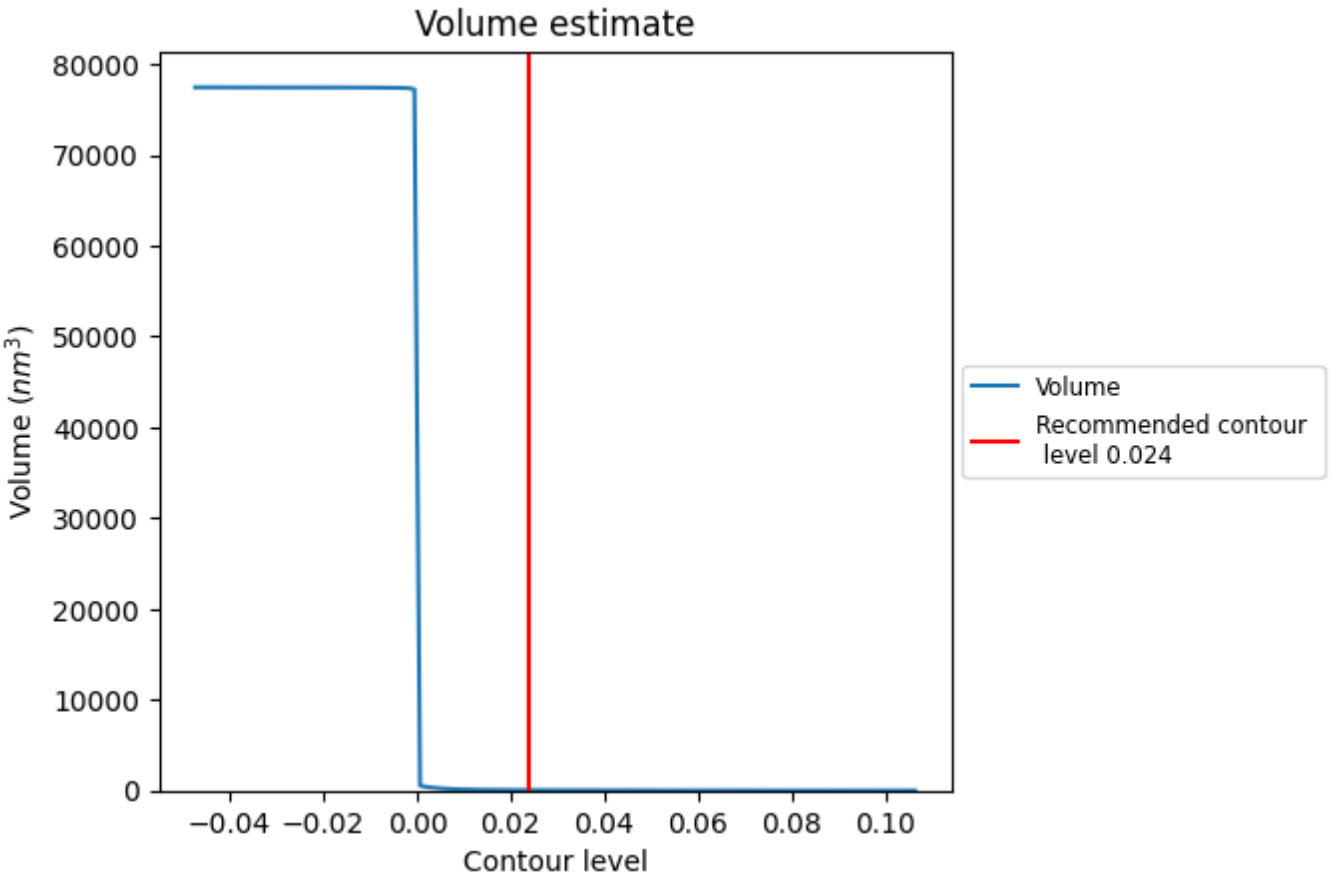
This section contains the results of statistical analysis of the map.

6.1 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.

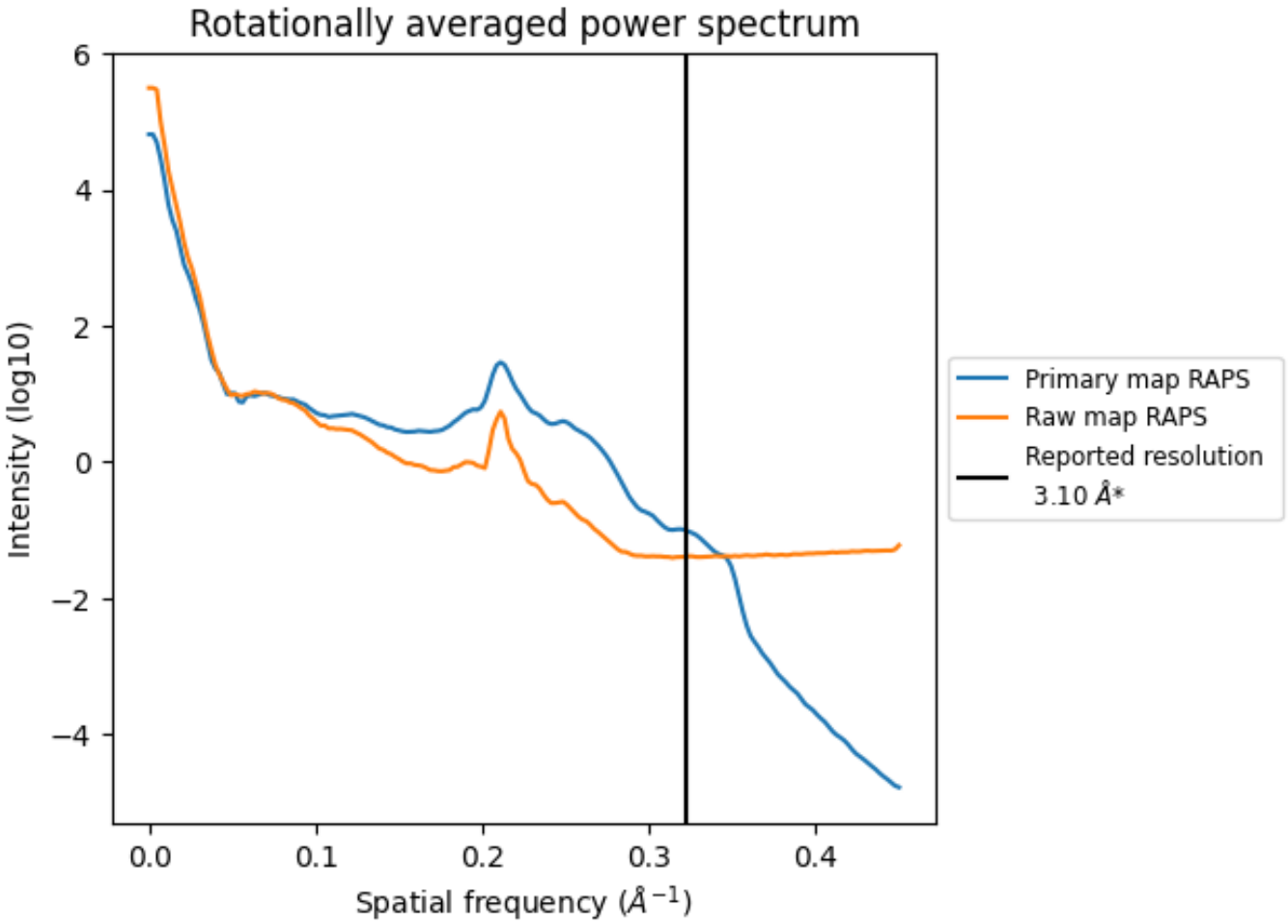
6.2 Volume estimate



The volume at the recommended contour level is 50 nm^3; this corresponds to an approximate mass of 45 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.

6.3 Rotationally averaged power spectrum (i)

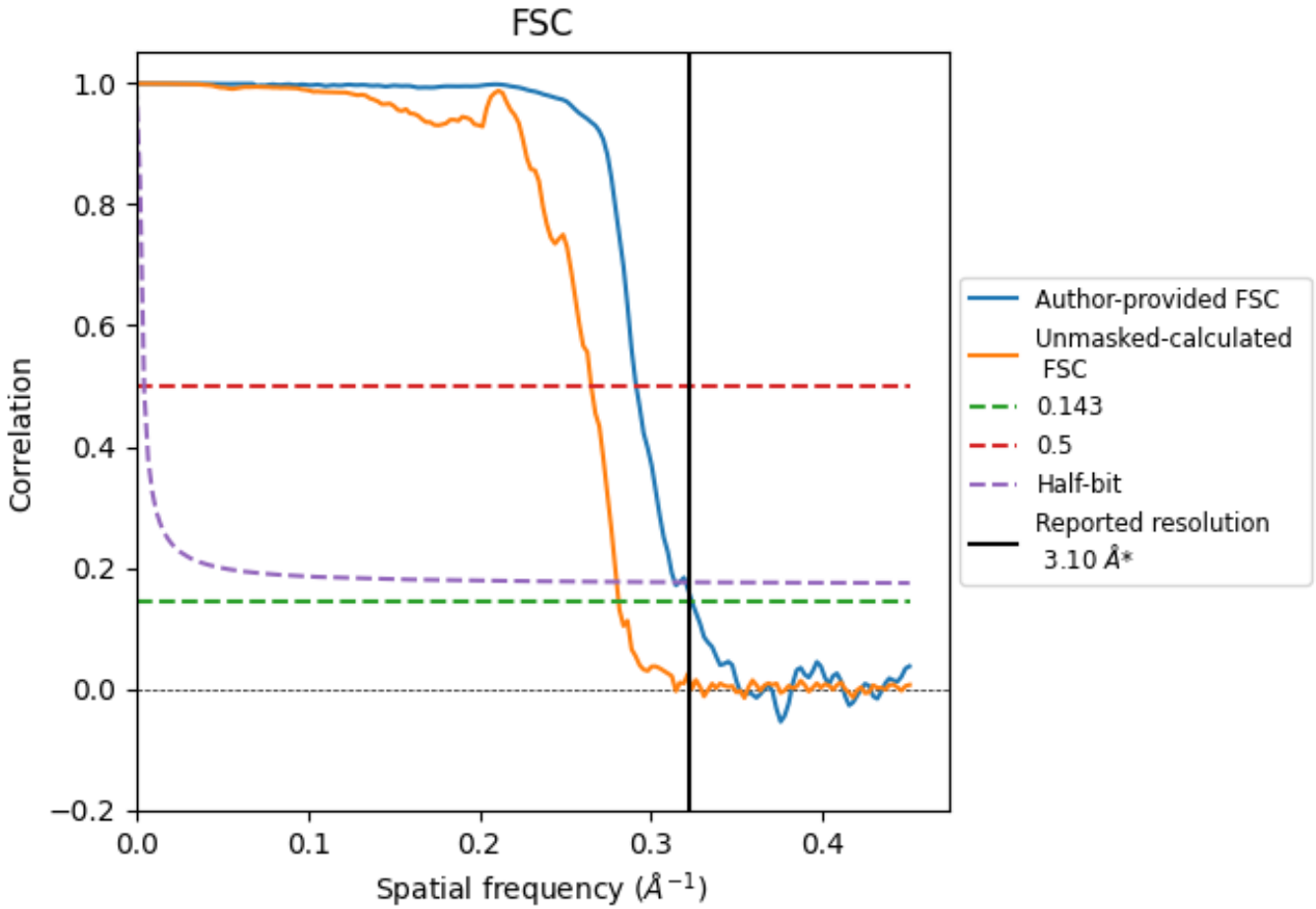


*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

7 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.

7.1 FSC



*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

7.2 Resolution estimates (i)

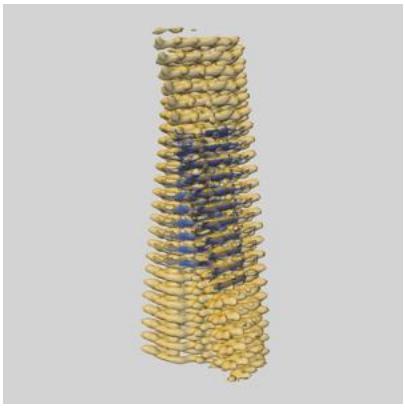
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.09	3.43	3.19
Unmasked-calculated*	3.56	3.77	3.57

*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 3.56 differs from the reported value 3.1 by more than 10 %

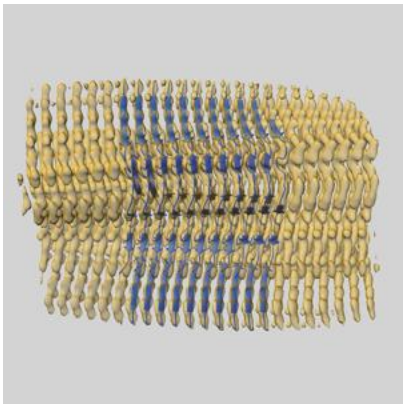
8 Map-model fit

This section contains information regarding the fit between EMDB map EMD-64274 and PDB model 9UMH. Per-residue inclusion information can be found in section ?? on page ??.

8.1 Map-model overlay



X

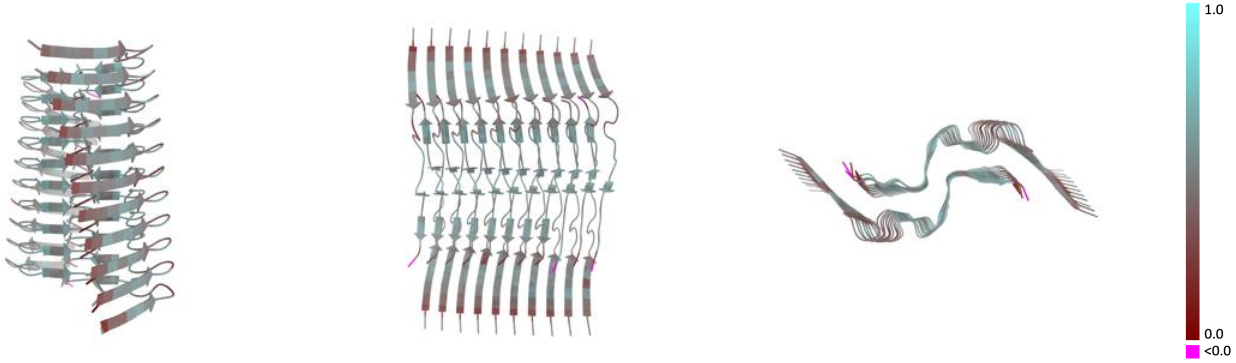


Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.024 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.

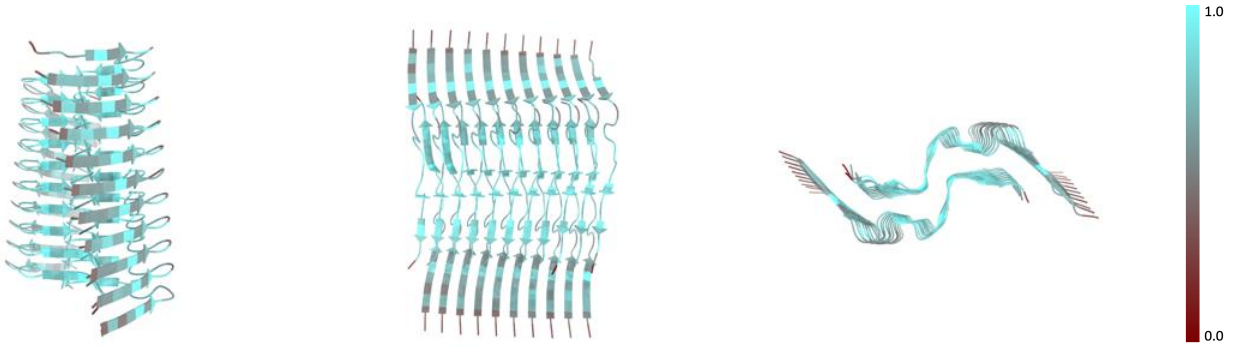
8.2 Q-score mapped to coordinate model (i)



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.

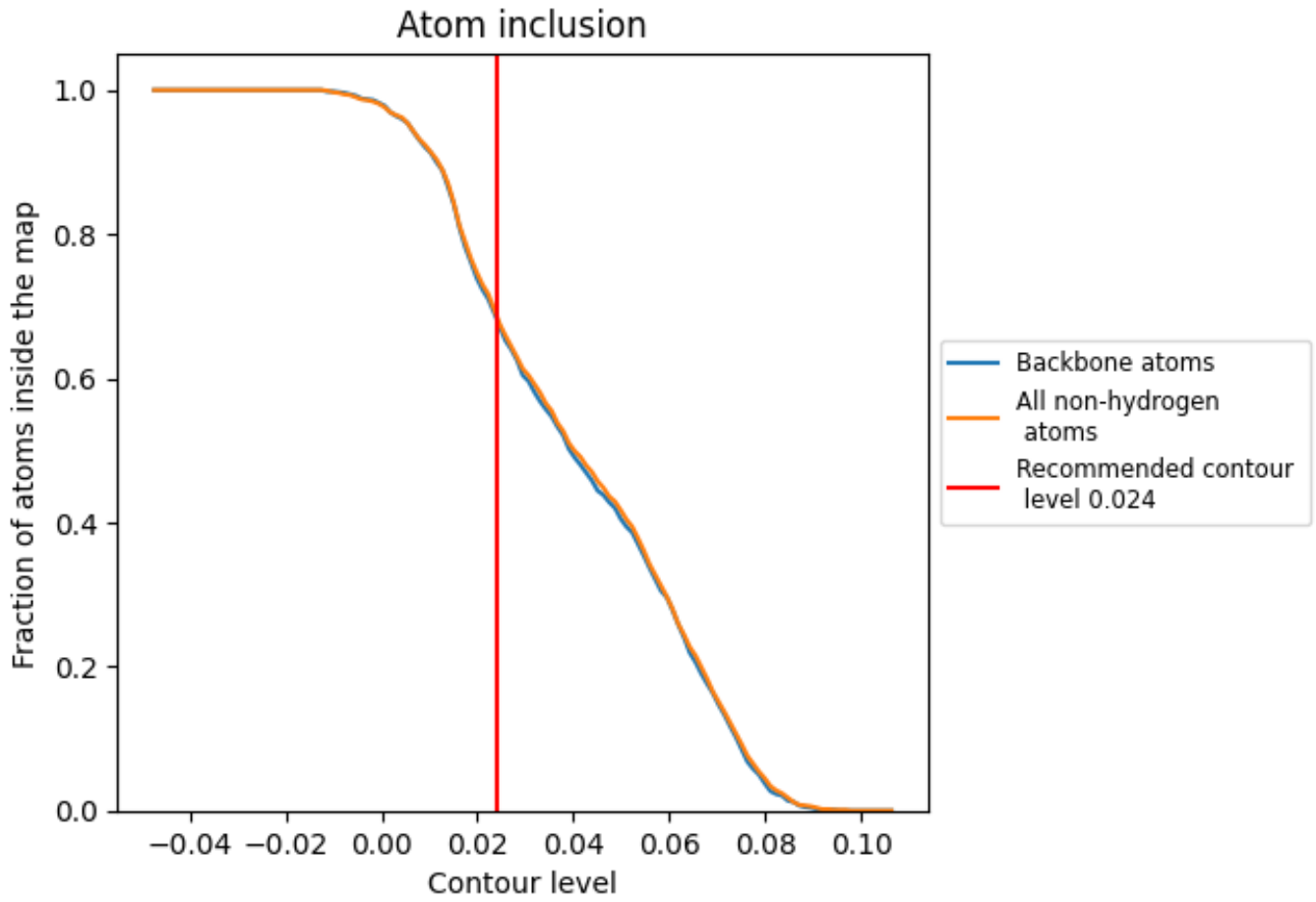
8.3 Atom inclusion mapped to coordinate model (i)



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 (0.024).

8.4 Atom inclusion (i)



At the recommended contour level, 68% of all backbone atoms, 69% of all non-hydrogen atoms, are inside the map.

8.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.024) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6870	0.4710
AL	0.6870	0.4450
AM	0.6820	0.4600
AN	0.7020	0.4750
AO	0.6870	0.4720
AP	0.6970	0.4810
AQ	0.6820	0.4770
AR	0.7020	0.4750
AS	0.6620	0.4500
AT	0.6870	0.4730
AU	0.6920	0.4810
AV	0.6920	0.4590
AW	0.7070	0.4830
AX	0.6970	0.4770
AY	0.7170	0.4740
AZ	0.6970	0.4770
Aa	0.6920	0.4850
Ab	0.6870	0.4760
Ac	0.7070	0.4890
Ad	0.6920	0.4750
Ae	0.6720	0.4530
Af	0.6720	0.4570