



wwPDB EM Validation Summary Report ⓘ

Mar 28, 2026 – 02:53 AM UTC

PDB ID : 6RYU / pdb_00006ryu
EMDB ID : EMD-10059
Title : Nucleosome-CHD4 complex structure (two CHD4 copies)
Authors : Farnung, L.; Ochmann, M.; Cramer, P.
Deposited on : 2019-06-12
Resolution : 4.00 Å(reported)

This is a wwPDB EM Validation Summary 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:

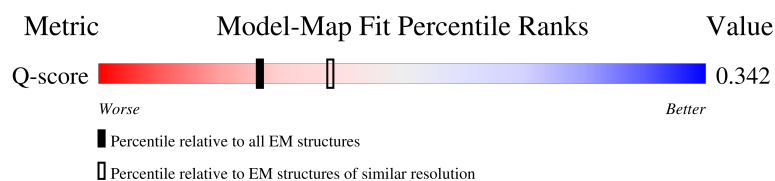
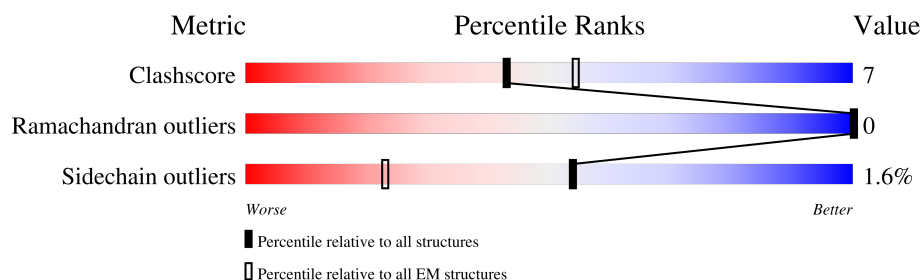
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

1 Overall quality at a glance

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

The reported resolution of this entry is 4.00 Å.

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







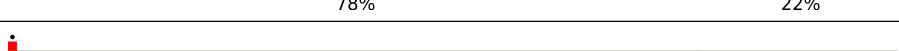

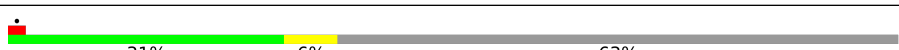

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	7587 (3.50 - 4.50)

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 $\leq 5\%$. 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	136	
1	E	136	
2	B	103	
2	F	103	

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Mol	Chain	Length	Quality of chain
3	C	130	
3	G	130	
4	D	123	
4	H	123	
5	I	149	
6	J	149	
7	V	1927	
7	W	1927	

2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 23598 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 Histone H3.2.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	97	Total	C	N	O	S	0	0
			802	506	155	138	3		
1	E	97	Total	C	N	O	S	0	0
			801	504	155	139	3		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	102	ALA	GLY	conflict	UNP P84233
E	102	ALA	GLY	conflict	UNP P84233

- Molecule 2 is a protein called Histone H4.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	87	Total	C	N	O	S	0	0
			703	442	142	118	1		
2	F	87	Total	C	N	O	S	0	0
			703	442	142	118	1		

- Molecule 3 is a protein called Histone H2A type 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	103	Total	C	N	O		0	0
			795	501	155	139			
3	G	105	Total	C	N	O		0	0
			809	510	158	141			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	99	ARG	GLY	conflict	UNP P06897
C	123	SER	ALA	conflict	UNP P06897
G	99	ARG	GLY	conflict	UNP P06897

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Chain	Residue	Modelled	Actual	Comment	Reference
G	123	SER	ALA	conflict	UNP P06897

- Molecule 4 is a protein called Histone H2B 1.1.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	95	Total	C	N	O	S	0	0
			745	469	134	140	2		
4	H	93	Total	C	N	O	S	0	0
			726	457	130	137	2		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	0	MET	-	initiating methionine	UNP P02281
D	29	THR	SER	conflict	UNP P02281
H	0	MET	-	initiating methionine	UNP P02281
H	29	THR	SER	conflict	UNP P02281

- Molecule 5 is a DNA chain called DNA (149-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
5	I	149	Total	C	N	O	P	0	0
			3036	1443	555	890	148		

- Molecule 6 is a DNA chain called DNA (149-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
6	J	149	Total	C	N	O	P	0	0
			3070	1454	571	896	149		

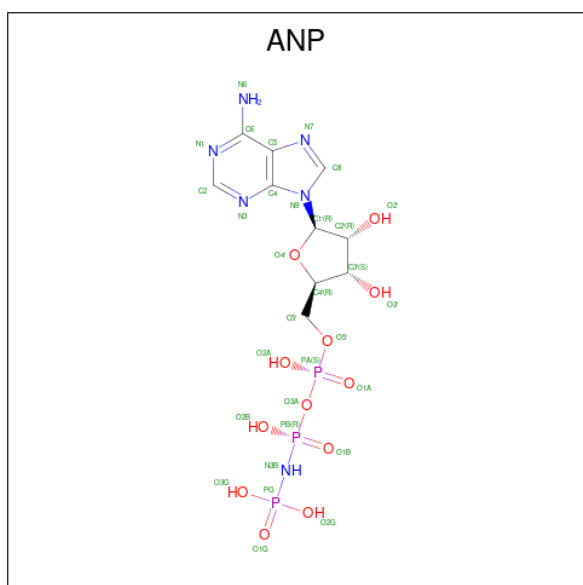
- Molecule 7 is a protein called Chromodomain-helicase-DNA-binding protein 4, CHD4, Chromodomain-helicase-DNA-binding protein 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	W	708	Total	C	N	O	S	1	0
			5668	3623	988	1013	44		
7	V	708	Total	C	N	O	S	1	0
			5672	3625	988	1015	44		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
W	-2	SER	-	expression tag	UNP Q14839
W	-1	ASN	-	expression tag	UNP Q14839
W	0	ALA	-	expression tag	UNP Q14839
V	-2	SER	-	expression tag	UNP Q14839
V	-1	ASN	-	expression tag	UNP Q14839
V	0	ALA	-	expression tag	UNP Q14839

- Molecule 8 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (CCD ID: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$).



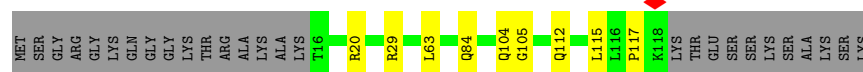
Mol	Chain	Residues	Atoms					AltConf
8	W	1	Total	C	N	O	P	0
			31	10	6	12	3	
8	V	1	Total	C	N	O	P	0
			31	10	6	12	3	

- Molecule 9 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
9	W	1	Total	Mg	0
			1	1	
9	V	1	Total	Mg	0
			1	1	

- Molecule 10 is ZINC ION (CCD ID: ZN) (formula: Zn).

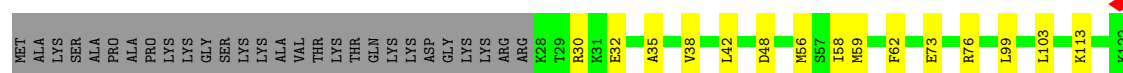
Mol	Chain	Residues	Atoms		AltConf
10	W	2	Total 2	Zn 2	0
10	V	2	Total 2	Zn 2	0



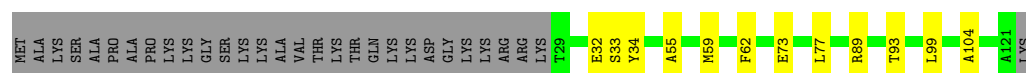
- Molecule 3: Histone H2A type 1



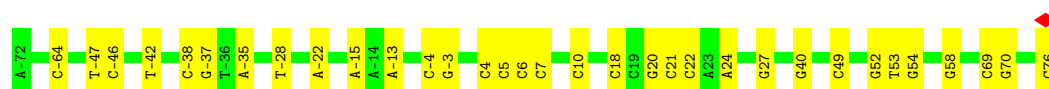
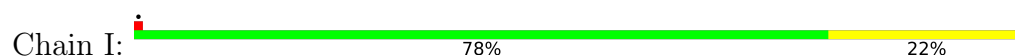
- Molecule 4: Histone H2B 1.1



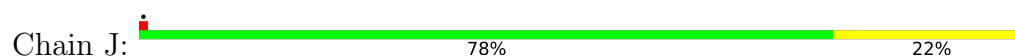
- Molecule 4: Histone H2B 1.1



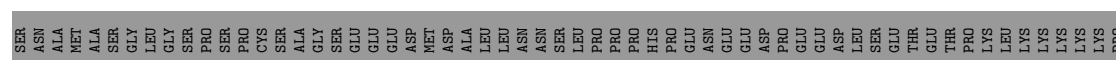
- Molecule 5: DNA (149-MER)



- Molecule 6: DNA (149-MER)



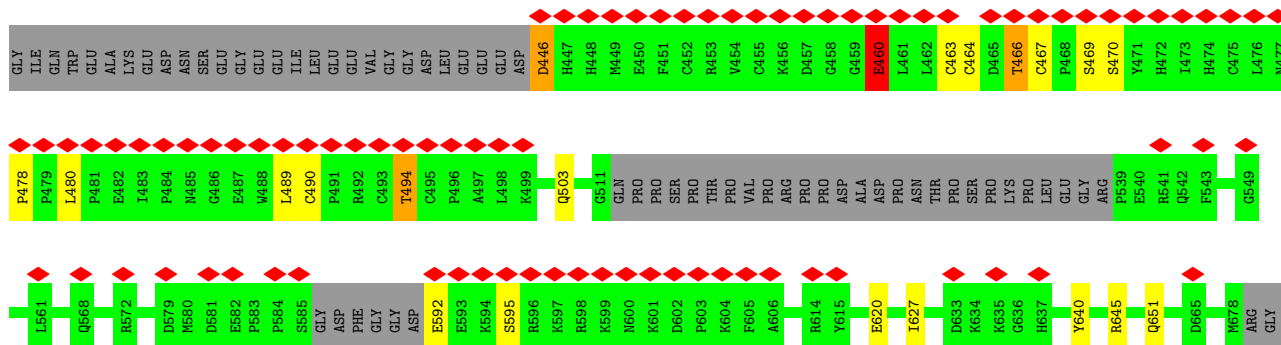
- Molecule 7: Chromodomain-helicase-DNA-binding protein 4,CHD4,Chromodomain-helicase-DNA-binding protein 4



WORLDWIDE
PDB
PROTEIN DATA BANK

ALA	HIS	GLN	LYS	THR	GLU	ASN
ALA	PRO	ASN	GLN	GLU	GLU	ASN
ILE	SER	SER	ARG	PRO	GLU	ARG
ALA	ALA	PRO	PHE	LYS	SER	TRP
ILE	LEU	ARG	MET	GLY	ILE	SER
PRO	ASN	TYR	PHE	ALA	GLU	MET
THR	ILE	ALA	ASN	ALA	GLY	PRO
VAL	ARG	LEU	ILE	VAL	GLU	GLU
ARG	PHE	LEU	GLY	GLY	VAL	GLU
GLU	VAL	PRO	GLY	VAL	LYS	VAL
GLN	GLU	PHE	PHE	GLU	SER	GLU
MET	GLY	LYS	THR	GLU	THR	GLU
SER	CYS	GLY	GLU	LYS	ALA	GLU
GLU	LEU	MET	HIS	ALA	PRO	LYS
ARG	ALA	ASN	SER	ILE	THR	MET
ASN	SER	ARG	LEU	ASP	ALA	SER
ILE	HIS	GLY	TRP	LEU	ILE	GLN
LEU	SER	ASN	GLN	THR	GLU	SER
SER	HIS	PHE	ASN	PRO	CYS	GLY
ARG	LEU	LEU	GLU	ILE	THR	SER
LEU	SER	GLU	GLU	VAL	GLN	PRO
ALA	LYS	ILE	ARG	VAL	ALA	SER
ASN	GLU	LYS	ALA	GLU	PRO	PRO
ARG	SER	ASN	ALA	ASP	ALA	LYS
ALA	MET	ALA	THR	LYS	PRO	THR
PRO	ALA	PHE	VAL	GLU	ALA	PRO
GLU	GLY	LEU	THR	GLU	SER	THR
THR	ASN	ALA	LYS	LYS	GLU	PRO
PRO	LYS	ARG	LYS	LYS	ASP	SER
PRO	PRO	ALA	THR	GLU	GLU	THR
GLN	ALA	PHE	TYR	GLU	LYS	PRO
GLN	ASN	LYS	GLU	GLU	VAL	GLY
VAL	ALA	LEU	ILE	GLU	VAL	ASP
ALA	VAL	LEU	TRP	GLU	VAL	THR
GLN	LEU	GLU	HIS	LYS	GLN	ASN
GLN	HIS	GLU	ARG	GLU	PRO	PRO
GLN	LYS	ALA	ARG	VAL	PRO	THR
GLN	VAL	LEU	HIS	MET	GLU	ASN
	LEU	ARG	ASP	LEU	GLY	PRO
	GLN	ILE	TYR	GLN	GLU	ALA
	LYS	GLU	TRP	ASN	GLU	GLU
	LEU	GLN	LEU	GLY	VAL	ASP
	GLU	GLN	LEU	GLU	VAL	GLY
	GLU	LEU	ALA	THR	GLU	LYS
	LEU	ARG	GLY	PRO	LYS	ALA
	LEU	ARG	ILE	LYS	ALA	GLU
	SER	ALA	ILE	ASP	GLU	ASP
	SER	ALA	ASN	LEU	VAL	GLY
	MET	TYR	HIS	ASN	VAL	LYS
	ALA	ASN	GLY	ASP	GLU	ILE
	ASP	ASN	TYR	GLU	ARG	LYS
	VAL	MET	TYR	GLU	THR	ILE
	VAL	MET	ALA	LYS	THR	GLU
	THR	GLU	ARG	GLN	THR	GLU
	ARG	GLU	TRP	LYS	GLU	ASN
	THR	ASP	GLN	LYS	PRO	SER
	LEU	PRO	ASP	ASN	MET	LEU
	PRO	SER	ILE	THR	GLU	LYS

- Molecule 7: Chromodomain-helicase-DNA-binding protein 4,CHD4,Chromodomain-helicase-DNA-binding protein 4

[illegible]



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	40233	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 ($e^-/\text{\AA}^2$)	43	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.029	Depositor
Minimum map value	-0.016	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.00472	Depositor
Map size (Å)	315.0, 315.0, 315.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.18	0/814	0.48	0/1092
1	E	0.23	0/812	0.50	0/1088
2	B	0.26	0/711	0.66	0/948
2	F	0.26	0/711	0.66	0/948
3	C	0.22	0/805	0.49	0/1088
3	G	0.16	0/819	0.46	0/1106
4	D	0.15	0/756	0.45	0/1015
4	H	0.16	0/737	0.45	0/993
5	I	0.24	0/3403	0.44	0/5246
6	J	0.25	0/3446	0.45	0/5321
7	V	0.29	0/5756	0.76	6/7774 (0.1%)
7	W	0.28	0/5752	0.76	6/7769 (0.1%)
All	All	0.26	0/24522	0.62	12/34388 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
2	B	0	1
2	F	0	1
All	All	0	2

There are no bond length outliers.

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	W	826	ASN	CA-CB-CG	6.66	119.26	112.60
7	V	826	ASN	CA-CB-CG	6.62	119.22	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	W	1003	GLY	CA-C-N	6.47	133.35	121.70
7	W	1003	GLY	C-N-CA	6.47	133.35	121.70
7	V	1003	GLY	CA-C-N	6.47	133.34	121.70

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	23	ARG	Peptide
2	F	23	ARG	Peptide

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	802	0	841	13	0
1	E	801	0	838	12	0
2	B	703	0	755	16	0
2	F	703	0	755	13	0
3	C	795	0	846	7	0
3	G	809	0	864	12	0
4	D	745	0	773	12	0
4	H	726	0	747	9	0
5	I	3036	0	1673	32	0
6	J	3070	0	1674	34	0
7	V	5672	0	5482	76	0
7	W	5668	0	5478	68	0
8	V	31	0	13	1	0
8	W	31	0	13	1	0
9	V	1	0	0	0	0
9	W	1	0	0	0	0
10	V	2	0	0	0	0
10	W	2	0	0	0	0
All	All	23598	0	20752	245	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 7.

The worst 5 of 245 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)
7:W:446:ASP:N	7:W:446:ASP:OD1	2.29	0.65
7:V:446:ASP:OD1	7:V:446:ASP:N	2.29	0.65
7:W:861:ILE:HG23	7:W:862:LEU:HD12	1.79	0.64
7:V:861:ILE:HG23	7:V:862:LEU:HD12	1.79	0.64
7:W:503:GLN:HE22	7:W:651:GLN:HE22	1.44	0.63

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	95/136 (70%)	92 (97%)	3 (3%)	0	100	100
1	E	95/136 (70%)	93 (98%)	2 (2%)	0	100	100
2	B	85/103 (82%)	78 (92%)	7 (8%)	0	100	100
2	F	85/103 (82%)	78 (92%)	7 (8%)	0	100	100
3	C	101/130 (78%)	99 (98%)	2 (2%)	0	100	100
3	G	103/130 (79%)	101 (98%)	2 (2%)	0	100	100
4	D	93/123 (76%)	90 (97%)	3 (3%)	0	100	100
4	H	91/123 (74%)	89 (98%)	2 (2%)	0	100	100
7	V	689/1927 (36%)	641 (93%)	48 (7%)	0	100	100
7	W	689/1927 (36%)	641 (93%)	48 (7%)	0	100	100
All	All	2126/4838 (44%)	2002 (94%)	124 (6%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	85/111 (77%)	85 (100%)	0	100	100
1	E	84/111 (76%)	84 (100%)	0	100	100
2	B	72/79 (91%)	69 (96%)	3 (4%)	26	49
2	F	72/79 (91%)	69 (96%)	3 (4%)	26	49
3	C	82/102 (80%)	82 (100%)	0	100	100
3	G	83/102 (81%)	83 (100%)	0	100	100
4	D	81/103 (79%)	81 (100%)	0	100	100
4	H	79/103 (77%)	79 (100%)	0	100	100
7	V	595/1680 (35%)	583 (98%)	12 (2%)	48	66
7	W	594/1680 (35%)	582 (98%)	12 (2%)	48	66
All	All	1827/4150 (44%)	1797 (98%)	30 (2%)	54	70

5 of 30 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	W	872	VAL
7	V	1006	VAL
7	W	1179	SER
7	V	1179	SER
7	V	494	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 41 such sidechains are listed below:

Mol	Chain	Res	Type
7	V	730	GLN
7	V	993	ASN
7	V	826	ASN
7	V	890	ASN
7	V	1004	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 8 ligands modelled in this entry, 6 are monoatomic - leaving 2 for Mogul analysis.

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$
8	ANP	V	2201	9	33,33,33	0.91	4 (12%)	45,52,52	0.67	1 (2%)
8	ANP	W	2201	9	33,33,33	0.91	4 (12%)	45,52,52	0.67	1 (2%)

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
8	ANP	V	2201	9	-	10/18/38/38	0/3/3/3
8	ANP	W	2201	9	-	10/18/38/38	0/3/3/3

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	V	2201	ANP	PG-O1G	2.53	1.50	1.46

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	W	2201	ANP	PG-O1G	2.47	1.49	1.46
8	W	2201	ANP	PG-N3B	2.34	1.69	1.63
8	V	2201	ANP	PG-N3B	2.33	1.69	1.63
8	V	2201	ANP	PB-O3A	-2.32	1.56	1.59

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	W	2201	ANP	O1G-PG-N3B	-2.25	108.46	111.77
8	V	2201	ANP	O1G-PG-N3B	-2.21	108.51	111.77

There are no chirality outliers.

5 of 20 torsion outliers are listed below:

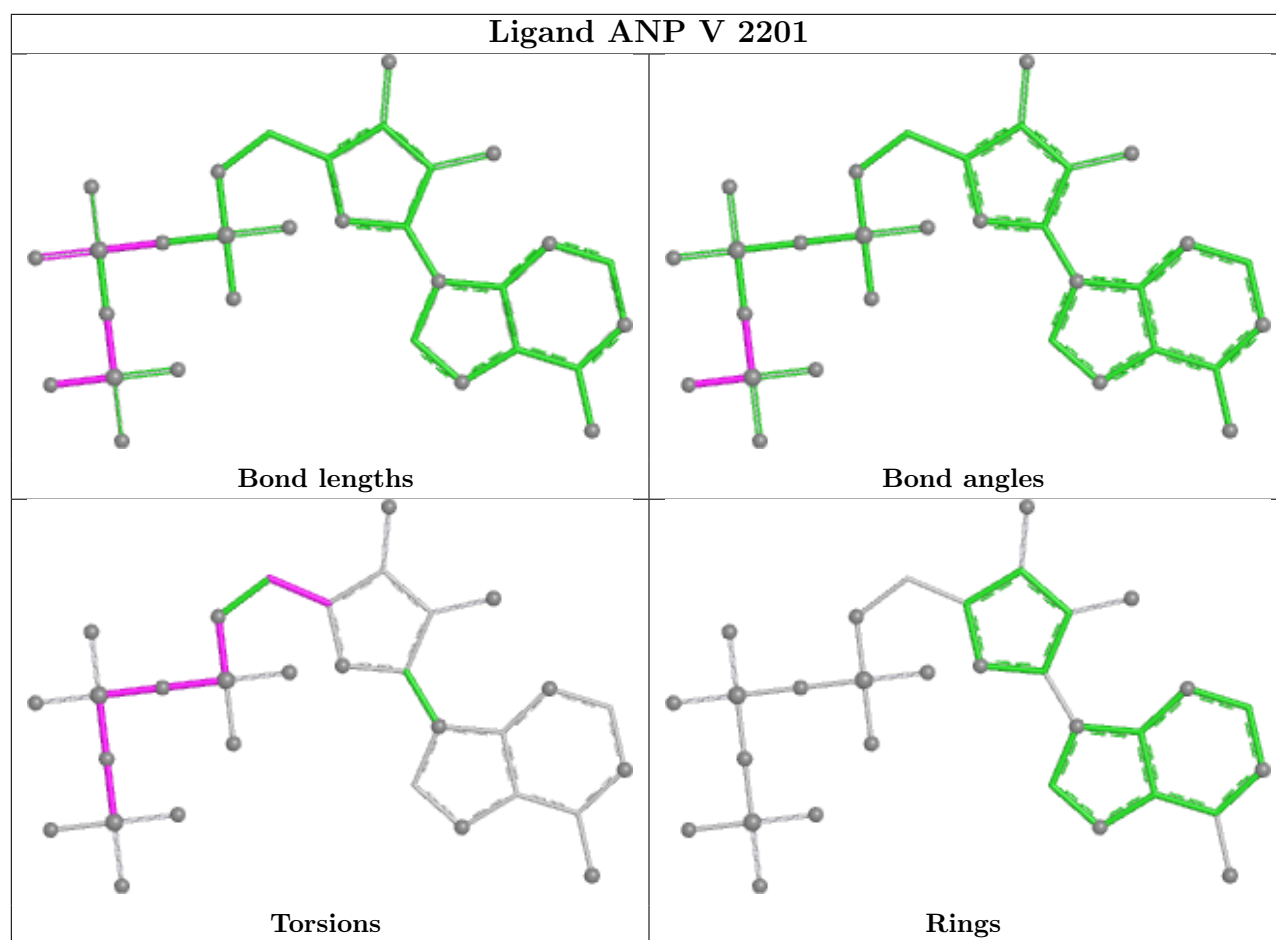
Mol	Chain	Res	Type	Atoms
8	W	2201	ANP	PB-N3B-PG-O1G
8	W	2201	ANP	PG-N3B-PB-O3A
8	W	2201	ANP	PA-O3A-PB-O2B
8	W	2201	ANP	C5'-O5'-PA-O1A
8	W	2201	ANP	C5'-O5'-PA-O2A

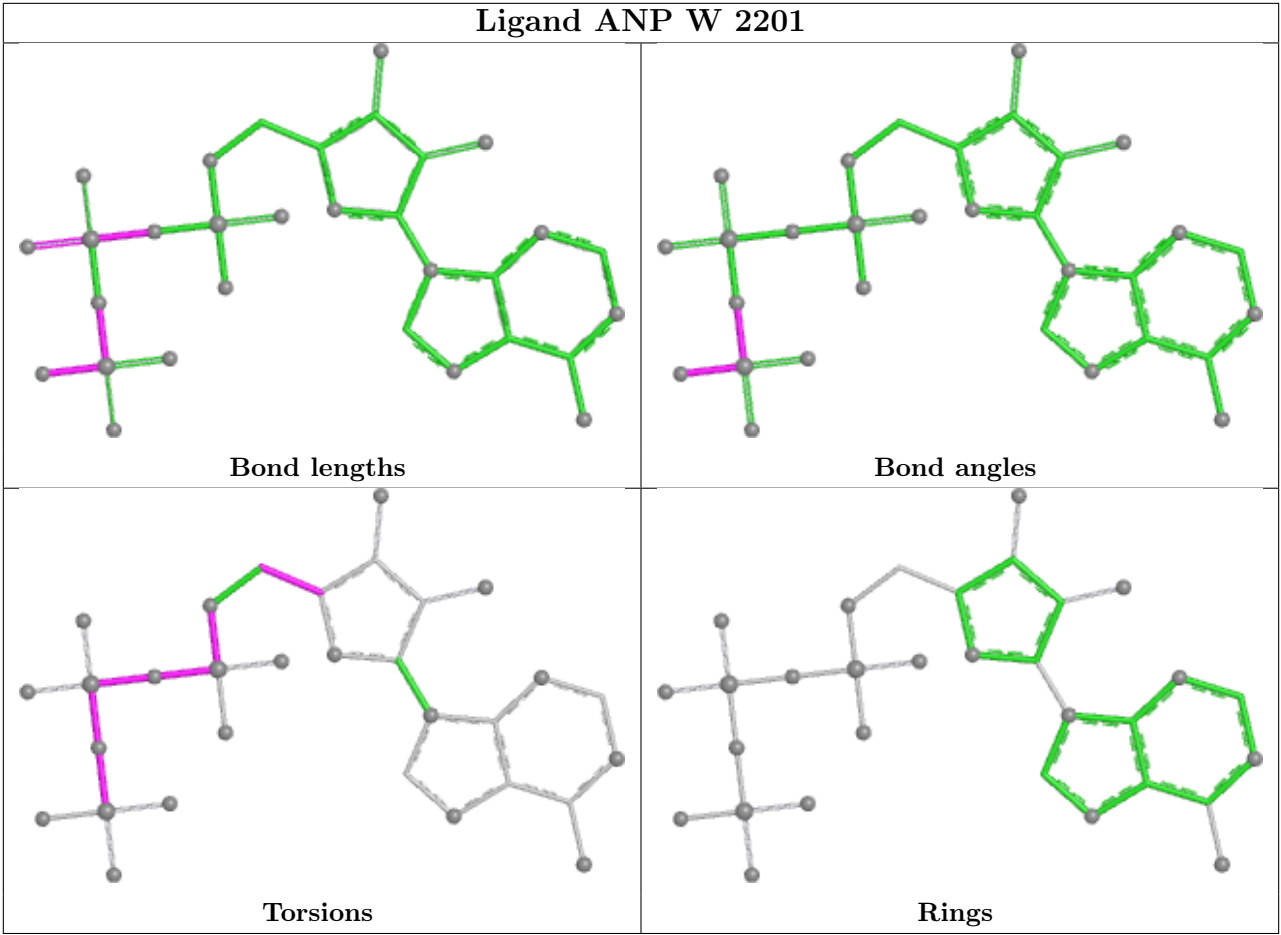
There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	V	2201	ANP	1	0
8	W	2201	ANP	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 than 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.





5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
7	W	1
7	V	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	W	1200:ARG	C	1405:UNK	N	38.59
1	V	1200:ARG	C	1405:UNK	N	38.59

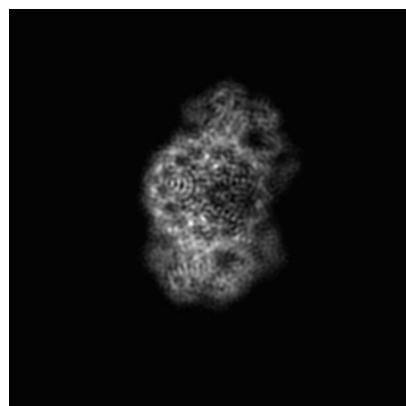
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-10059. These allow visual inspection of the internal detail of the map and identification of artifacts.

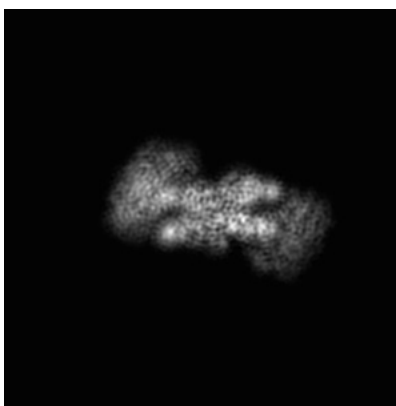
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

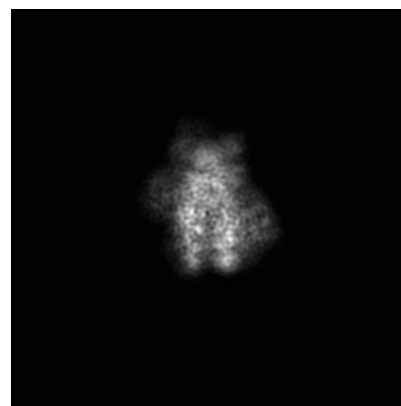
6.1.1 Primary map



X

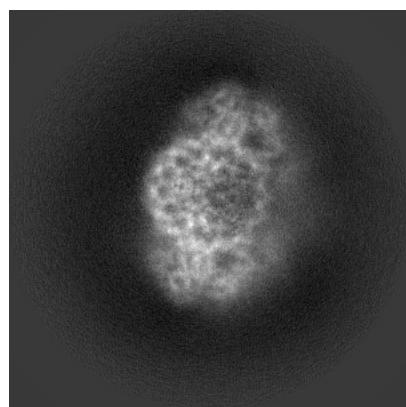


Y

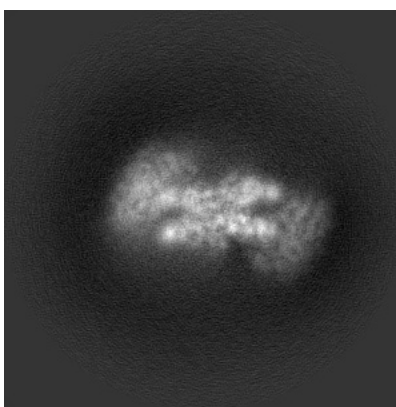


Z

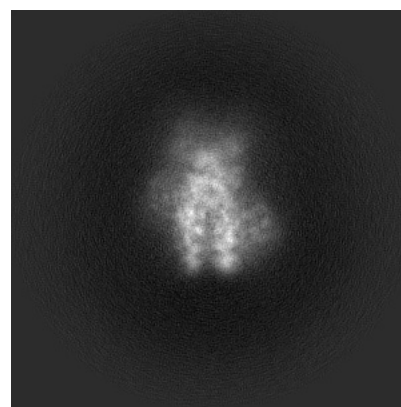
6.1.2 Raw map



X



Y

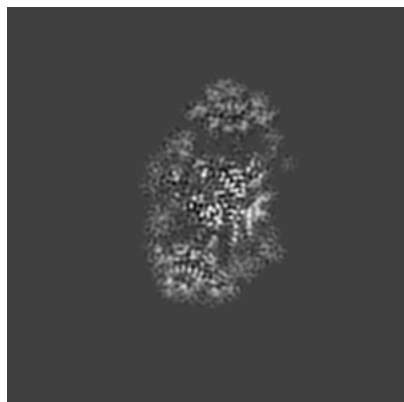


Z

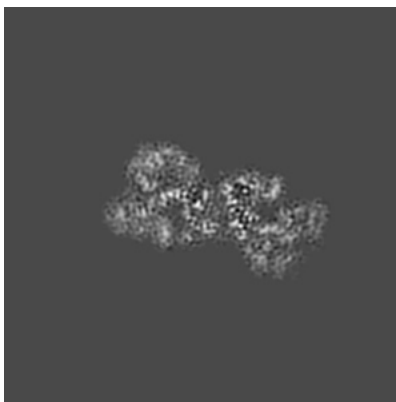
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 150

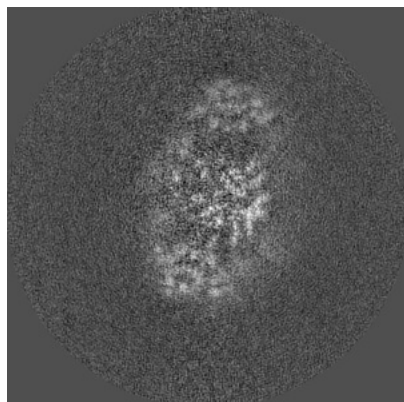


Y Index: 150

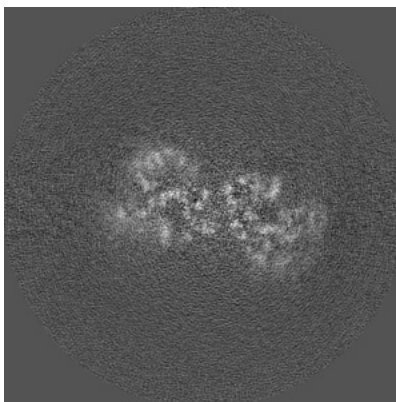


Z Index: 150

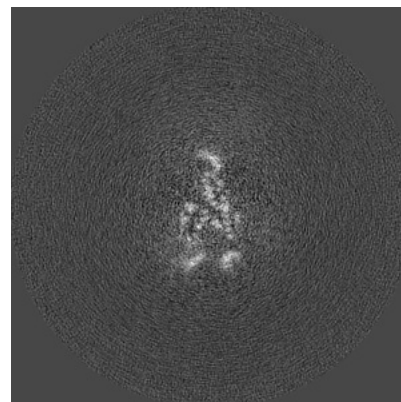
6.2.2 Raw map



X Index: 150



Y Index: 150

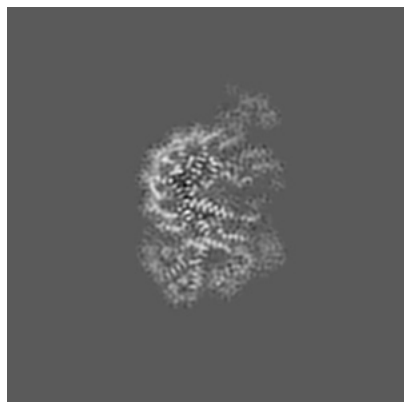


Z Index: 150

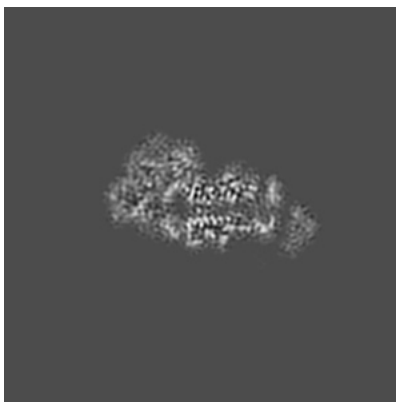
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

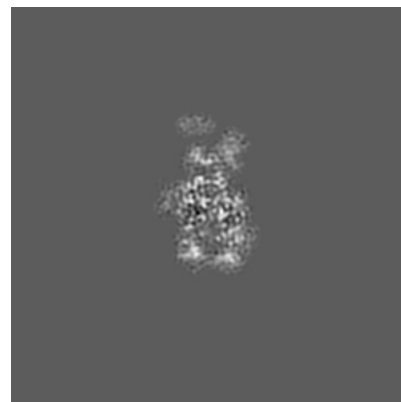
6.3.1 Primary map



X Index: 160

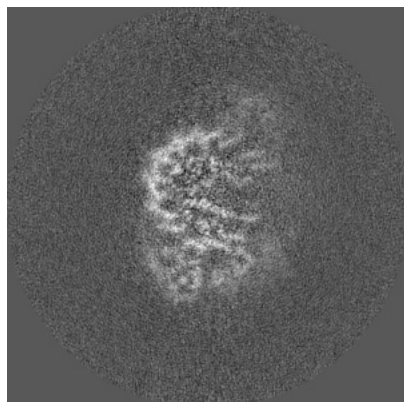


Y Index: 136

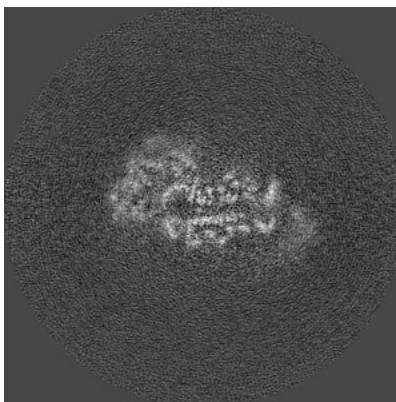


Z Index: 181

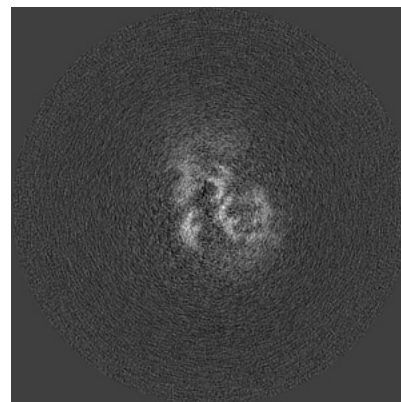
6.3.2 Raw map



X Index: 160



Y Index: 135

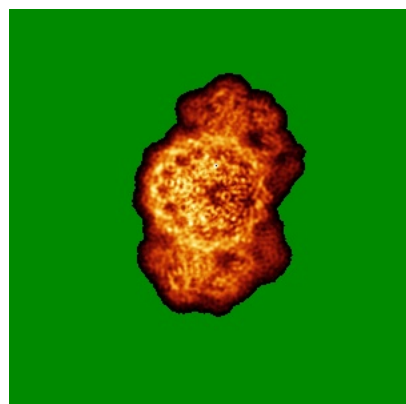


Z Index: 125

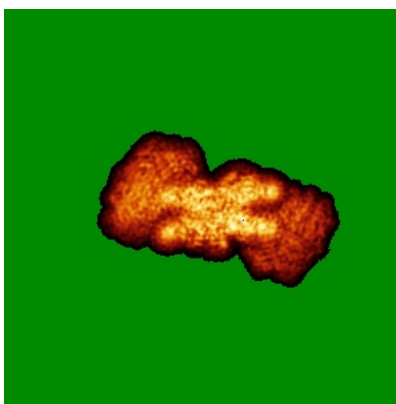
The images above show the largest variance slices of the map in three orthogonal directions.

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

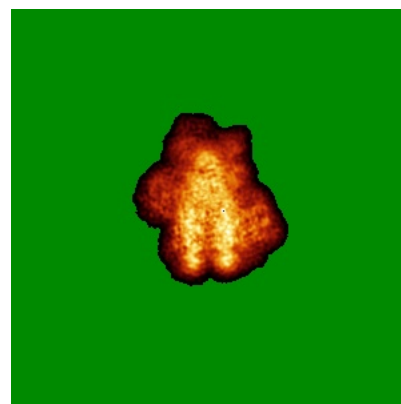
6.4.1 Primary map



X

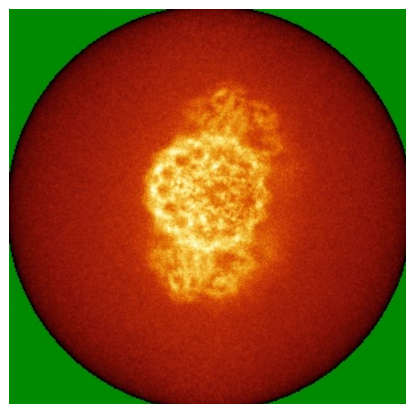


Y

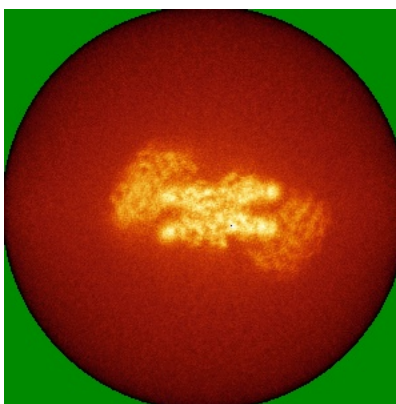


Z

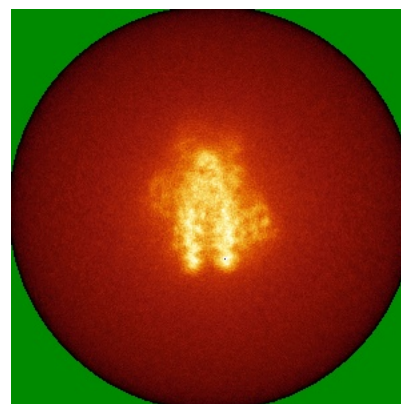
6.4.2 Raw map



X



Y

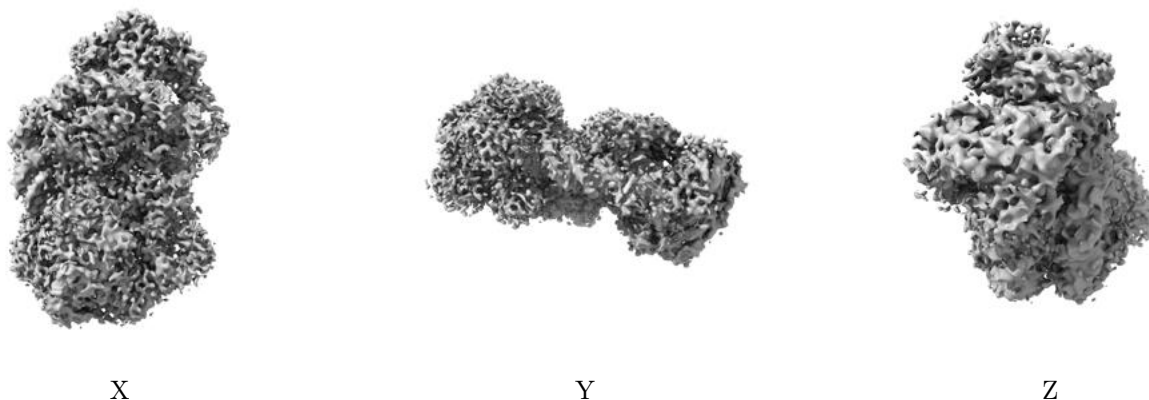


Z

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.

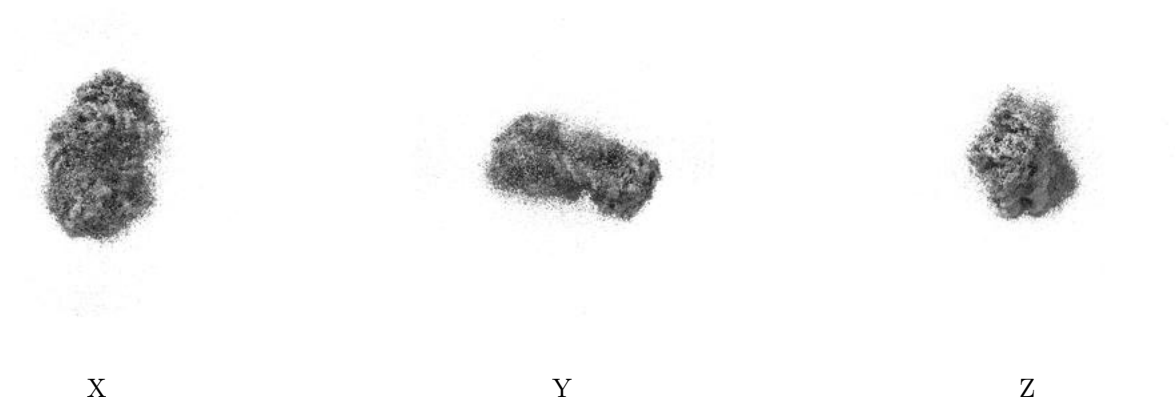
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.00472. 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



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

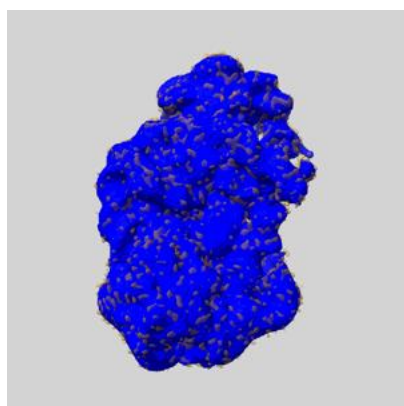
6.6 Mask visualisation [i](#)

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

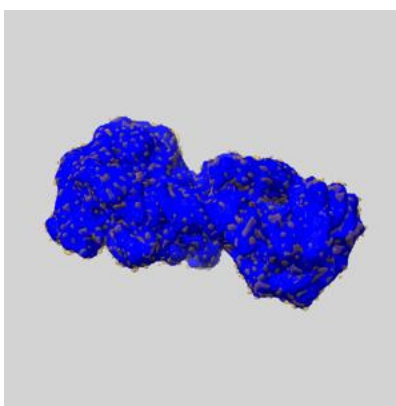
A mask typically either:

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

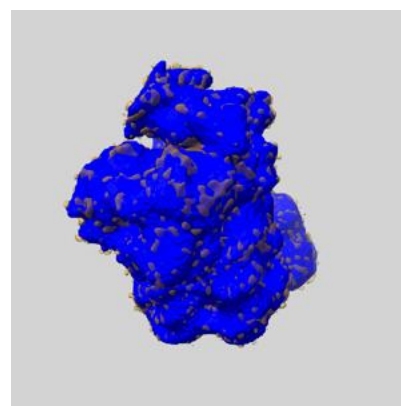
6.6.1 emd_10059_msk_1.map [i](#)



X



Y

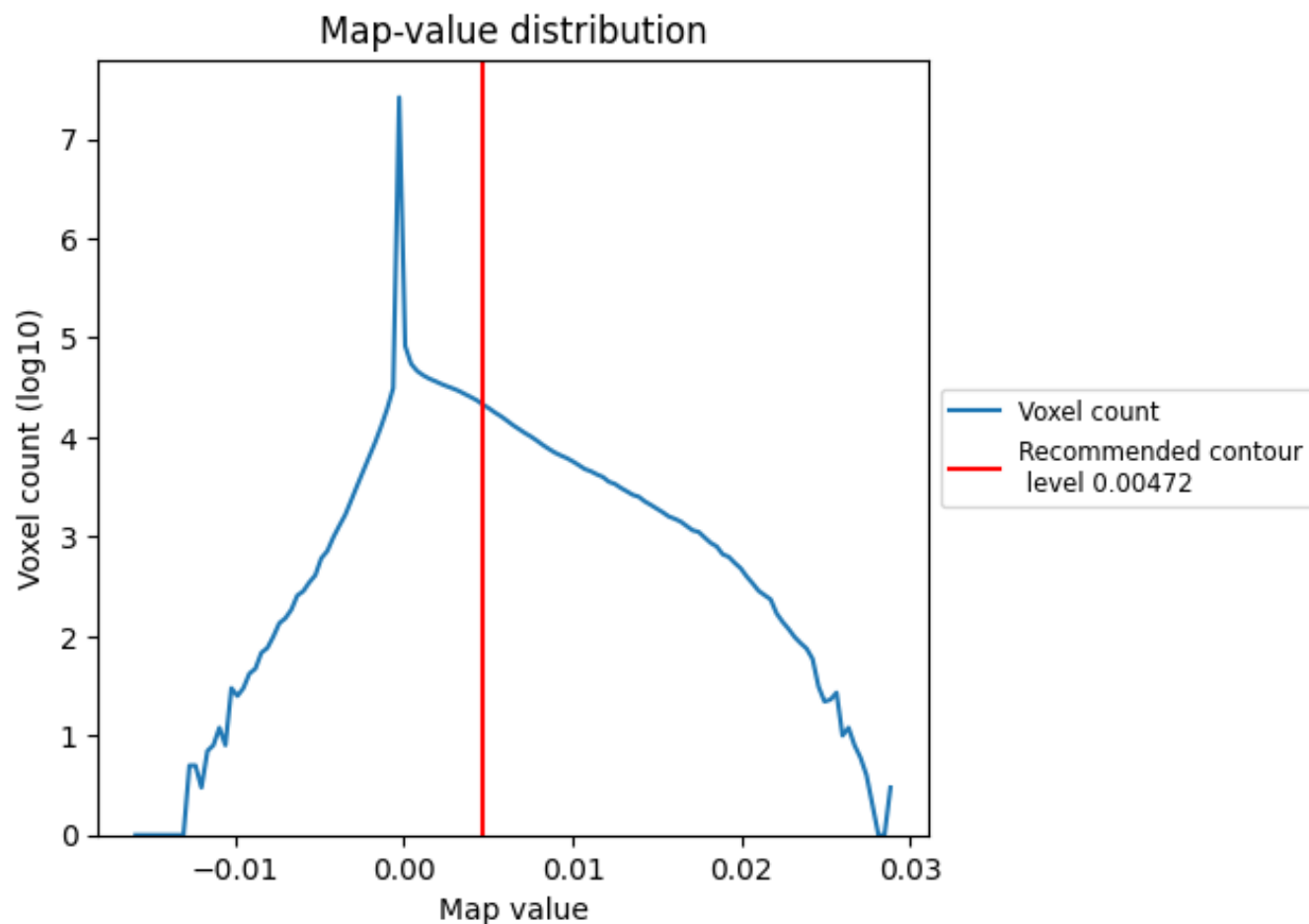


Z

7 Map analysis [i](#)

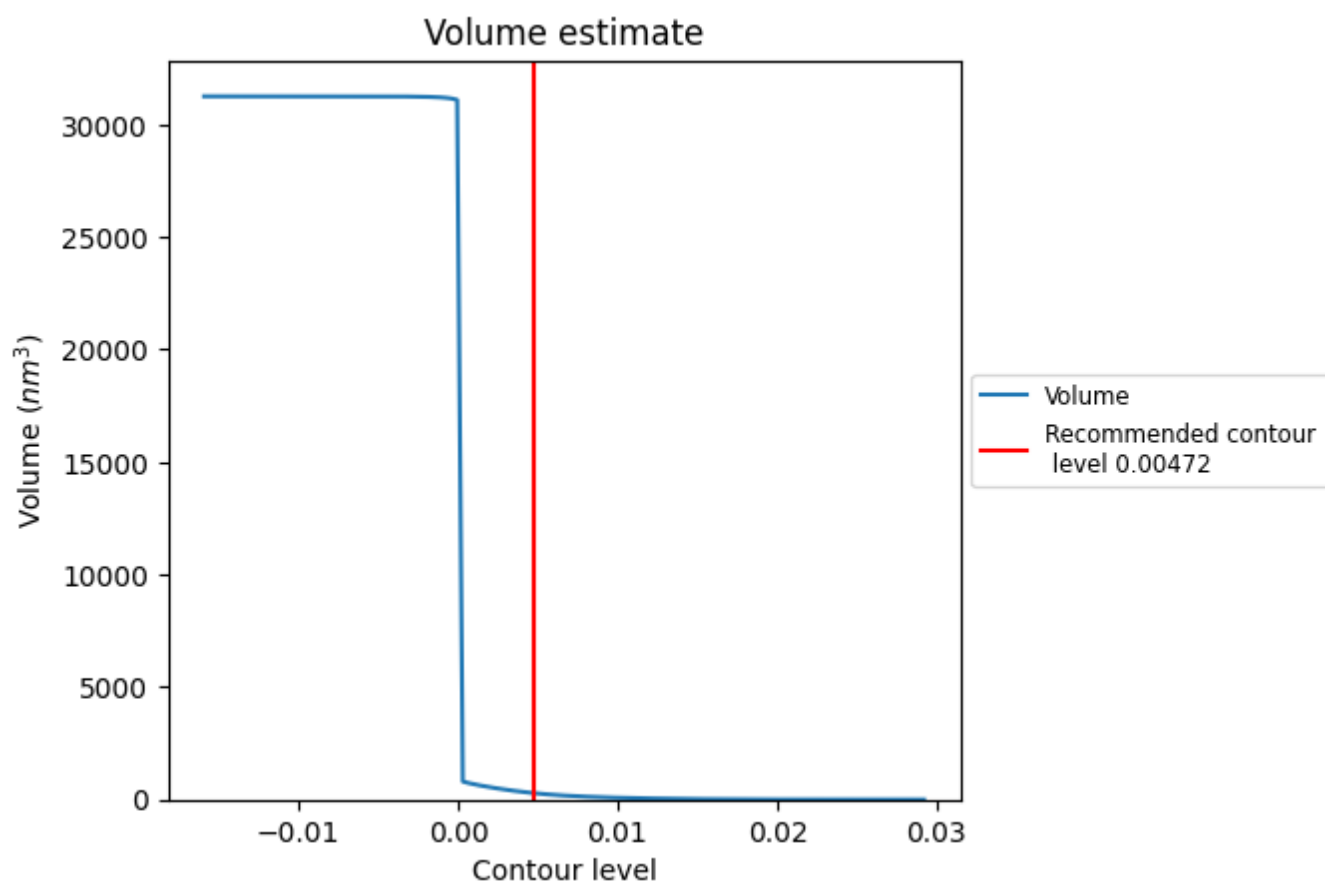
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

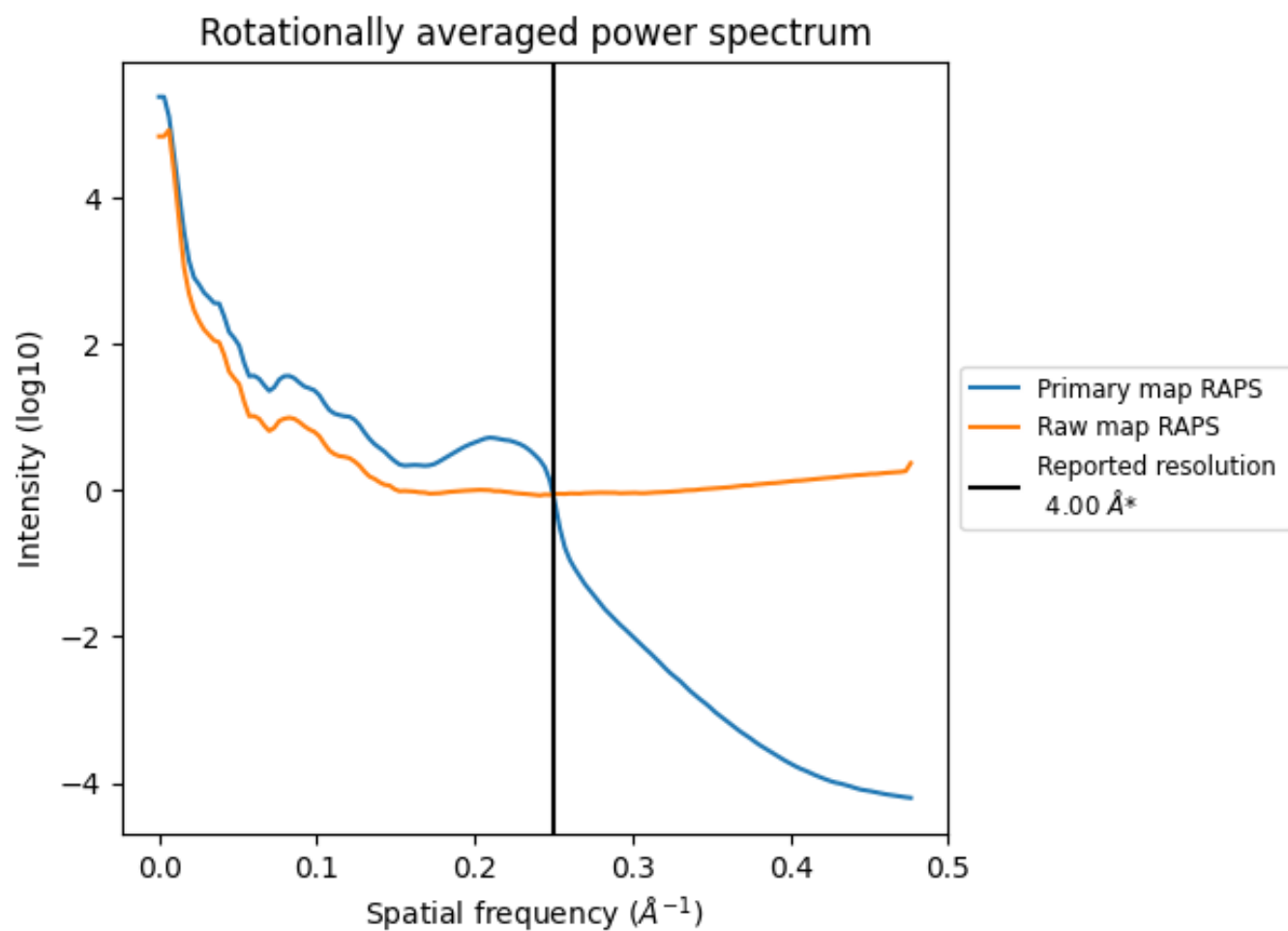
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 288 nm³; this corresponds to an approximate mass of 261 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

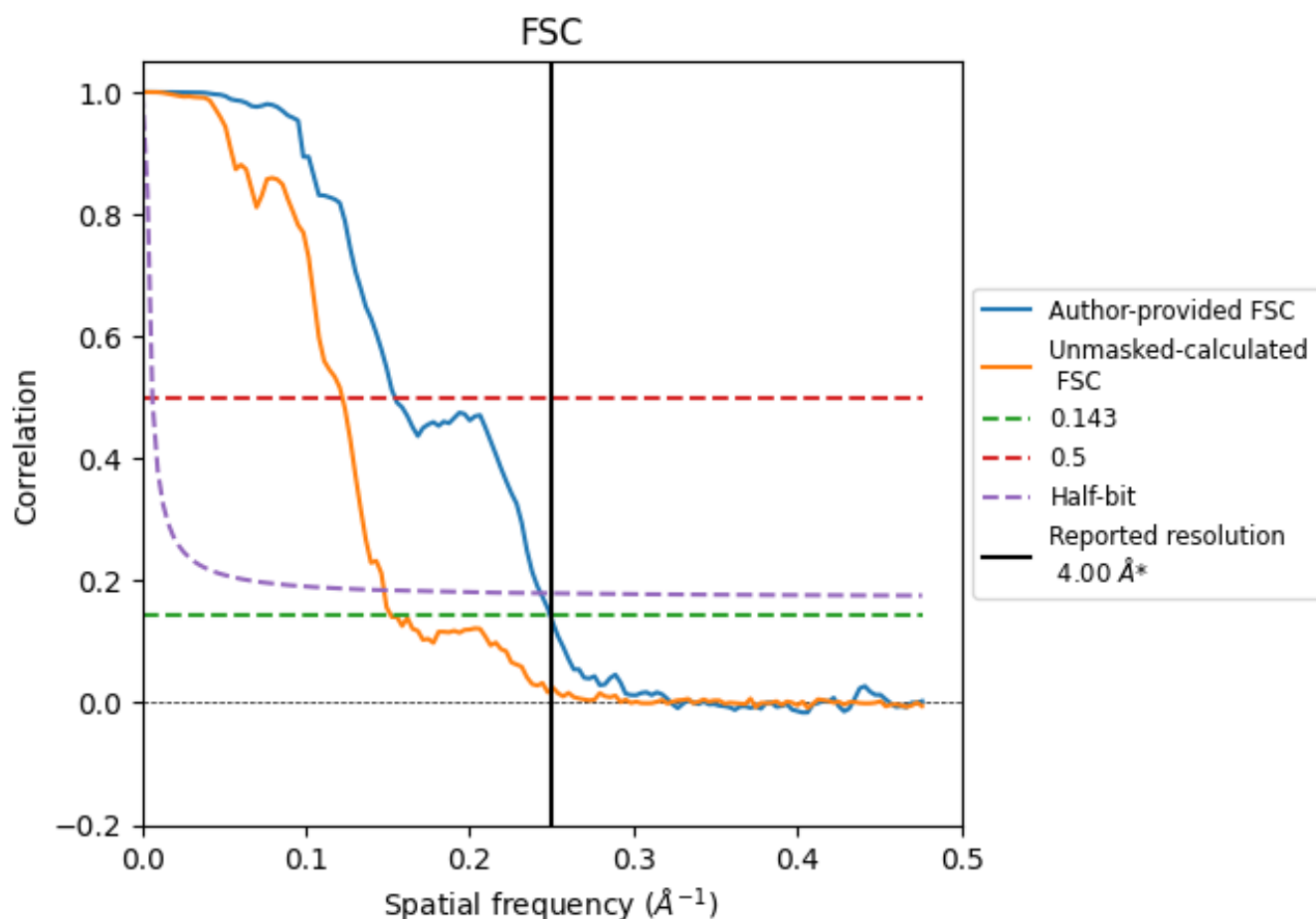


*Reported resolution corresponds to spatial frequency of 0.250 Å⁻¹

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 0.250 Å⁻¹

8.2 Resolution estimates [i](#)

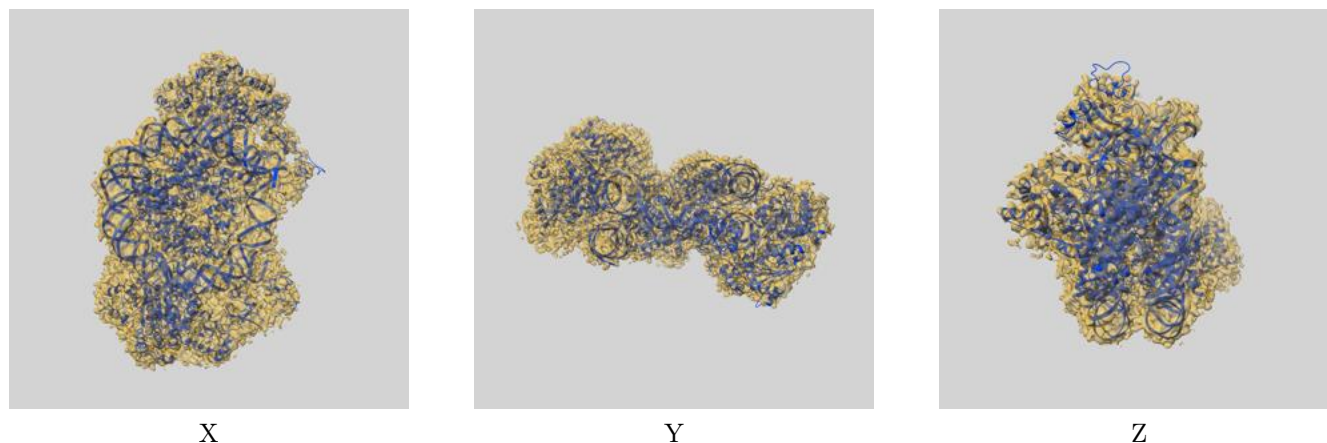
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.00	-	-
Author-provided FSC curve	4.01	6.48	4.11
Unmasked-calculated*	6.58	8.19	6.78

*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 6.58 differs from the reported value 4.0 by more than 10 %

9 Map-model fit [i](#)

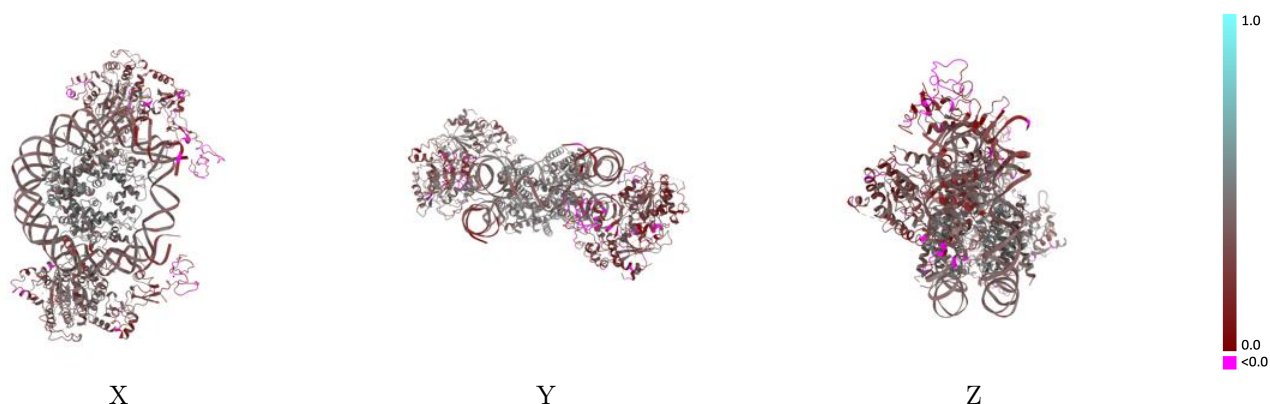
This section contains information regarding the fit between EMDB map EMD-10059 and PDB model 6RYU. Per-residue inclusion information can be found in [section 3](#) on [page 8](#).

9.1 Map-model overlay [i](#)



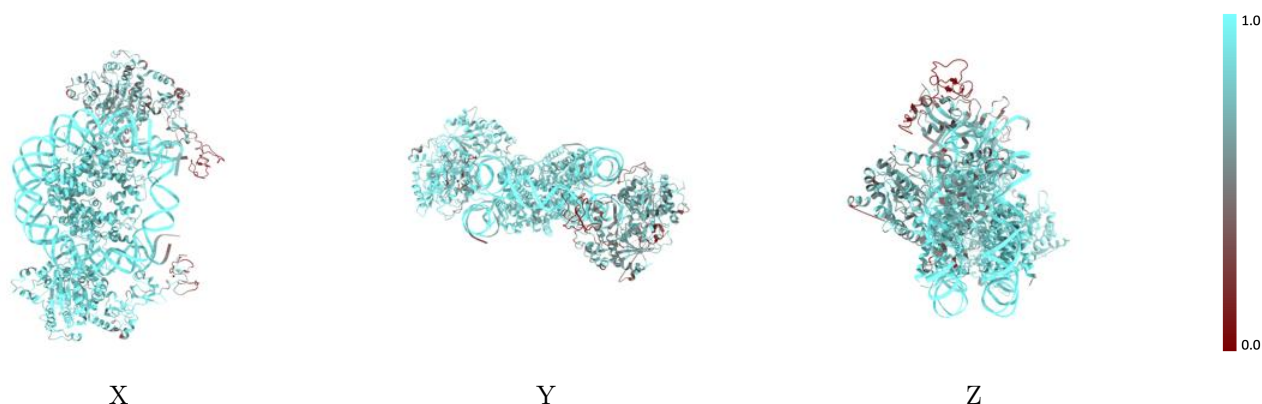
The images above show the 3D surface view of the map at the recommended contour level 0.00472 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



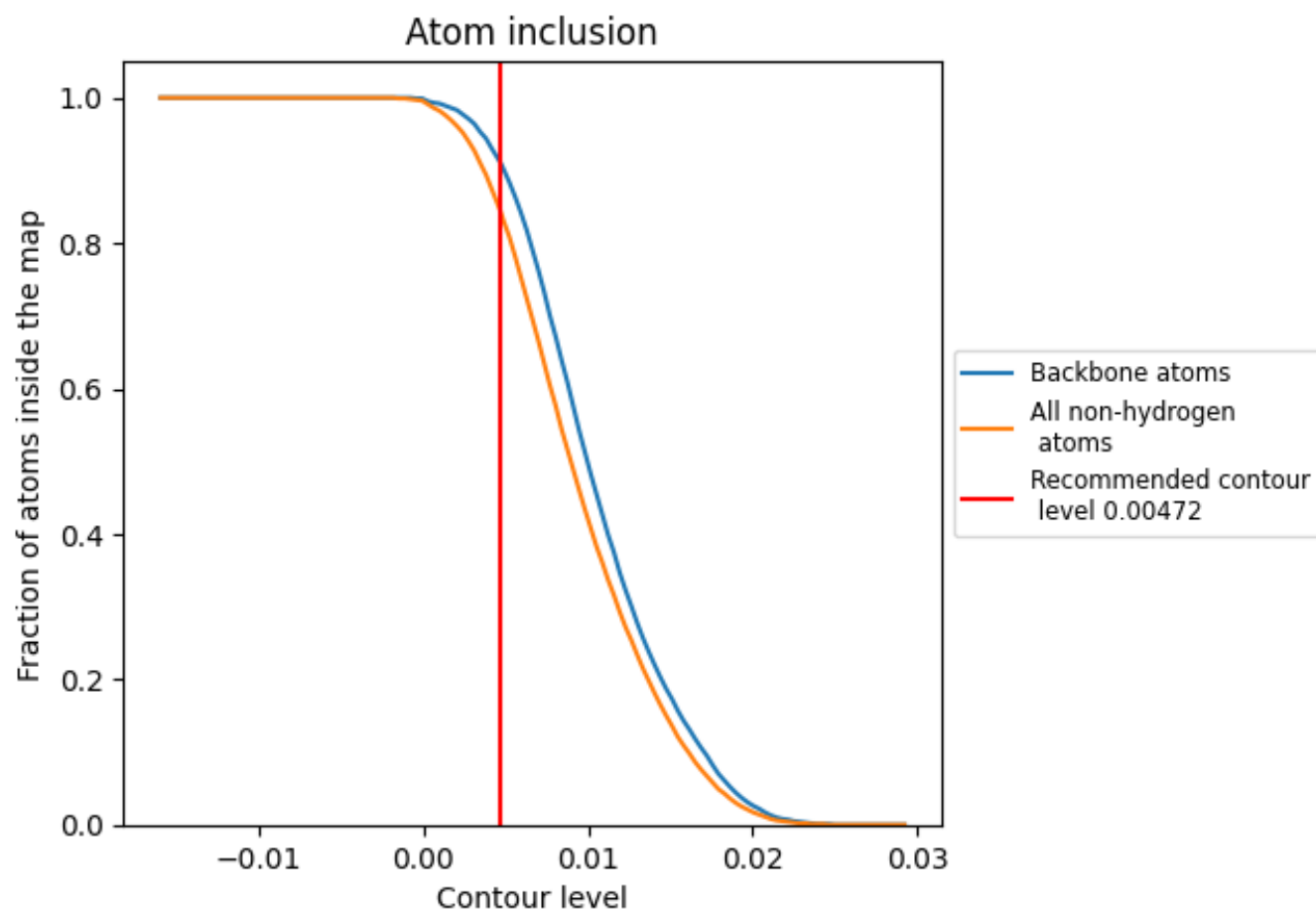
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.00472).

9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 84% 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 (0.00472) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div><div></div>0.8430</div>	<div><div></div>0.3420</div>
A	<div><div></div>0.9380</div>	<div><div></div>0.4640</div>
B	<div><div></div>0.9030</div>	<div><div></div>0.4320</div>
C	<div><div></div>0.9140</div>	<div><div></div>0.4500</div>
D	<div><div></div>0.9340</div>	<div><div></div>0.4440</div>
E	<div><div></div>0.9050</div>	<div><div></div>0.4550</div>
F	<div><div></div>0.8740</div>	<div><div></div>0.4320</div>
G	<div><div></div>0.9320</div>	<div><div></div>0.4540</div>
H	<div><div></div>0.9560</div>	<div><div></div>0.4560</div>
I	<div><div></div>0.9650</div>	<div><div></div>0.3530</div>
J	<div><div></div>0.9690</div>	<div><div></div>0.3560</div>
V	<div><div></div>0.6180</div>	<div><div></div>0.2370</div>
W	<div><div></div>0.8490</div>	<div><div></div>0.3210</div>

1.0

0.0

<0.0