



## Full wwPDB EM Validation Report ⓘ

Jan 1, 2025 – 08:18 AM EST

PDB ID : 8SEV  
EMDB ID : EMD-40430  
Title : Cryo-EM Structure of RyR1 + ATP-gamma-S (Local Refinement of TMD)  
Authors : Cholak, S.; Saville, J.W.; Zhu, X.; Berezuk, A.M.; Tuttle, K.S.; Haji-Ghassemi, O.; Van Petegem, F.; Subramaniam, S.  
Deposited on : 2023-04-10  
Resolution : 3.17 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](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.dev113  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
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) : 2.40

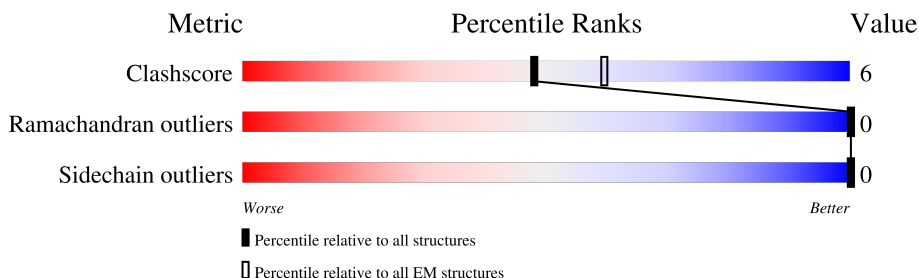
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*





The reported resolution of this entry is 3.17 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	5037	 10% • 88%
1	B	5037	 10% • 88%
1	C	5037	 10% • 88%
1	D	5037	 10% • 88%

## 2 Entry composition [i](#)

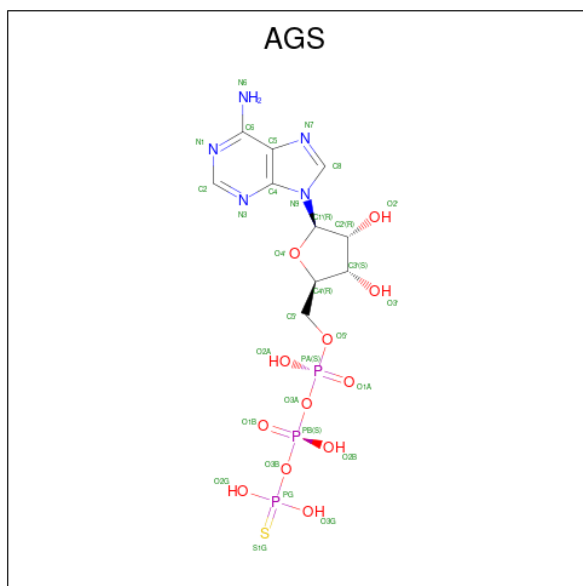
There are 3 unique types of molecules in this entry. The entry contains 20632 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Ryanodine receptor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	626	Total	C	N	O	S	0	0
			5126	3335	816	935	40		
1	B	626	Total	C	N	O	S	0	0
			5126	3335	816	935	40		
1	C	626	Total	C	N	O	S	0	0
			5126	3335	816	935	40		
1	D	626	Total	C	N	O	S	0	0
			5126	3335	816	935	40		

- Molecule 2 is PHOSPHOTHIOPHOSPHORIC ACID-ADENYLATE ESTER (three-letter code: AGS) (formula: C<sub>10</sub>H<sub>16</sub>N<sub>5</sub>O<sub>12</sub>P<sub>3</sub>S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf	
2	A	1	Total 31	C 10	N 5	O 12	P 3	S 1	0
2	B	1	Total 31	C 10	N 5	O 12	P 3	S 1	0

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Mol	Chain	Residues	Atoms						AltConf
2	C	1	Total	C	N	O	P	S	0
			31	10	5	12	3	1	
2	D	1	Total	C	N	O	P	S	0
			31	10	5	12	3	1	

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
3	A	1	Total	Zn	0
			1	1	
3	B	1	Total	Zn	0
			1	1	
3	C	1	Total	Zn	0
			1	1	
3	D	1	Total	Zn	0
			1	1	







GLY	LEU	E4239	ARG	ILE	Q3978	ASN	VAL	GLN	LEU	TRP	ALA	ALA	THR	PRO	PRO	PRO	PRO	ASP	PRO
GLY	GLY	D4240	PHE	VAL	S3979	TYR	LEU	MET	TYR	ILE	VAL	LEU	ILE	ASP	PRO	PRO	PRO	ILE	ASP
VAL	LEU	T4241	GLN	GLY	L3980	LEU	ASP	ILE	LEU	THR	TYR	LEU	THR	ASP	CYS	CYS	CYS	ARG	THR
GLY	GLY	I4242	PRO	GLU	A3981	THR	ASN	ALA	ALA	GLU	LEU	ASP	GLN	THR	ALA	ALA	THR	LEU	VAL
ALA	ARG	F4243	ALA	PHE	F3984	GLN	PHE	CYS	GLN	ASP	ALA	ASP	THR	PRO	GLU	GLU	ASP	LEU	LEU
ARG	ASP	E4244	ASP	GLN	L3985	THR	GLJ	LYS	THR	ILE	GLN	ILE	THR	ASP	GLY	GLY	ARG	ARG	ASP
LYS	VAL	I4247	ILE	ASP	W3986	GLY	ARG	GLY	GLY	THR	GLN	GLY	THR	VAL	GLY	GLY	THR	THR	LEU
VAL	ARG	P4254	GLY	VAL	V3989	THR	ASN	ALA	ALA	ASP	THR	ASP	THR	GLY	GLY	GLY	VAL	ARG	ARG
ARG	VAL	GLY	ASN	THR	F3992	ILE	LYS	ALA	LYS	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR
VAL	ARG	GLY	VAL	ASP	L3993	THR	ALA	MET	VAL	ILE	ASP	ASP	ILE	ASP	ASN	ASN	ASN	ASN	ASN
ARG	ARG	PRO	ALA	PRO	H3994	ASN	GLJ	VAL	GLJ	ASN	PRO	GLY	ILE	GLY	THR	THR	THR	THR	THR
LEU	LEU	GLY	VAL	GLY	F3995	ILE	GLY	THR	GLY	ASP	ARG	GLY	ASP	GLY	LEU	LEU	LEU	LEU	LEU
ALA	ARG	ALA	LEU	LEU	V3996	ILE	GLY	THR	THR	THR	LEU	GLY	ASP	GLY	GLY	GLY	GLY	GLY	GLY
ARG	ARG	ASP	THR	ILE	A3997	CYS	MET	LYS	THR	GLY	VAL	GLY	GLY	GLY	ASN	ASN	ASN	ASN	ASN
LEU	THR	GLJ	ASN	SER	H3998	THR	VAL	LYS	VAL	ALA	THR	VAL	GLY	GLY	GLY	GLY	GLY	GLY	GLY
THR	THR	ASP	LEU	LYS	D4006	VAL	ASN	LEU	VAL	ALA	THR	THR	ALA	GLY	LEU	LEU	LEU	LEU	LEU
PRO	ASP	GLY	SER	LYS	L4016	LEU	GLU	GLY	ILE	GLY	THR	THR	THR	GLY	GLY	GLY	GLY	GLY	GLY
ASP	GLY	ASP	GLU	ASP	L4017	TYR	ASP	ILE	TYR	GLY	THR	GLY	THR	GLY	GLY	GLY	GLY	GLY	GLY
PRO	GLY	MET	GLY	PHE	L4012	LEU	GLY	THR	LEU	GLY	GLN	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	GLY	VAL	GLN	F4015	ARG	VAL	ILE	ARG	GLY	LYS	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	THR	ALA	HIS	LYS	L4016	LEU	ASN	GLN	LEU	GLY	ALA	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
VAL	ALA	ALA	ASP	MET	L4017	GLN	ASN	GLY	GLY	GLY	VAL	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
LEU	ALA	ALA	PRO	ALA	D4018	GLY	ARG	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	GLY	ARG	SER	L4019	ILE	GLN	ASN	ASN	VAL	GLN	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	GLY	LEU	GLN	F4020	ILE	ASN	ALA	ILE	VAL	VAL	GLY	VAL	VAL	GLY	GLY	GLY	GLY	GLY
LEU	LEU	ALA	ARG	LYS	L4021	SER	GLY	GLY	SER	GLY	VAL	GLY	VAL	VAL	GLY	GLY	GLY	GLY	GLY
GLY	LEU	GLY	ASN	GLN	D4022	ASP	GLU	VAL	ASP	THR	GLY	VAL	GLY	GLY	GLY	GLY	GLY	GLY	GLY
TRP	ALA	GLY	PHE	PHE	M4023	PHE	LYS	GLN	PHE	LYS	VAL	PHE	PHE	LYS	GLY	GLY	GLY	GLY	GLY
VAL	ALA	GLY	LEU	THR	V4024	TYR	VAL	GLN	GLY	PRO	ALA	GLY	GLY	PRO	ALA	ALA	ALA	ALA	ALA
VAL	VAL	ALA	GLY	PRO	W4025	TRP	MET	LYS	GLY	ASP	CYS	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	GLY	LEU	ILE	M4026	TYR	ALA	MET	LEU	PRO	ARG	GLY	VAL	ARG	ARG	ARG	ARG	ARG	ARG
ARG	ALA	GLY	ALA	ILE	L4027	SER	ASP	ASP	GLY	LEU	THR	GLY	THR	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	ALA	GLY	GLN	L4031	GLY	GLY	TYR	LYS	HIS	THR	THR	THR	GLY	GLY	GLY	GLY	GLY	GLY
GLY	ALA	GLY	ILE	PHE	Q4043	ASP	PHE	LEU	LYS	GLN	LEU	GLY	GLY	PRO	PRO	PRO	PRO	PRO	PRO
ALA	ALA	ALA	LEU	LEU	D4046	VAL	ARG	GLN	VAL	VAL	LEU	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
GLY	GLY	GLY	TYR	SER	F4050	ILE	ASP	LYS	GLY	THR	THR	GLY	THR	GLY	GLY	GLY	GLY	GLY	GLY
GLY	GLY	VAL	ARG	CYS	V4055	GLY	PHE	LYS	GLY	ASP	THR	GLY	GLY	ASP	ASP	ASP	ASP	ASP	ASP
VAL	ALA	ALA	GLY	SER	I4058	ARG	THR	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	THR	ASN	GLY	L4059	ASN	LEU	SER	THR	THR	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
LEU	LEU	ALA	GLY	GLY	K4060	GLY	CYS	ILE	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ARG	ARG	LEU	ILE	MET	PHE	THR	GLY	GLY	GLY	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR
ALA	ALA	LEU	ASN	ASN	ASP	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	ALA	ALA	PHE	L3965	LYS	ASN	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA
GLY	GLY	ALA	ALA	THR	A3964	THR	ASN	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR
ASP	ALA	ALA	GLY	ALA	L3969	GLY	GLN	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	ALA	ALA	ALA	G3975	THR	GLN	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ASP	ALA	ALA	ALA	ALA	ASP	ASN	ASN	GLN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
ALA	ALA	ALA	ALA	ALA	E4226	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	ALA	ALA	ALA	E4227	THR	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	ALA	ALA	ALA	A4228	THR	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
ALA	ALA	ALA	ALA	ALA	E4232	ASN	GLN	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY



[illegible]







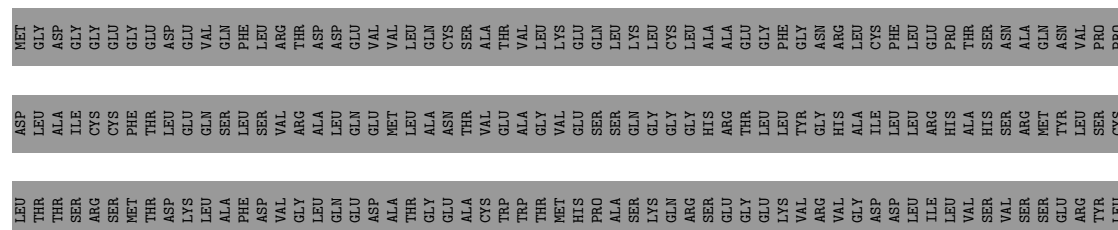


















[illegible]

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	55892	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 ( $e^-/\text{\AA}^2$ )	40	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	96000	Depositor
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	5.194	Depositor
Minimum map value	-3.336	Depositor
Average map value	-0.003	Depositor
Map value standard deviation	0.123	Depositor
Recommended contour level	0.499	Depositor
Map size (Å)	515.2, 515.2, 515.2	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.288, 1.288, 1.288	Depositor

## 5 Model quality [i](#)

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

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

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	0.26	0/5248	0.44	0/7082
1	B	0.26	0/5248	0.44	0/7082
1	C	0.26	0/5248	0.44	0/7082
1	D	0.26	0/5248	0.44	0/7082
All	All	0.26	0/20992	0.44	0/28328

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	5126	0	5013	60	0
1	B	5126	0	5013	62	0
1	C	5126	0	5013	59	0
1	D	5126	0	5013	61	0
2	A	31	0	12	1	0
2	B	31	0	12	1	0
2	C	31	0	12	1	0
2	D	31	0	12	1	0
3	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
All	All	20632	0	20100	234	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 6.

All (234) 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:4017:LEU:HA	1:A:4020:GLN:HE21	1.37	0.89
1:B:4017:LEU:HA	1:B:4020:GLN:HE21	1.37	0.89
1:D:4017:LEU:HA	1:D:4020:GLN:HE21	1.37	0.89
1:C:4017:LEU:HA	1:C:4020:GLN:HE21	1.37	0.88
1:C:3986:TRP:NE1	1:C:4043:GLN:OE1	2.24	0.71
1:D:3986:TRP:NE1	1:D:4043:GLN:OE1	2.24	0.71
1:A:4888:TYR:O	1:A:4892:ARG:HB2	1.94	0.68
1:B:4888:TYR:O	1:B:4892:ARG:HB2	1.94	0.67
1:D:4888:TYR:O	1:D:4892:ARG:HB2	1.94	0.67
1:C:4888:TYR:O	1:C:4892:ARG:HB2	1.94	0.66
1:C:4570:ALA:O	1:C:4574:ASN:ND2	2.30	0.65
1:A:4570:ALA:O	1:A:4574:ASN:ND2	2.30	0.64
1:D:4570:ALA:O	1:D:4574:ASN:ND2	2.30	0.64
1:C:4687:TYR:O	1:C:4691:GLN:NE2	2.30	0.64
1:A:4576:ILE:HG21	1:A:4643:LEU:HB2	1.80	0.64
1:B:4687:TYR:O	1:B:4691:GLN:NE2	2.30	0.64
1:A:4687:TYR:O	1:A:4691:GLN:NE2	2.30	0.64
1:D:4576:ILE:HG21	1:D:4643:LEU:HB2	1.80	0.64
1:D:4687:TYR:O	1:D:4691:GLN:NE2	2.30	0.64
1:B:4570:ALA:O	1:B:4574:ASN:ND2	2.30	0.63
1:B:4576:ILE:HG21	1:B:4643:LEU:HB2	1.80	0.63
1:C:4576:ILE:HG21	1:C:4643:LEU:HB2	1.80	0.63
1:A:4060:LYS:HE3	1:A:4060:LYS:HA	1.82	0.61
1:B:4060:LYS:HE3	1:B:4060:LYS:HA	1.82	0.61
1:D:4060:LYS:HE3	1:D:4060:LYS:HA	1.82	0.61
1:B:4640:GLU:HG3	1:B:4641:PRO:HD3	1.82	0.61
1:D:4182:GLU:OE2	1:D:4192:ARG:NH2	2.32	0.61
1:A:4640:GLU:HG3	1:A:4641:PRO:HD3	1.82	0.61
1:B:4046:ASP:O	1:B:4050:GLU:HG2	2.01	0.61
1:A:4046:ASP:O	1:A:4050:GLU:HG2	2.01	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:4640:GLU:HG3	1:C:4641:PRO:HD3	1.82	0.61
1:B:3992:PHE:O	1:B:3996:PHE:N	2.24	0.60
1:C:4060:LYS:HE3	1:C:4060:LYS:HA	1.82	0.60
1:D:4046:ASP:O	1:D:4050:GLU:HG2	2.02	0.59
1:D:4640:GLU:HG3	1:D:4641:PRO:HD3	1.82	0.59
1:A:4182:GLU:OE2	1:A:4192:ARG:NH2	2.32	0.59
1:B:4182:GLU:OE2	1:B:4192:ARG:NH2	2.32	0.59
1:C:4046:ASP:O	1:C:4050:GLU:HG2	2.02	0.58
1:D:3985:LEU:O	1:D:3989:VAL:N	2.35	0.58
1:A:4980:LEU:O	1:A:4984:ASN:ND2	2.36	0.58
1:C:4980:LEU:O	1:C:4984:ASN:ND2	2.36	0.58
1:D:4980:LEU:O	1:D:4984:ASN:ND2	2.36	0.58
1:B:4980:LEU:O	1:B:4984:ASN:ND2	2.36	0.58
1:C:4182:GLU:OE2	1:C:4192:ARG:NH2	2.32	0.58
1:A:3985:LEU:O	1:A:3989:VAL:N	2.36	0.58
1:A:3986:TRP:NE1	1:A:4043:GLN:NE2	2.52	0.58
1:B:3985:LEU:O	1:B:3989:VAL:N	2.36	0.58
1:B:3986:TRP:NE1	1:B:4043:GLN:NE2	2.52	0.57
1:C:3985:LEU:O	1:C:3989:VAL:N	2.35	0.57
1:C:4991:PHE:HE2	1:C:5010:VAL:HG11	1.70	0.57
1:D:4991:PHE:HE2	1:D:5010:VAL:HG11	1.70	0.57
1:A:4982:GLU:OE2	1:A:5029:ARG:NH2	2.38	0.56
1:A:3992:PHE:O	1:A:3996:PHE:N	2.24	0.55
1:B:4991:PHE:HE2	1:B:5010:VAL:HG11	1.70	0.55
1:C:4982:GLU:OE2	1:C:5029:ARG:NH2	2.38	0.55
1:A:4983:HIS:O	2:A:5101:AGS:N6	2.40	0.55
1:C:4983:HIS:O	2:C:5101:AGS:N6	2.40	0.55
1:B:4982:GLU:OE2	1:B:5029:ARG:NH2	2.38	0.55
1:D:3992:PHE:O	1:D:3996:PHE:N	2.24	0.55
1:B:4966:ASP:OD2	1:B:4967:TYR:N	2.40	0.55
1:D:4885:PHE:O	1:D:4889:VAL:HG22	2.07	0.55
1:A:4885:PHE:O	1:A:4889:VAL:HG22	2.07	0.55
1:A:4966:ASP:OD2	1:A:4967:TYR:N	2.40	0.55
1:A:4991:PHE:HE2	1:A:5010:VAL:HG11	1.70	0.55
1:D:4966:ASP:OD2	1:D:4967:TYR:N	2.40	0.55
1:A:3994:HIS:O	1:A:3998:HIS:ND1	2.40	0.54
1:A:4677:LEU:HD11	1:A:4687:TYR:HE2	1.73	0.54
1:B:4552:LEU:HD22	1:B:4663:CYS:SG	2.48	0.54
1:D:4983:HIS:O	2:D:5101:AGS:N6	2.40	0.54
1:B:4885:PHE:O	1:B:4889:VAL:HG22	2.07	0.54
1:C:4552:LEU:HD22	1:C:4663:CYS:SG	2.48	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:4983:HIS:O	2:B:5101:AGS:N6	2.40	0.54
1:C:4885:PHE:O	1:C:4889:VAL:HG22	2.07	0.54
1:A:4552:LEU:HD22	1:A:4663:CYS:SG	2.48	0.54
1:C:4966:ASP:OD2	1:C:4967:TYR:N	2.40	0.54
1:A:4853:VAL:O	1:A:4857:ASN:ND2	2.38	0.53
1:D:4982:GLU:OE2	1:D:5029:ARG:NH2	2.38	0.53
1:B:4677:LEU:HD11	1:B:4687:TYR:HE2	1.73	0.53
1:D:4552:LEU:HD22	1:D:4663:CYS:SG	2.48	0.53
1:A:4555:LEU:HD21	1:A:4656:LEU:HD22	1.91	0.53
1:B:4555:LEU:HD21	1:B:4656:LEU:HD22	1.91	0.53
1:D:4677:LEU:HD11	1:D:4687:TYR:HE2	1.73	0.53
1:C:3992:PHE:O	1:C:3996:PHE:N	2.24	0.52
1:B:3994:HIS:O	1:B:3998:HIS:ND1	2.40	0.52
1:C:4677:LEU:HD11	1:C:4687:TYR:HE2	1.73	0.52
1:D:4555:LEU:HD21	1:D:4656:LEU:HD22	1.91	0.52
1:D:4569:LEU:HD22	1:D:4646:LEU:HD22	1.92	0.52
1:C:4577:LEU:HD21	1:C:4806:ASN:HB3	1.92	0.51
1:C:4555:LEU:HD21	1:C:4656:LEU:HD22	1.91	0.51
1:A:4569:LEU:HD22	1:A:4646:LEU:HD22	1.92	0.51
1:C:4569:LEU:HD22	1:C:4646:LEU:HD22	1.92	0.51
1:A:4232:GLU:OE1	1:A:5017:ARG:NH2	2.44	0.51
1:C:4240:ASP:OD2	1:C:4672:LYS:NZ	2.43	0.51
1:D:4661:TYR:OH	1:D:4786:ASP:OD2	2.29	0.51
1:D:4232:GLU:OE1	1:D:5017:ARG:NH2	2.44	0.51
1:A:4843:LEU:HD21	1:D:4827:LEU:HD21	1.93	0.51
1:C:3994:HIS:O	1:C:3998:HIS:ND1	2.39	0.51
1:C:4661:TYR:OH	1:C:4786:ASP:OD2	2.29	0.51
1:B:4827:LEU:HD21	1:C:4843:LEU:HD21	1.93	0.50
1:B:4577:LEU:HD21	1:B:4806:ASN:HB3	1.93	0.50
1:A:4577:LEU:HD21	1:A:4806:ASN:HB3	1.93	0.50
1:D:4577:LEU:HD21	1:D:4806:ASN:HB3	1.93	0.50
1:B:4569:LEU:HD22	1:B:4646:LEU:HD22	1.92	0.50
1:C:4232:GLU:OE1	1:C:5017:ARG:NH2	2.44	0.50
1:D:4202:ARG:O	1:D:4206:GLU:HG2	2.12	0.50
1:B:4232:GLU:OE1	1:B:5017:ARG:NH2	2.44	0.50
1:B:4240:ASP:OD2	1:B:4672:LYS:NZ	2.43	0.50
1:B:4661:TYR:OH	1:B:4786:ASP:OD2	2.29	0.50
1:C:4202:ARG:O	1:C:4206:GLU:HG2	2.12	0.50
1:D:3994:HIS:O	1:D:3998:HIS:ND1	2.39	0.50
1:B:4202:ARG:O	1:B:4206:GLU:HG2	2.12	0.50
1:A:4661:TYR:OH	1:A:4786:ASP:OD2	2.29	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4240:ASP:OD2	1:A:4672:LYS:NZ	2.43	0.49
1:A:4827:LEU:HD21	1:B:4843:LEU:HD21	1.93	0.49
1:C:4827:LEU:HD21	1:D:4843:LEU:HD21	1.93	0.49
1:D:4240:ASP:OD2	1:D:4672:LYS:NZ	2.43	0.49
1:A:4202:ARG:O	1:A:4206:GLU:HG2	2.12	0.49
1:C:4951:LYS:O	1:C:4955:GLU:HG3	2.13	0.49
1:D:4853:VAL:O	1:D:4857:ASN:ND2	2.38	0.49
1:D:4951:LYS:O	1:D:4955:GLU:HG3	2.13	0.49
1:B:3986:TRP:CE2	1:B:4043:GLN:NE2	2.82	0.48
1:B:4951:LYS:O	1:B:4955:GLU:HG3	2.13	0.48
1:A:3986:TRP:CE2	1:A:4043:GLN:NE2	2.82	0.48
1:A:4951:LYS:O	1:A:4955:GLU:HG3	2.13	0.48
1:C:4567:LEU:HG	1:C:4571:PHE:HE2	1.79	0.48
1:A:4567:LEU:HG	1:A:4571:PHE:HE2	1.79	0.47
1:D:4567:LEU:HG	1:D:4571:PHE:HE2	1.79	0.47
1:A:4937:ILE:HG12	1:B:4934:GLY:HA2	1.96	0.47
1:B:4937:ILE:HG12	1:C:4934:GLY:HA2	1.97	0.47
1:C:4853:VAL:O	1:C:4857:ASN:ND2	2.38	0.47
1:B:4567:LEU:HG	1:B:4571:PHE:HE2	1.79	0.46
1:B:4853:VAL:O	1:B:4857:ASN:ND2	2.38	0.46
1:C:4937:ILE:HG12	1:D:4934:GLY:HA2	1.96	0.46
1:B:5011:TRP:O	1:B:5015:GLN:HG2	2.16	0.46
1:A:4586:PRO:HA	1:A:4629:TYR:HD2	1.81	0.46
1:B:4586:PRO:HA	1:B:4629:TYR:HD2	1.81	0.46
1:C:4586:PRO:HA	1:C:4629:TYR:HD2	1.81	0.46
1:D:4586:PRO:HA	1:D:4629:TYR:HD2	1.81	0.46
1:A:4934:GLY:HA2	1:D:4937:ILE:HG12	1.96	0.46
1:A:5011:TRP:O	1:A:5015:GLN:HG2	2.16	0.46
1:C:4823:LEU:HD23	1:C:4823:LEU:HA	1.82	0.46
1:D:5011:TRP:O	1:D:5015:GLN:HG2	2.16	0.46
1:D:4584:ASP:OD1	1:D:4584:ASP:N	2.49	0.45
1:B:3981:ALA:HA	1:B:3986:TRP:HE1	1.82	0.45
1:B:4244:GLU:OE2	1:B:4247:ILE:HD11	2.17	0.45
1:A:4244:GLU:OE2	1:A:4247:ILE:HD11	2.17	0.45
1:B:4823:LEU:HD23	1:B:4823:LEU:HA	1.82	0.45
1:C:4244:GLU:OE2	1:C:4247:ILE:HD11	2.17	0.45
1:C:5011:TRP:O	1:C:5015:GLN:HG2	2.16	0.45
1:D:4239:GLU:OE2	1:D:5014:TYR:OH	2.30	0.45
1:A:3981:ALA:HA	1:A:3986:TRP:HE1	1.82	0.45
1:B:4584:ASP:OD1	1:B:4584:ASP:N	2.49	0.45
1:A:4584:ASP:OD1	1:A:4584:ASP:N	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:4851:TYR:CD2	1:B:4920:PHE:HD1	2.35	0.44
1:D:4244:GLU:OE2	1:D:4247:ILE:HD11	2.17	0.44
1:D:4851:TYR:CD2	1:D:4920:PHE:HD1	2.35	0.44
1:A:4851:TYR:CD2	1:A:4920:PHE:HD1	2.35	0.44
1:C:4851:TYR:CD2	1:C:4920:PHE:HD1	2.35	0.44
1:A:4055:VAL:HA	1:A:4058:ILE:HG22	2.00	0.43
1:C:4055:VAL:HA	1:C:4058:ILE:HG22	2.00	0.43
1:D:4794:TRP:O	1:D:4798:MET:HG2	2.18	0.43
1:A:4823:LEU:HD23	1:A:4823:LEU:HA	1.82	0.43
1:A:4945:ASP:OD1	1:A:4946:GLN:N	2.52	0.43
1:A:3975:GLY:O	1:A:3978:GLN:HG2	2.19	0.43
1:C:4650:HIS:CE1	1:C:4799:SER:HG	2.37	0.43
1:A:4794:TRP:O	1:A:4798:MET:HG2	2.18	0.43
1:B:4945:ASP:OD1	1:B:4946:GLN:N	2.52	0.43
1:B:4794:TRP:O	1:B:4798:MET:HG2	2.18	0.43
1:B:4650:HIS:CE1	1:B:4799:SER:HG	2.37	0.43
1:D:3975:GLY:O	1:D:3978:GLN:HG2	2.19	0.42
1:D:4945:ASP:OD1	1:D:4946:GLN:N	2.52	0.42
1:D:4055:VAL:HA	1:D:4058:ILE:HG22	2.00	0.42
1:B:3975:GLY:O	1:B:3978:GLN:HG2	2.19	0.42
1:B:4055:VAL:HA	1:B:4058:ILE:HG22	2.00	0.42
1:C:4794:TRP:O	1:C:4798:MET:HG2	2.18	0.42
1:C:4945:ASP:OD1	1:C:4946:GLN:N	2.52	0.42
1:B:4897:ILE:O	1:B:4901:ILE:HG12	2.20	0.42
1:D:4242:ILE:HG12	1:D:4993:MET:HB2	2.02	0.42
1:D:4650:HIS:CE1	1:D:4799:SER:HG	2.37	0.42
1:A:4897:ILE:O	1:A:4901:ILE:HG12	2.20	0.42
1:B:3969:ILE:HD12	1:B:3980:LEU:HD12	2.02	0.42
1:B:4640:GLU:CG	1:B:4641:PRO:HD3	2.49	0.42
1:C:5035:GLN:OE1	1:C:5035:GLN:N	2.53	0.42
1:D:4699:GLY:O	1:D:4703:ARG:HG3	2.20	0.42
1:B:4239:GLU:OE2	1:B:5014:TYR:OH	2.30	0.42
1:B:5035:GLN:OE1	1:B:5035:GLN:N	2.53	0.42
1:C:3969:ILE:HD12	1:C:3980:LEU:HD12	2.02	0.42
1:C:4242:ILE:HG12	1:C:4993:MET:HB2	2.02	0.42
1:C:4023:MET:O	1:C:4027:LEU:HD23	2.20	0.42
1:D:4022:ASP:HA	1:D:4025:VAL:HG22	2.02	0.42
1:D:4897:ILE:O	1:D:4901:ILE:HG12	2.20	0.42
1:A:3965:LEU:HD23	1:A:3965:LEU:HA	1.95	0.41
1:A:5035:GLN:N	1:A:5035:GLN:OE1	2.53	0.41
1:C:4897:ILE:O	1:C:4901:ILE:HG12	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:4823:LEU:HA	1:D:4823:LEU:HD23	1.82	0.41
1:A:4023:MET:O	1:A:4027:LEU:HD23	2.20	0.41
1:A:4699:GLY:O	1:A:4703:ARG:HG3	2.20	0.41
1:C:4017:LEU:O	1:C:4020:GLN:HG2	2.20	0.41
1:A:4031:LEU:HD23	1:A:4031:LEU:HA	1.89	0.41
1:C:3975:GLY:O	1:C:3978:GLN:HG2	2.19	0.41
1:C:4699:GLY:O	1:C:4703:ARG:HG3	2.20	0.41
1:A:4022:ASP:HA	1:A:4025:VAL:HG22	2.02	0.41
1:A:3969:ILE:HD12	1:A:3980:LEU:HD12	2.01	0.41
1:B:4023:MET:O	1:B:4027:LEU:HD23	2.20	0.41
1:A:4242:ILE:HG12	1:A:4993:MET:HB2	2.02	0.41
1:B:4022:ASP:HA	1:B:4025:VAL:HG22	2.02	0.41
1:B:4699:GLY:O	1:B:4703:ARG:HG3	2.20	0.41
1:D:4017:LEU:O	1:D:4020:GLN:HG2	2.20	0.41
1:D:5035:GLN:OE1	1:D:5035:GLN:N	2.53	0.41
1:D:3969:ILE:HD12	1:D:3980:LEU:HD12	2.02	0.41
1:D:4023:MET:O	1:D:4027:LEU:HD23	2.20	0.41
1:B:3965:LEU:HD23	1:B:3965:LEU:HA	1.95	0.41
1:B:4242:ILE:HG12	1:B:4993:MET:HB2	2.02	0.41
1:B:4580:TYR:OH	1:B:4630:TYR:HA	2.21	0.41
1:C:4580:TYR:OH	1:C:4630:TYR:HA	2.21	0.41
1:D:4580:TYR:OH	1:D:4630:TYR:HA	2.20	0.41
1:D:4681:LEU:HD23	1:D:4681:LEU:HA	1.92	0.41
1:C:4851:TYR:HD2	1:C:4920:PHE:HD1	1.69	0.41
1:B:4017:LEU:O	1:B:4020:GLN:HG2	2.21	0.40
1:C:4022:ASP:HA	1:C:4025:VAL:HG22	2.02	0.40
1:D:4640:GLU:CG	1:D:4641:PRO:HD3	2.49	0.40
1:A:4017:LEU:O	1:A:4020:GLN:HG2	2.21	0.40
1:B:4052:SER:O	1:B:4056:GLU:HG3	2.21	0.40
1:B:4634:GLU:OE1	1:B:4636:THR:N	2.54	0.40
1:C:4584:ASP:N	1:C:4584:ASP:OD1	2.49	0.40
1:C:4634:GLU:OE1	1:C:4636:THR:N	2.54	0.40
1:D:4851:TYR:HD2	1:D:4920:PHE:HD1	1.69	0.40
1:A:4239:GLU:OE2	1:A:5014:TYR:OH	2.30	0.40
1:A:4580:TYR:OH	1:A:4630:TYR:HA	2.20	0.40
1:A:4634:GLU:OE1	1:A:4636:THR:N	2.54	0.40
1:D:4634:GLU:OE1	1:D:4636:THR:N	2.54	0.40
1:C:4677:LEU:HD23	1:C:4711:PHE:HE1	1.87	0.40
1:C:4801:LEU:HD23	1:C:4801:LEU:HA	1.93	0.40
1:D:4031:LEU:HD23	1:D:4031:LEU:HA	1.90	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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	616/5037 (12%)	597 (97%)	19 (3%)	0	100	100
1	B	616/5037 (12%)	597 (97%)	19 (3%)	0	100	100
1	C	616/5037 (12%)	597 (97%)	19 (3%)	0	100	100
1	D	616/5037 (12%)	597 (97%)	19 (3%)	0	100	100
All	All	2464/20148 (12%)	2388 (97%)	76 (3%)	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	558/4276 (13%)	558 (100%)	0	100	100
1	B	558/4276 (13%)	558 (100%)	0	100	100
1	C	558/4276 (13%)	558 (100%)	0	100	100
1	D	558/4276 (13%)	558 (100%)	0	100	100
All	All	2232/17104 (13%)	2232 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	4020	GLN
1	B	4020	GLN
1	C	4020	GLN
1	D	4020	GLN

### 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](#)

Of 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 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	$\# Z  > 2$
2	AGS	C	5101	-	28,33,33	0.73	1 (3%)	31,52,52	1.09	3 (9%)
2	AGS	B	5101	-	28,33,33	0.74	1 (3%)	31,52,52	1.09	3 (9%)
2	AGS	A	5101	-	28,33,33	0.74	1 (3%)	31,52,52	1.09	3 (9%)
2	AGS	D	5101	-	28,33,33	0.73	1 (3%)	31,52,52	1.09	3 (9%)

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	AGS	C	5101	-	-	1/17/38/38	0/3/3/3
2	AGS	B	5101	-	-	1/17/38/38	0/3/3/3
2	AGS	A	5101	-	-	1/17/38/38	0/3/3/3
2	AGS	D	5101	-	-	1/17/38/38	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	5101	AGS	PG-S1G	2.16	1.95	1.90
2	D	5101	AGS	PG-S1G	2.16	1.95	1.90
2	C	5101	AGS	PG-S1G	2.15	1.95	1.90
2	B	5101	AGS	PG-S1G	2.13	1.95	1.90

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	5101	AGS	PB-O3B-PG	-3.46	120.53	133.17
2	A	5101	AGS	PB-O3B-PG	-3.45	120.56	133.17
2	D	5101	AGS	PB-O3B-PG	-3.44	120.58	133.17
2	C	5101	AGS	PB-O3B-PG	-3.44	120.58	133.17
2	C	5101	AGS	C4'-O4'-C1'	-3.06	107.12	109.92
2	D	5101	AGS	C4'-O4'-C1'	-3.06	107.12	109.92
2	B	5101	AGS	C4'-O4'-C1'	-3.06	107.13	109.92
2	A	5101	AGS	C4'-O4'-C1'	-3.05	107.13	109.92
2	B	5101	AGS	C5-C6-N6	2.32	123.84	120.31
2	C	5101	AGS	C5-C6-N6	2.29	123.81	120.31
2	D	5101	AGS	C5-C6-N6	2.29	123.81	120.31
2	A	5101	AGS	C5-C6-N6	2.26	123.75	120.31

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	5101	AGS	C4'-C5'-O5'-PA
2	B	5101	AGS	C4'-C5'-O5'-PA
2	C	5101	AGS	C4'-C5'-O5'-PA
2	D	5101	AGS	C4'-C5'-O5'-PA

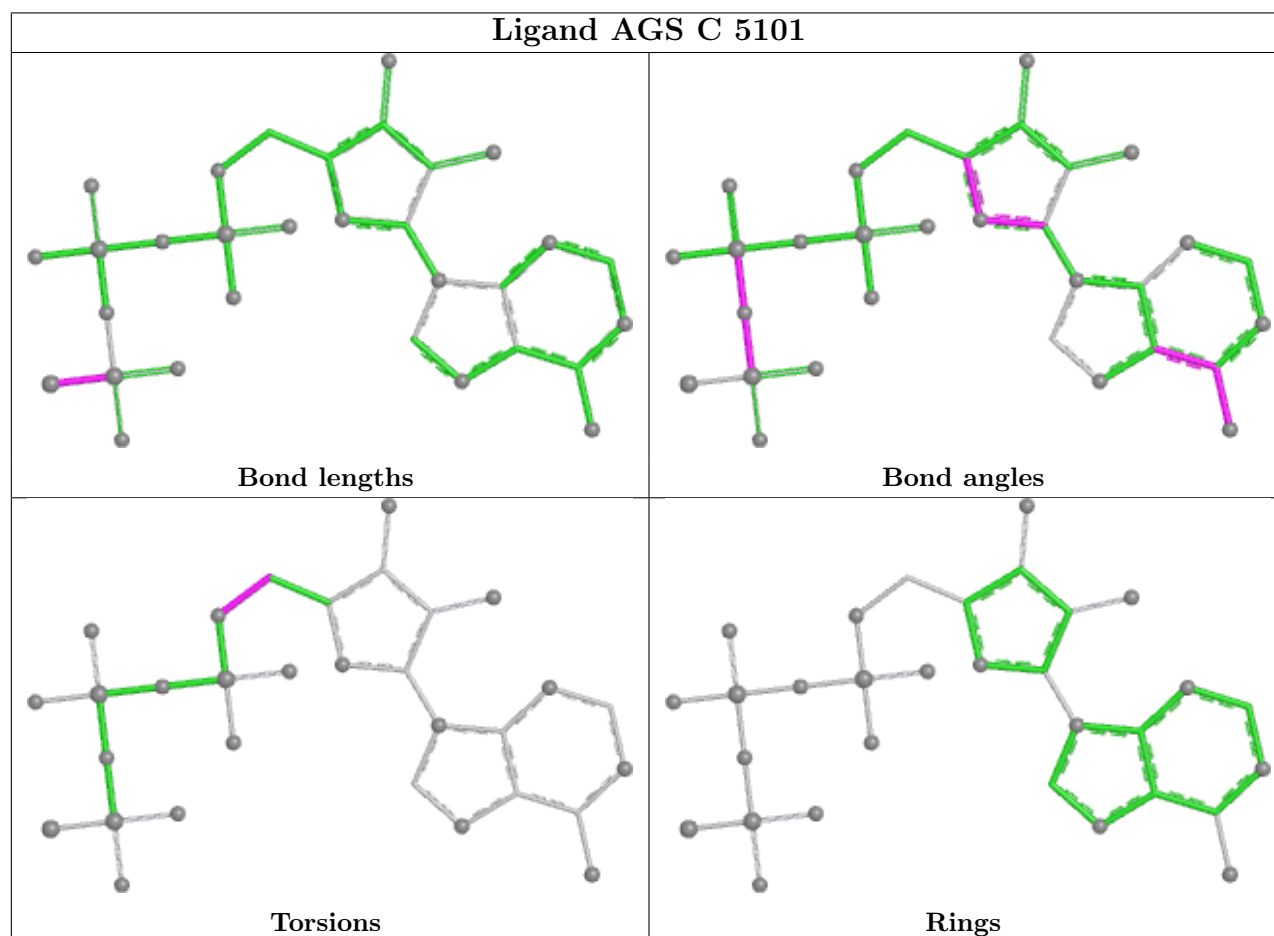
There are no ring outliers.

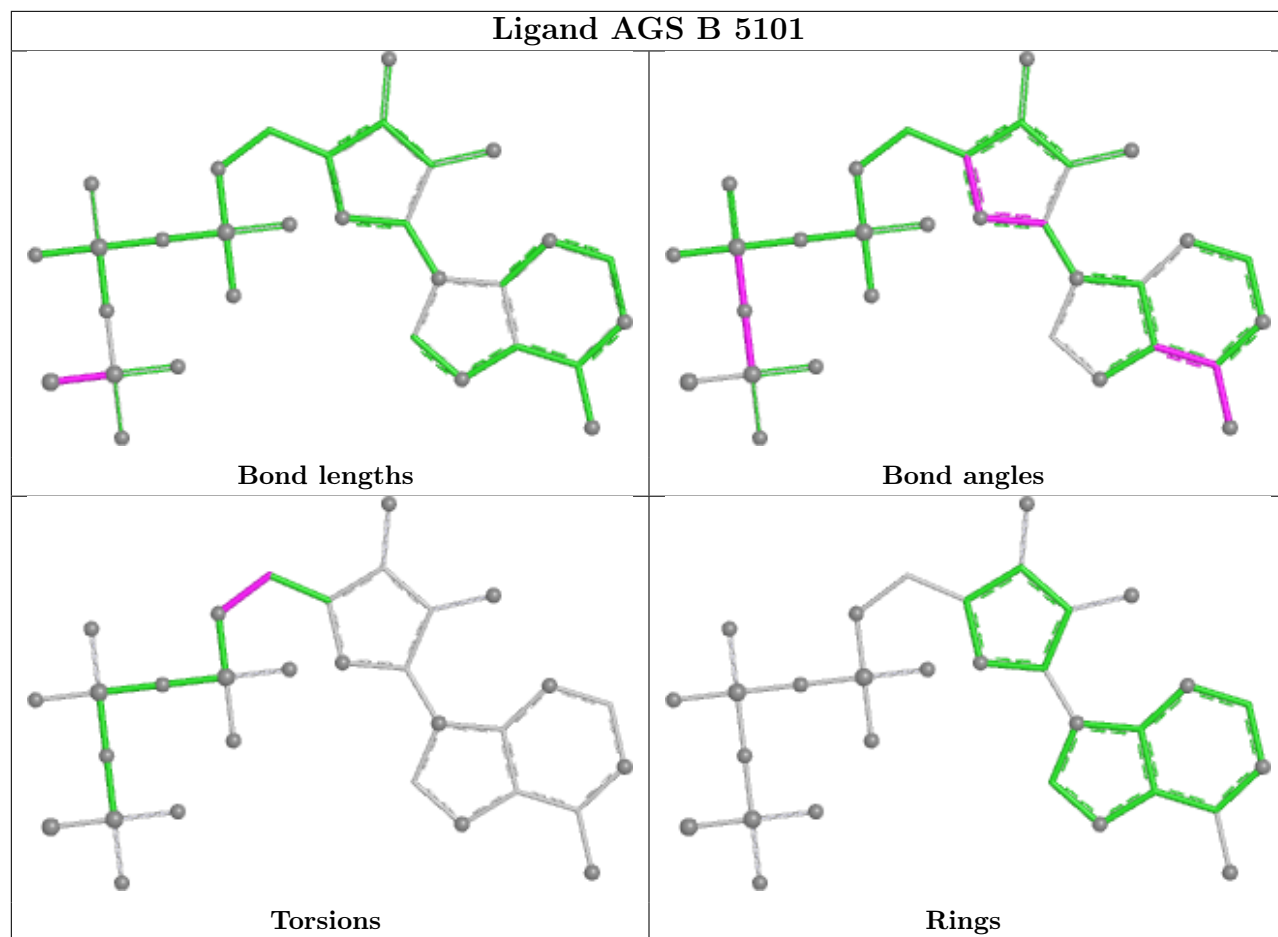
4 monomers are involved in 4 short contacts:

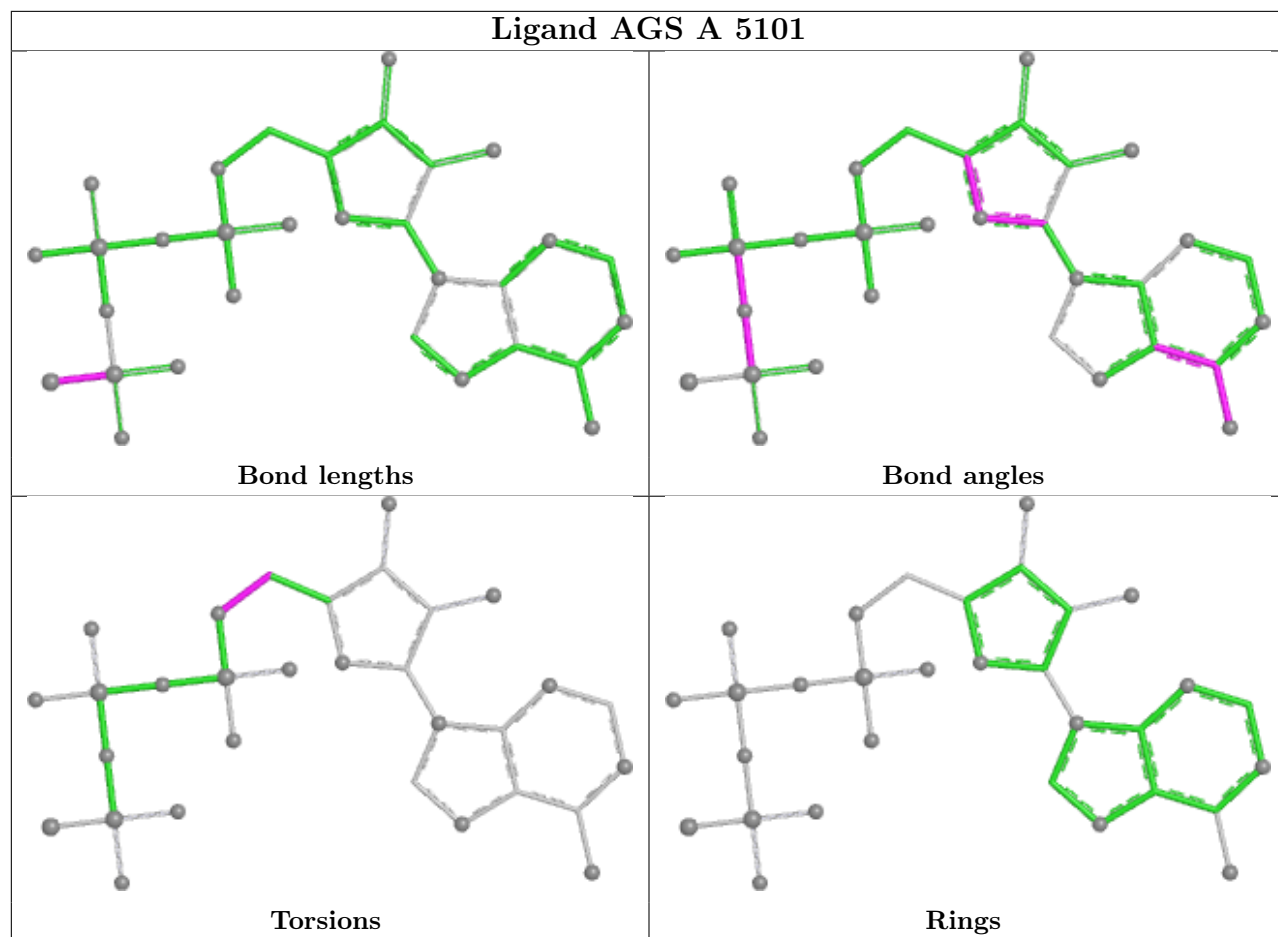


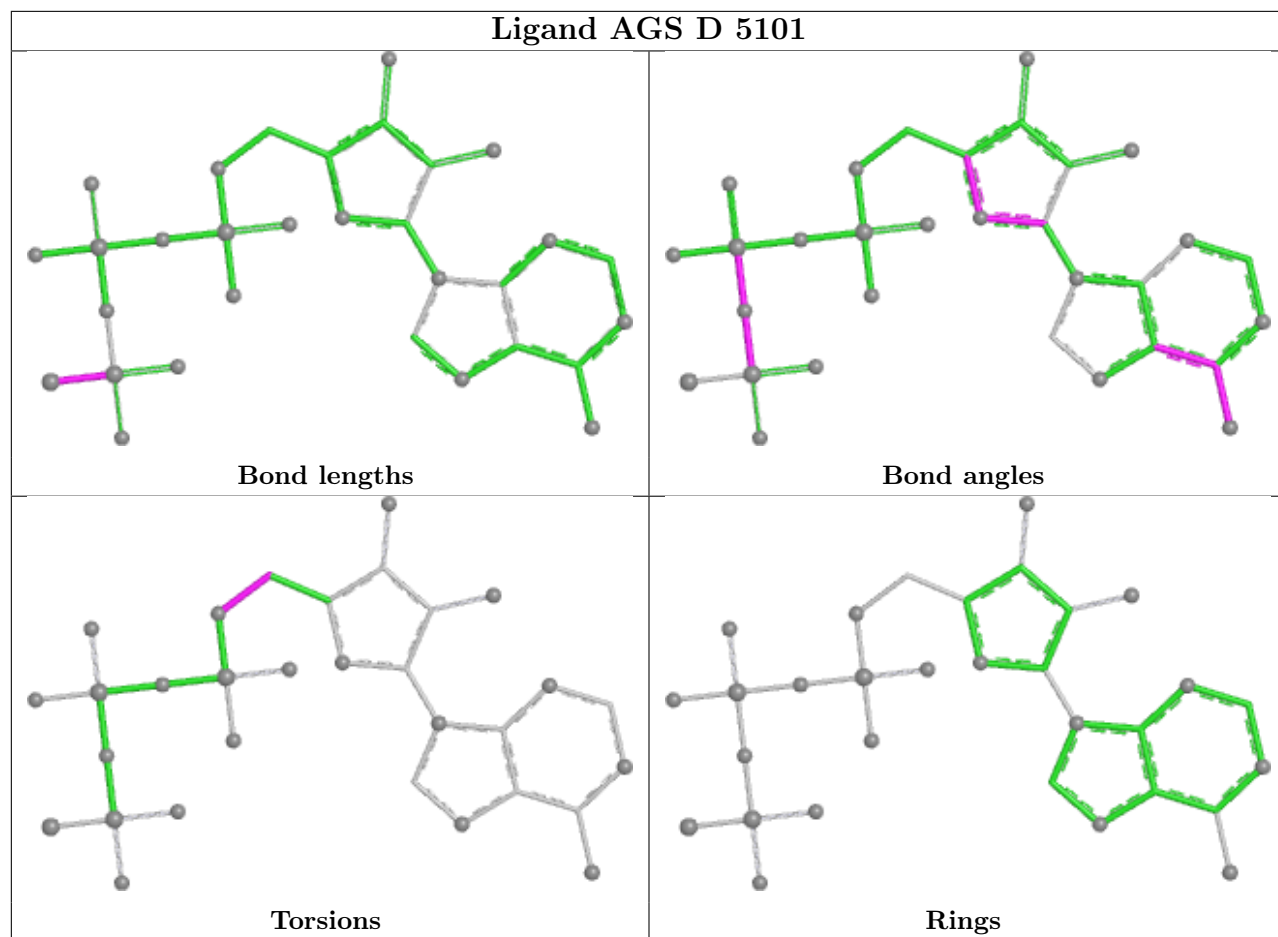
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	5101	AGS	1	0
2	B	5101	AGS	1	0
2	A	5101	AGS	1	0
2	D	5101	AGS	1	0

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 [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

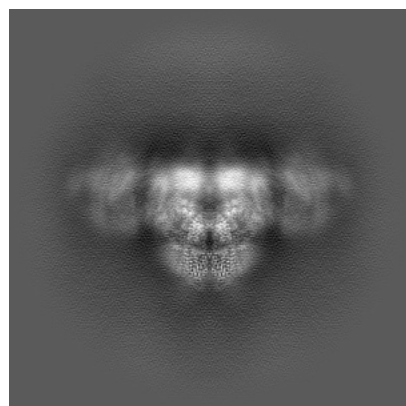
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-40430. These allow visual inspection of the internal detail of the map and identification of artifacts.

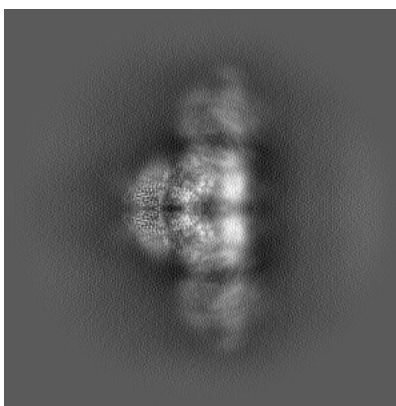
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

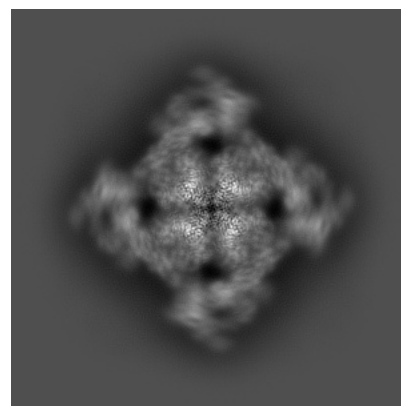
#### 6.1.1 Primary map



X

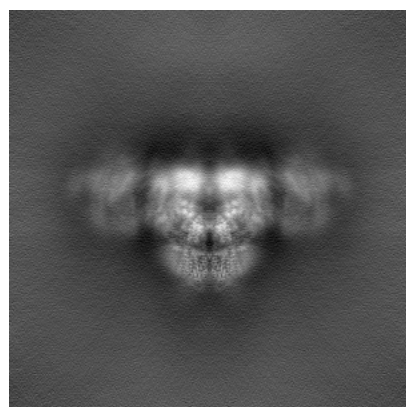


Y

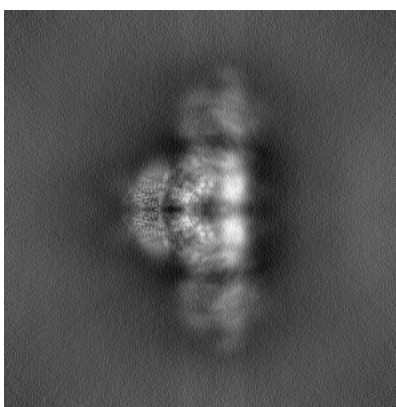


Z

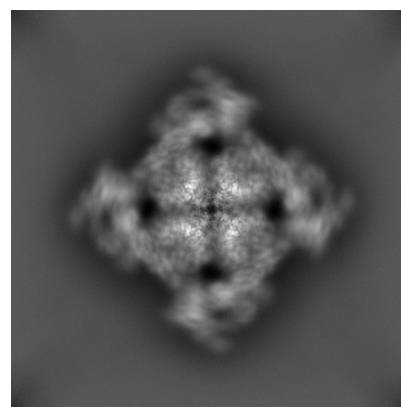
#### 6.1.2 Raw map



X



Y

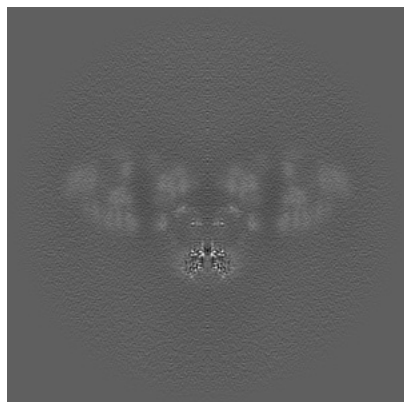


Z

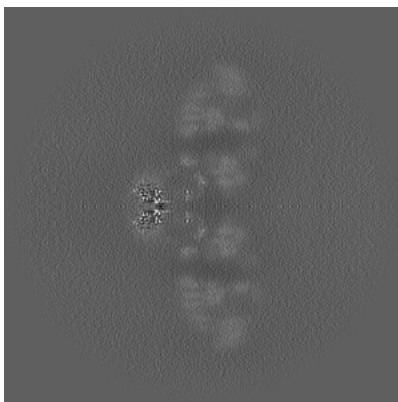
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

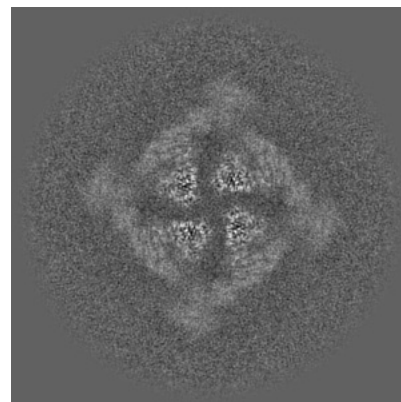
### 6.2.1 Primary map



X Index: 200

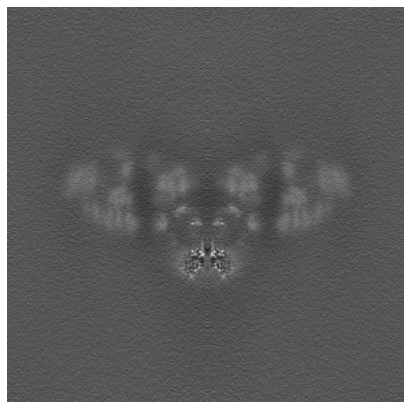


Y Index: 200

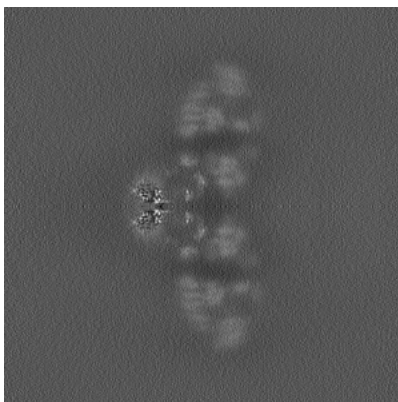


Z Index: 200

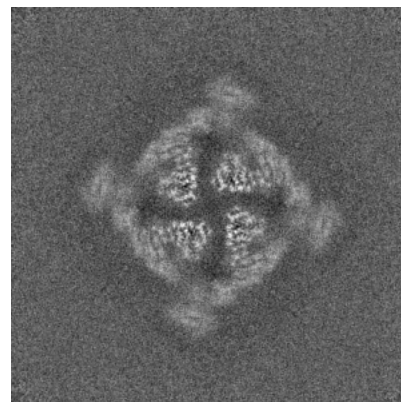
### 6.2.2 Raw map



X Index: 200



Y Index: 200



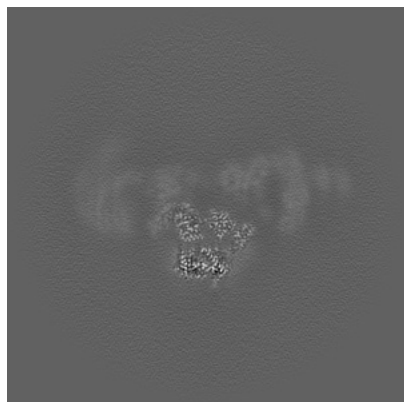
Z Index: 200

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

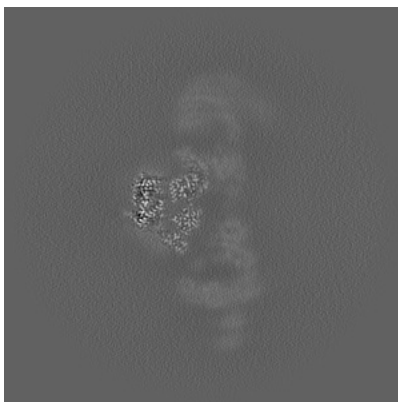


## 6.3 Largest variance slices [i](#)

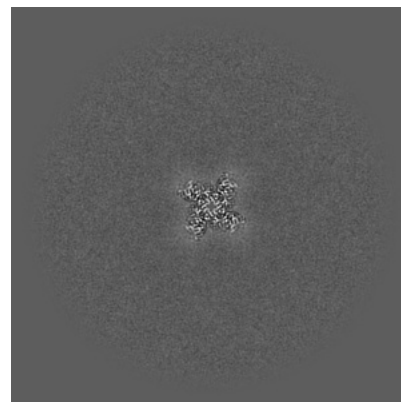
### 6.3.1 Primary map



X Index: 188

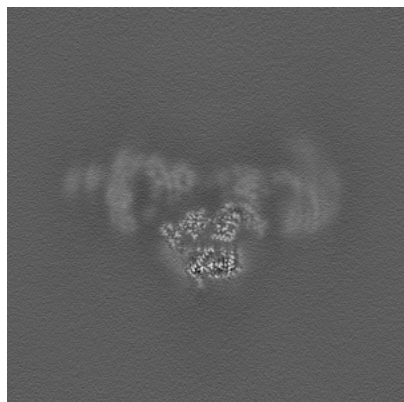


Y Index: 188

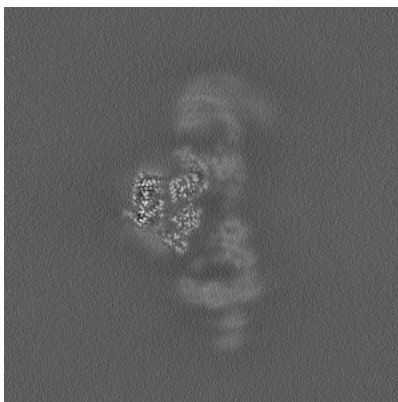


Z Index: 139

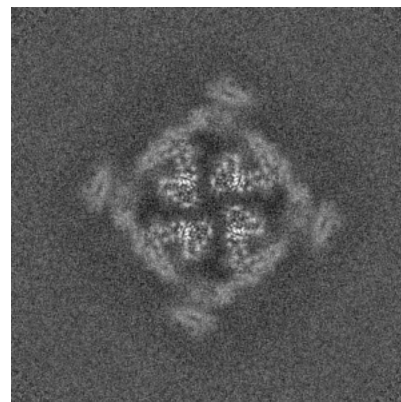
### 6.3.2 Raw map



X Index: 212



Y Index: 188

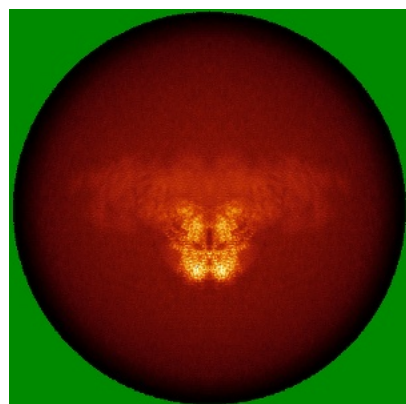


Z Index: 198

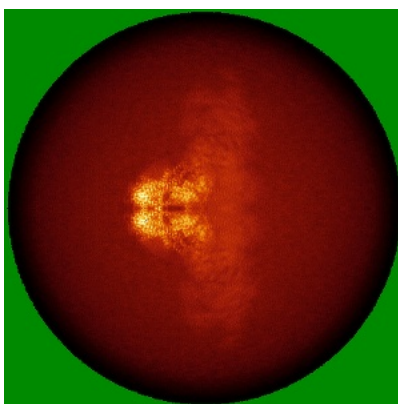
The images above show the largest variance slices of the map in three orthogonal directions.

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

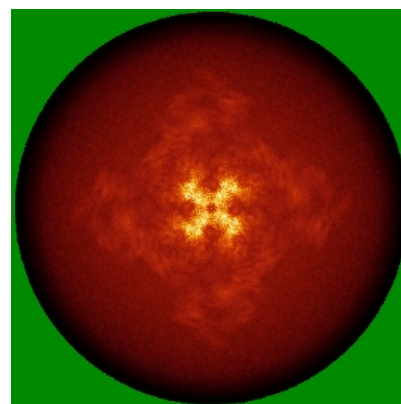
### 6.4.1 Primary map



X

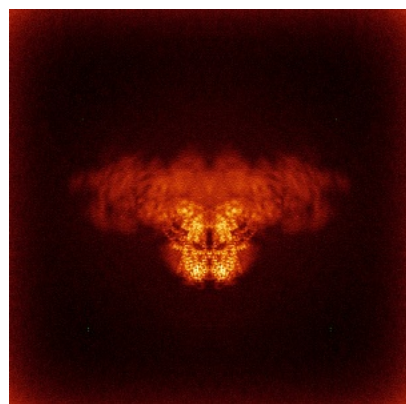


Y

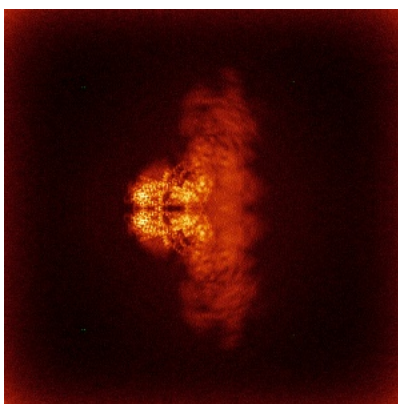


Z

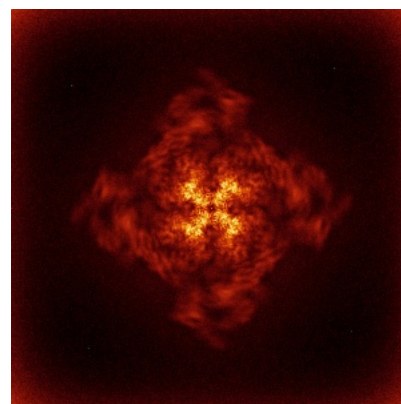
### 6.4.2 Raw map



X



Y



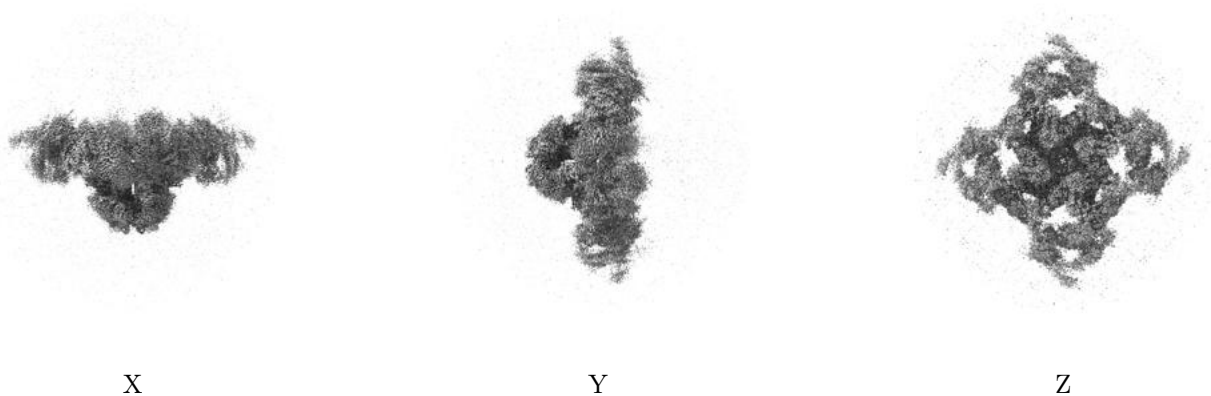
Z

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.



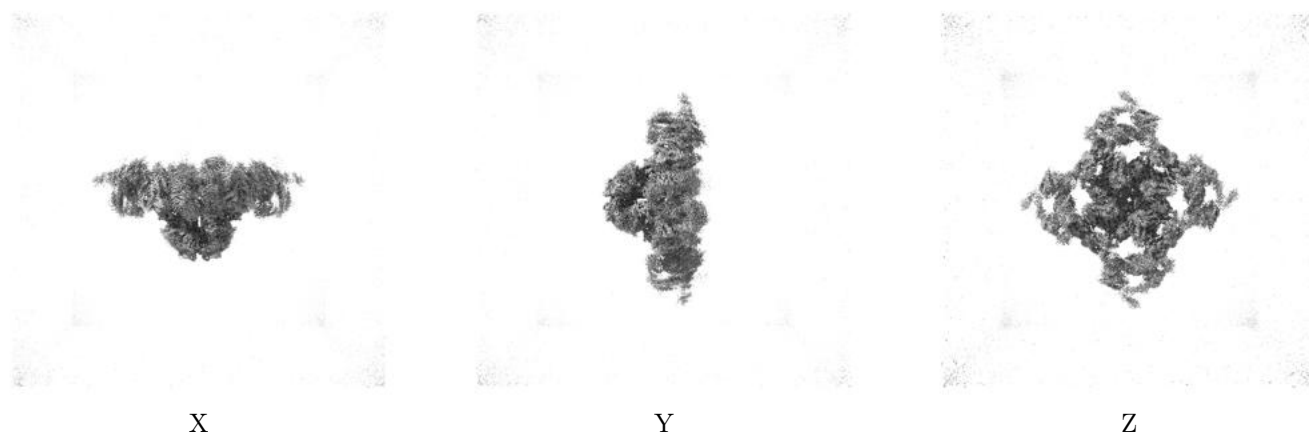
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.499. 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.

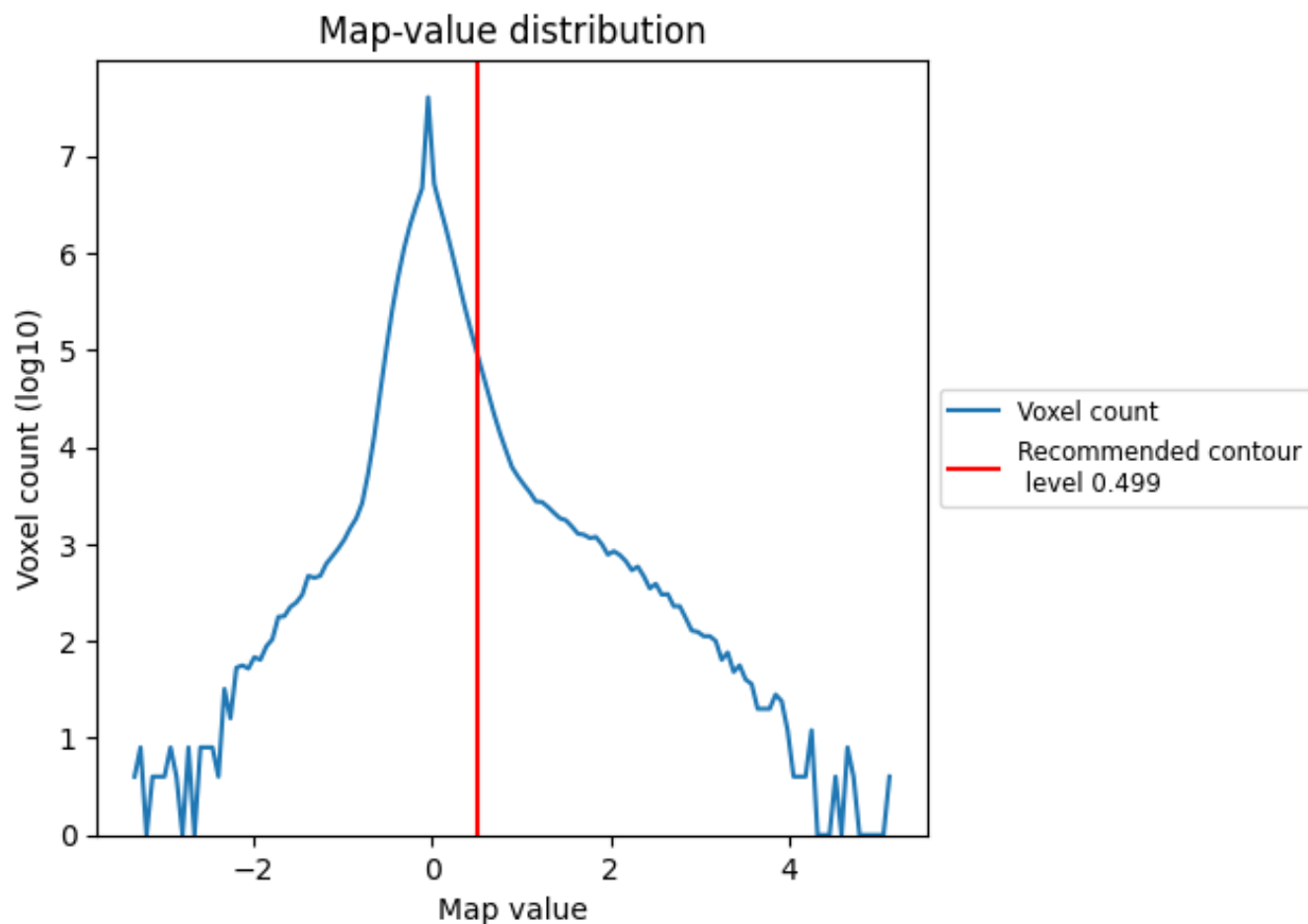
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

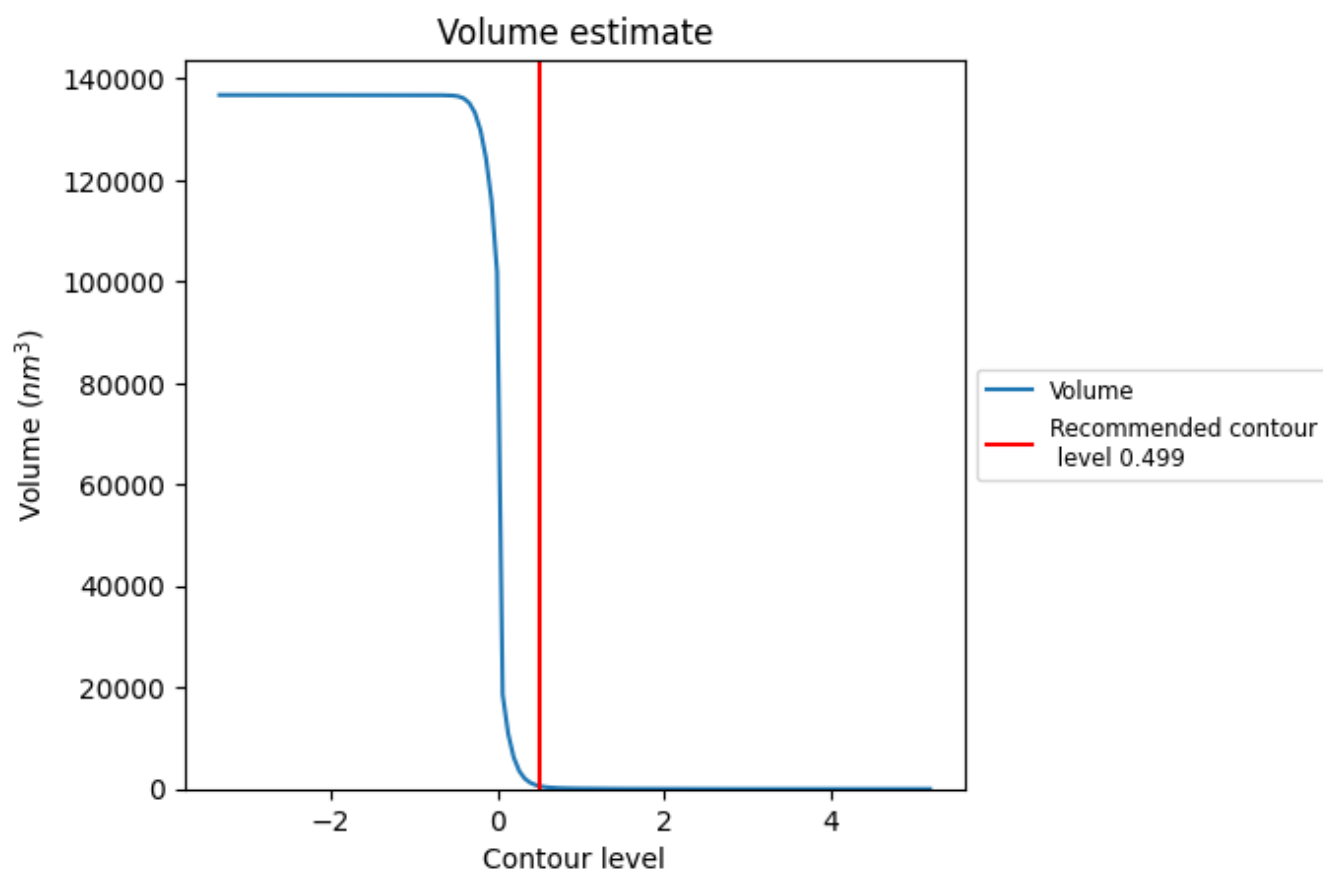
This section contains the results of statistical analysis of the map.

### 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.

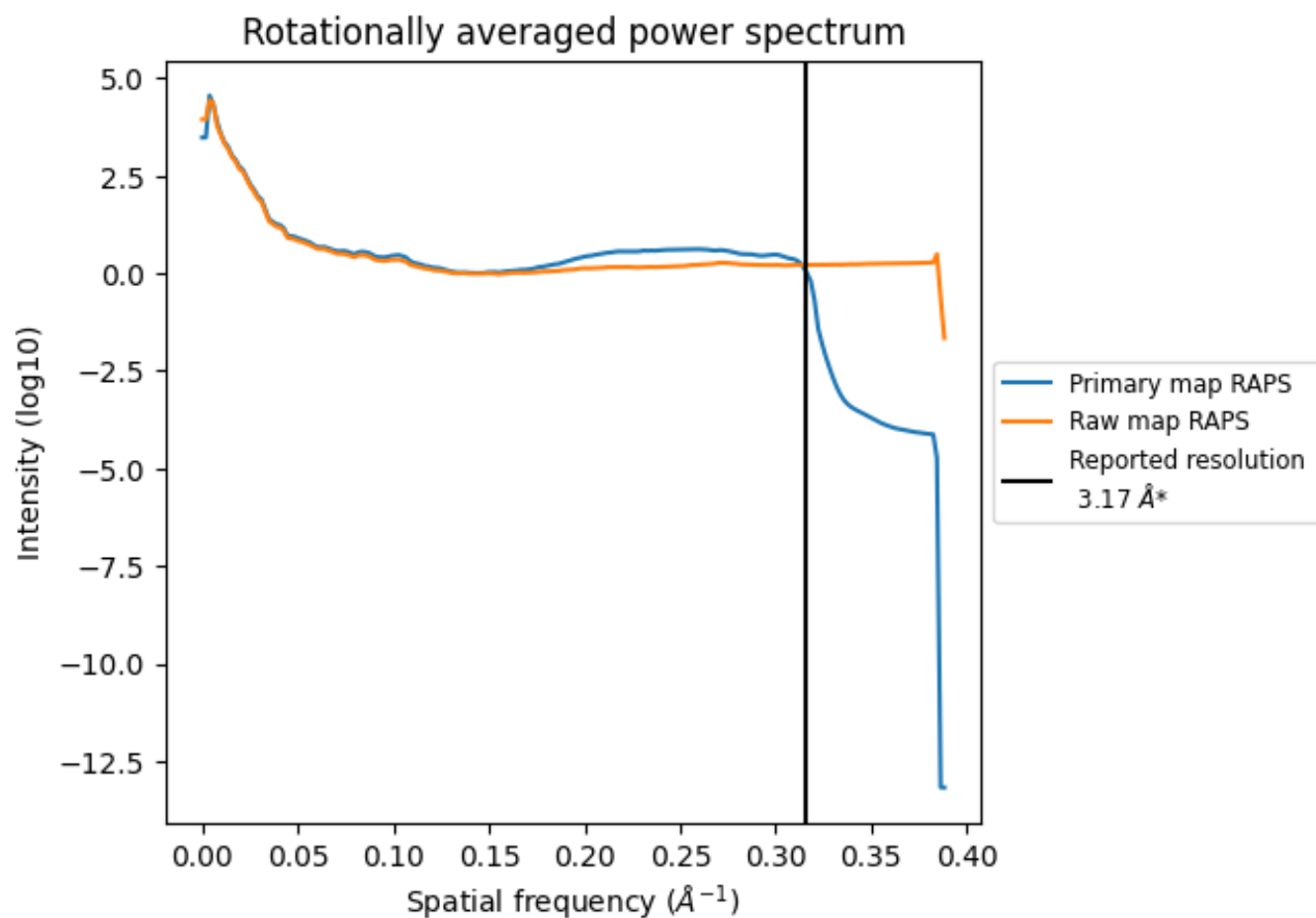
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 609 nm<sup>3</sup>; this corresponds to an approximate mass of 550 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 ⓘ

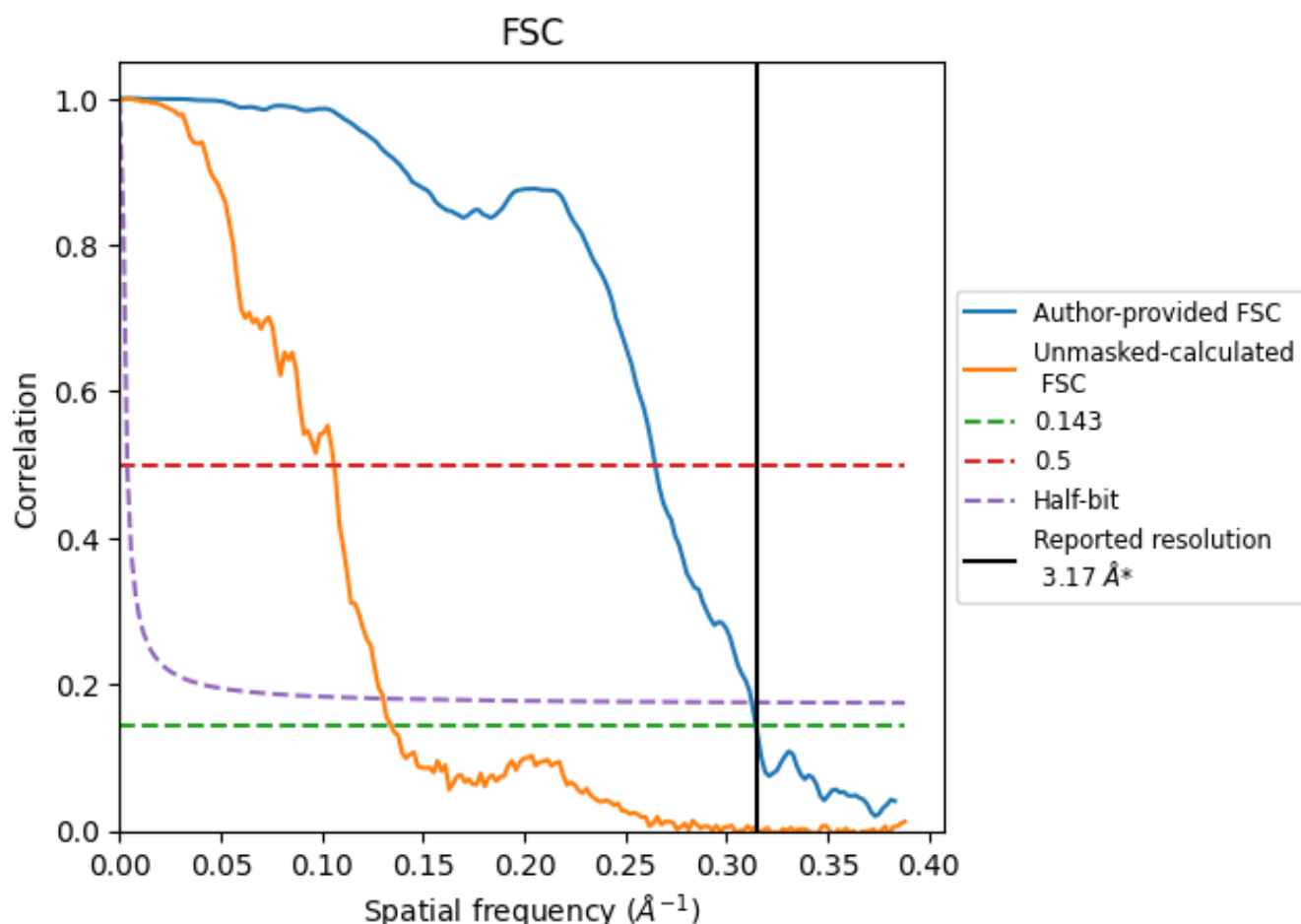


\*Reported resolution corresponds to spatial frequency of 0.315 Å<sup>-1</sup>

## 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 0.315 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

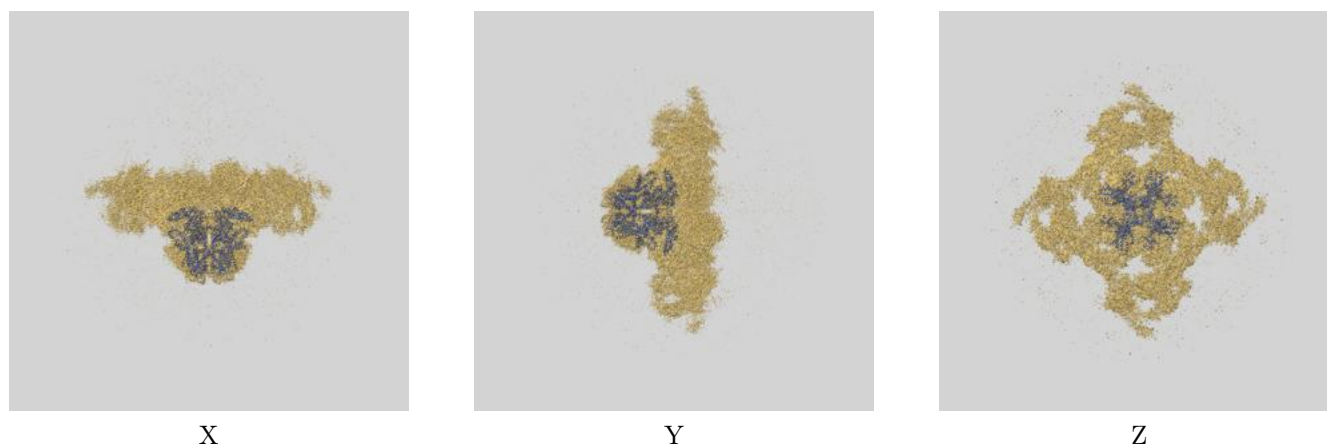
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.17	-	-
Author-provided FSC curve	3.18	3.78	3.20
Unmasked-calculated*	7.44	9.43	7.67

\*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 7.44 differs from the reported value 3.17 by more than 10 %

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

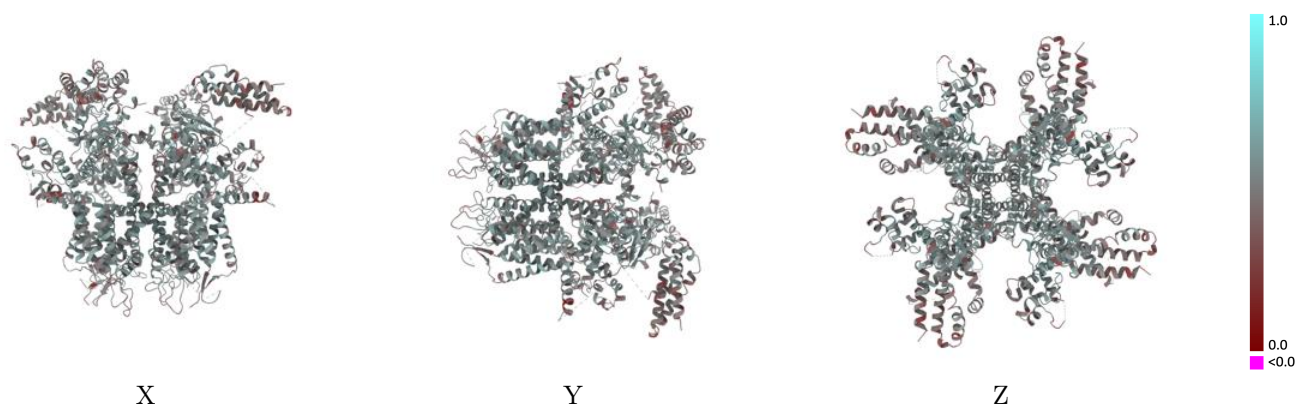
This section contains information regarding the fit between EMDB map EMD-40430 and PDB model 8SEV. Per-residue inclusion information can be found in section [3](#) on page [5](#).

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



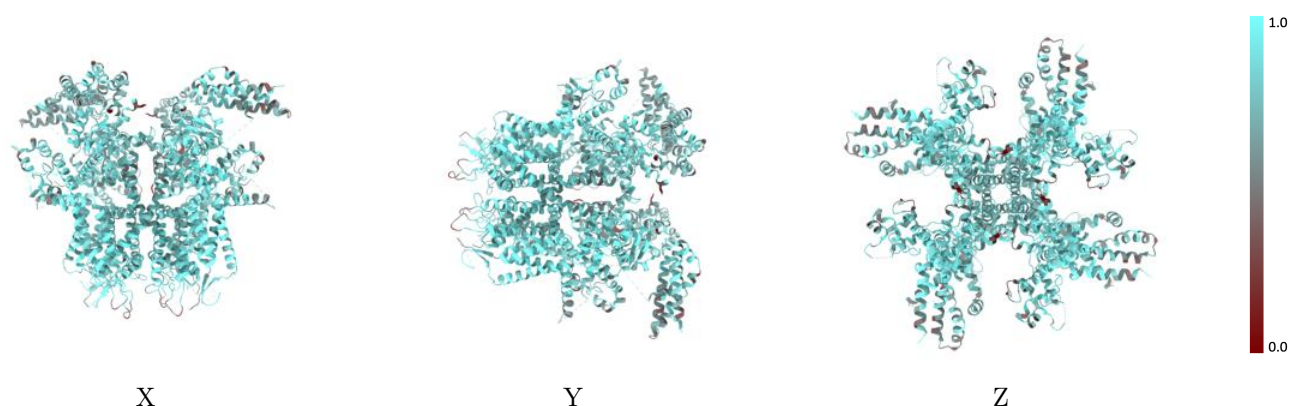
The images above show the 3D surface view of the map at the recommended contour level 0.499 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 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.

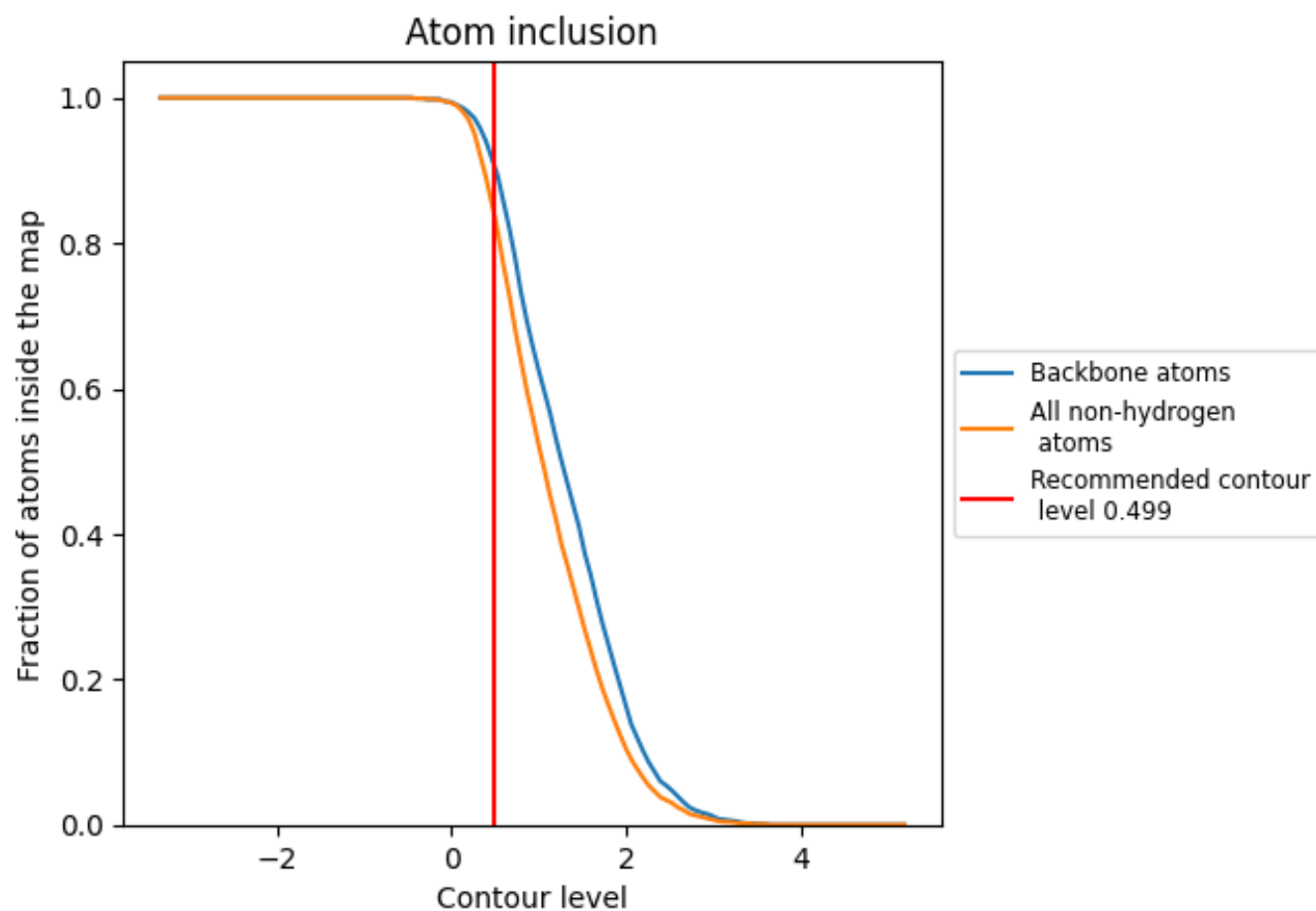
## 9.3 Atom inclusion mapped to coordinate model [i](#)



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 (0.499).



## 9.4 Atom inclusion [i](#)



At the recommended contour level, 90% 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 (0.499) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div><div></div></div> 0.8350	<div><div></div></div> 0.4990
A	<div><div></div></div> 0.8350	<div><div></div></div> 0.4990
B	<div><div></div></div> 0.8350	<div><div></div></div> 0.4990
C	<div><div></div></div> 0.8350	<div><div></div></div> 0.4990
D	<div><div></div></div> 0.8350	<div><div></div></div> 0.4990

