W O R L D W I D E

wwPDB

P R O T E I N   D A T A   B A N K

Full wwPDB EM Validation Report ⓘ

Oct 14, 2025 – 10:53 am BST

PDB ID	:	8QSI / pdb_00008qsi
EMDB ID	:	EMD-18633
Title	:	Portal protein of empty Haloferax tailed virus 1.
Authors	:	Zhang, D.; Daum, B.; Isupov, M.N.; McLaren, M.
Deposited on	:	2023-10-10
Resolution	:	2.75 Å(reported)
Based on initial model	:	.

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.75 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	Percentile Ranks	Value
Clashscore		0
Ramachandran outliers		0
Sidechain outliers		0.4%

Worse *Better*

▌ Percentile relative to all structures

◻ Percentile relative to all EM structures

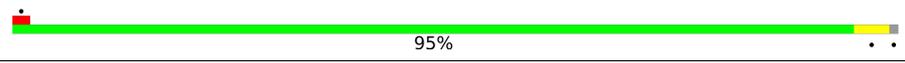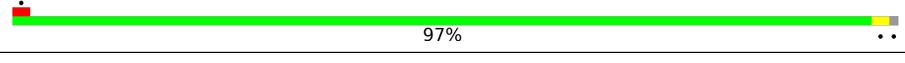| Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.532

Worse *Better*

▌ Percentile relative to all EM structures

◻ Percentile relative to EM structures of similar resolution
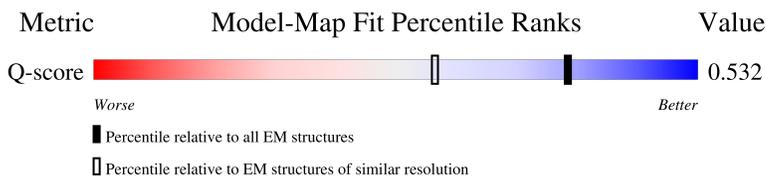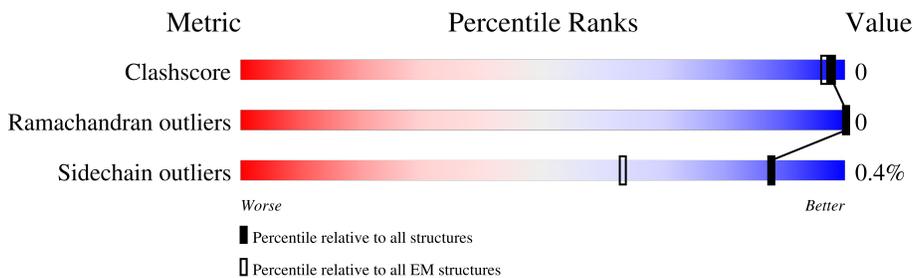
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	10570 (2.25 - 3.25)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	PM	141	97%
1	PN	141	97%
1	PO	141	96%
1	PP	141	96%

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Mol	Chain	Length	Quality of chain
1	PQ	141	95%
1	PR	141	97%
1	PS	141	96%
1	PT	141	96%
1	PU	141	94% 5%
1	PV	141	96%
1	PW	141	96%
1	PX	141	96%
2	PA	675	59% 41%
2	PB	675	58% 41%
2	PC	675	58% 41%
2	PD	675	59% 41%
2	PE	675	58% 41%
2	PF	675	59% 41%
2	PG	675	58% 41%
2	PH	675	58% 41%
2	PI	675	58% 41%
2	PJ	675	58% 41%
2	PK	675	59% 41%
2	PL	675	58% 41%
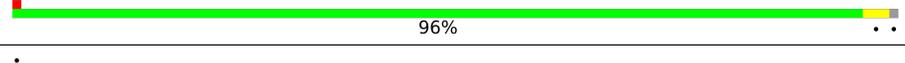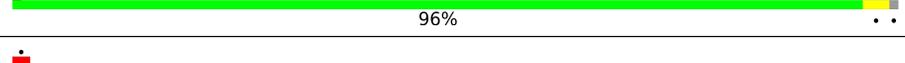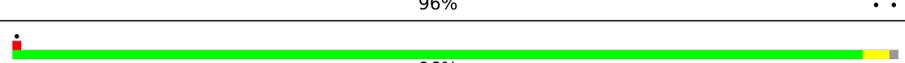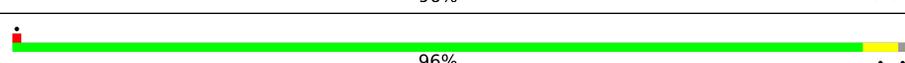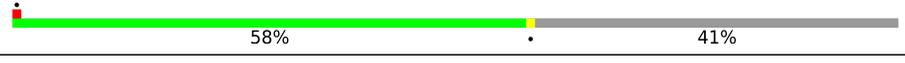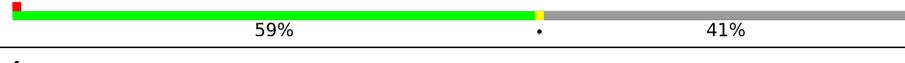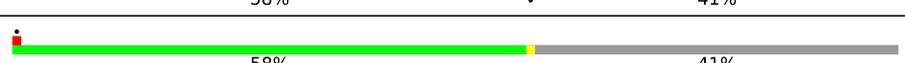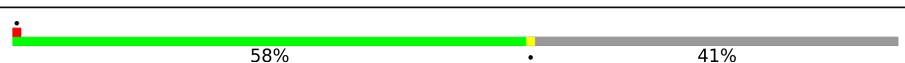
2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 50784 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 HK97 gp6-like/SPP1 gp15-like head-tail connector.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	PM	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PN	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PO	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PP	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PQ	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PR	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PS	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PT	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PU	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PV	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PW	140	Total 1087	C 666	N 184	O 235	S 2	0	0
1	PX	140	Total 1087	C 666	N 184	O 235	S 2	0	0

- Molecule 2 is a protein called Portal protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	PA	401	Total 3144	C 1945	N 536	O 650	P 3	S 10	0	0
2	PB	401	Total 3144	C 1945	N 536	O 650	P 3	S 10	0	0
2	PC	401	Total 3144	C 1945	N 536	O 650	P 3	S 10	0	0

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Mol	Chain	Residues	Atoms						AltConf	Trace
2	PD	401	Total	C	N	O	P	S	0	0
			3144	1945	536	650	3	10		
2	PE	401	Total	C	N	O	P	S	0	0
			3144	1945	536	650	3	10		
2	PF	401	Total	C	N	O	P	S	0	0
			3144	1945	536	650	3	10		
2	PG	401	Total	C	N	O	P	S	0	0
			3144	1945	536	650	3	10		
2	PH	401	Total	C	N	O	P	S	0	0
			3144	1945	536	650	3	10		
2	PI	401	Total	C	N	O	P	S	0	0
			3144	1945	536	650	3	10		
2	PJ	401	Total	C	N	O	P	S	0	0
			3144	1945	536	650	3	10		
2	PK	401	Total	C	N	O	P	S	0	0
			3144	1945	536	650	3	10		
2	PL	401	Total	C	N	O	P	S	0	0
			3144	1945	536	650	3	10		

- Molecule 3 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
3	PM	1	Total	Mg	0
			1	1	
3	PN	1	Total	Mg	0
			1	1	
3	PO	1	Total	Mg	0
			1	1	
3	PP	1	Total	Mg	0
			1	1	
3	PQ	1	Total	Mg	0
			1	1	
3	PR	1	Total	Mg	0
			1	1	
3	PS	1	Total	Mg	0
			1	1	
3	PT	1	Total	Mg	0
			1	1	
3	PU	1	Total	Mg	0
			1	1	
3	PV	1	Total	Mg	0
			1	1	

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Mol	Chain	Residues	Atoms		AltConf
3	PW	1	Total 1	Mg 1	0
3	PX	1	Total 1	Mg 1	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PM:

- Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PN:

- Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PO:

- Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PP:

- Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PQ:

• Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PR:

• Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PS:

• Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PT:

• Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PU:

• Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PV:
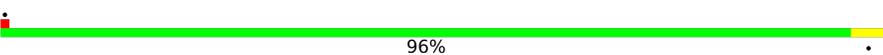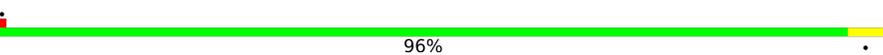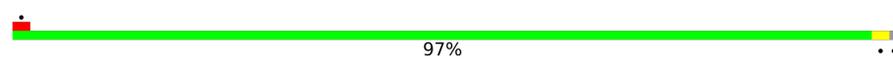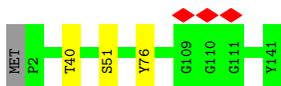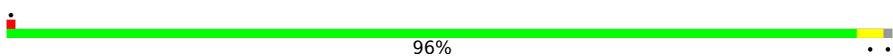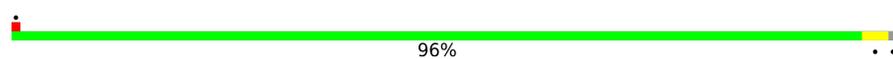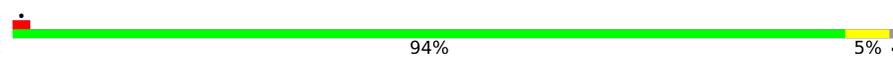
• Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PW:

• Molecule 1: HK97 gp6-like/SPP1 gp15-like head-tail connector

Chain PX:

MET P2 S51 L67 Y76 G110 G111 T119 R120 Y141

• Molecule 2: Portal protein

Chain PA:
59%   41%

MET PRO LYS TYR ASN LEU ARG ILE GLY ASN ARG ARG VAL PRO ILE ALA SER THR ASP THR PRO LEU SER GLU ALA ILE GLY LYS ARG LEU A31 M42 G45 HIS SER TYR GLN PHE N51 G52 Q53 D166 D193 H196 H243 D258 P268 H291 V434 Q435

D436 GLU PRO PHE GLY GLY MET PHE ALA GLY ARG ASP MET GLY ASN ARG CYS LEU GLY LEU GLY ILE ASP THR ASP GLU LEU GLN HIS ALA PRO GLU TRP ASP ARG PRO LEU LEU GLU MET TYR GLN GLY VAL THR ASN PRO GLU SER ASP THR SER ARG THR LEU VAL SER PHE SER SER

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

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

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

• Molecule 2: Portal protein

Chain PB:
58%   41%

MET PRO LYS TYR ASN LEU ARG ILE GLY ASN ARG ARG VAL PRO ILE ALA SER THR ASP THR PRO LEU SER GLU ALA ILE GLY LYS ARG LEU A31 G45 HIS SER TYR GLN PHE N51 G52 Q53 R67 M77 W134 D166 D193 H196 H243 D258 H291

Q393 V434 Q435 D436 GLU PRO PHE GLY MET PHE ALA GLY ASP GLY MET GLY ASN ARG CYS LEU GLU LEU GLY ILE THR ASP ASP GLU LEU GLN HIS ALA PRO GLU TRP ASP ARG PRO LEU LEU GLU LEU GLU MET TYR GLN GLY VAL THR ASN PRO GLU SER ASP THR SER ARG THR LEU VAL

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

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

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

TRP GLU GLN LEU

• Molecule 2: Portal protein

Chain PC:
58%   41%

MET PRO LYS TYR ASN LEU ARG ILE GLY ASN ARG ARG VAL PRO ILE ALA SER THR ASP THR PRO LEU SER GLU ALA ILE GLY LYS ARG LEU A31 M42 G45 HIS SER TYR GLN PHE N51 G52 Q53 D166 D193 H196 H243 D258 H291 D322 Q392 Q393

• Molecule 2: Portal protein

Chain PD:

59% 41%

• Molecule 2: Portal protein

Chain PE:

58% 41%

• Molecule 2: Portal protein

Chain PF:

59%   41%

• Molecule 2: Portal protein

Chain PG:

58%   41%

• Molecule 2: Portal protein

Chain PH:

58%   41%

• Molecule 2: Portal protein

Chain PI:

58% 41%

• Molecule 2: Portal protein

Chain PJ:

58% 41%

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

GLN LEU

• Molecule 2: Portal protein

Chain PK:

• Molecule 2: Portal protein

Chain PL:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C12	Depositor
Number of particles used	7163	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 $(e^-/\text{Å}^2)$	50, 54.6	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	TFS FALCON 4i (4k x 4k), GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.056	Depositor
Minimum map value	-0.026	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.008	Depositor
Map size (Å)	412.19202, 412.19202, 412.19202	wwPDB
Map dimensions	352, 352, 352	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.171, 1.171, 1.171	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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	PM	0.57	0/1105	1.02	0/1492
1	PN	0.57	0/1105	1.05	0/1492
1	PO	0.58	0/1105	1.04	0/1492
1	PP	0.57	0/1105	1.03	0/1492
1	PQ	0.57	0/1105	1.03	1/1492 (0.1%)
1	PR	0.57	0/1105	1.07	0/1492
1	PS	0.56	0/1105	1.02	0/1492
1	PT	0.57	0/1105	1.05	0/1492
1	PU	0.58	0/1105	1.06	0/1492
1	PV	0.57	0/1105	1.04	0/1492
1	PW	0.57	0/1105	1.04	0/1492
1	PX	0.57	0/1105	1.06	3/1492 (0.2%)
2	PA	0.55	0/3155	1.03	1/4277 (0.0%)
2	PB	0.55	0/3155	1.03	1/4277 (0.0%)
2	PC	0.55	0/3155	1.02	1/4277 (0.0%)
2	PD	0.55	0/3155	1.02	1/4277 (0.0%)
2	PE	0.55	0/3155	1.03	1/4277 (0.0%)
2	PF	0.55	0/3155	1.02	1/4277 (0.0%)
2	PG	0.55	0/3155	1.02	1/4277 (0.0%)
2	PH	0.55	0/3155	1.02	1/4277 (0.0%)
2	PI	0.55	0/3155	1.02	1/4277 (0.0%)
2	PJ	0.55	0/3155	1.03	1/4277 (0.0%)
2	PK	0.55	0/3155	1.03	1/4277 (0.0%)
2	PL	0.55	0/3155	1.03	1/4277 (0.0%)
All	All	0.55	0/51120	1.03	16/69228 (0.0%)

There are no bond length outliers.

All (16) bond angle outliers are listed below:

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	PB	166	ASP	CA-CB-CG	5.67	118.27	112.60
2	PA	166	ASP	CA-CB-CG	5.58	118.18	112.60
2	PK	166	ASP	CA-CB-CG	5.54	118.14	112.60
2	PJ	166	ASP	CA-CB-CG	5.53	118.13	112.60
2	PF	166	ASP	CA-CB-CG	5.47	118.07	112.60
2	PD	166	ASP	CA-CB-CG	5.45	118.05	112.60
2	PI	166	ASP	CA-CB-CG	5.45	118.05	112.60
2	PE	166	ASP	CA-CB-CG	5.41	118.00	112.60
2	PL	166	ASP	CA-CB-CG	5.35	117.95	112.60
2	PH	166	ASP	CA-CB-CG	5.34	117.94	112.60
1	PX	120	ARG	N-CA-CB	-5.32	101.11	109.78
2	PG	166	ASP	CA-CB-CG	5.14	117.74	112.60
2	PC	166	ASP	CA-CB-CG	5.12	117.72	112.60
1	PX	119	THR	CA-C-N	5.11	128.49	120.82
1	PX	119	THR	C-N-CA	5.11	128.49	120.82
1	PQ	89	PHE	CA-CB-CG	5.07	118.86	113.80

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	PM	1087	0	1018	3	0
1	PN	1087	0	1018	3	0
1	PO	1087	0	1018	2	0
1	PP	1087	0	1018	3	0
1	PQ	1087	0	1018	3	0
1	PR	1087	0	1018	2	0
1	PS	1087	0	1018	3	0
1	PT	1087	0	1018	3	0
1	PU	1087	0	1018	4	0
1	PV	1087	0	1018	3	0
1	PW	1087	0	1018	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	PX	1087	0	1018	3	0
2	PA	3144	0	2972	2	0
2	PB	3144	0	2972	4	0
2	PC	3144	0	2972	3	0
2	PD	3144	0	2972	2	0
2	PE	3144	0	2972	3	0
2	PF	3144	0	2972	1	0
2	PG	3144	0	2972	3	0
2	PH	3144	0	2972	4	0
2	PI	3144	0	2972	4	0
2	PJ	3144	0	2972	3	0
2	PK	3144	0	2972	1	0
2	PL	3144	0	2972	3	0
3	PM	1	0	0	0	0
3	PN	1	0	0	0	0
3	PO	1	0	0	0	0
3	PP	1	0	0	0	0
3	PQ	1	0	0	0	0
3	PR	1	0	0	0	0
3	PS	1	0	0	0	0
3	PT	1	0	0	0	0
3	PU	1	0	0	0	0
3	PV	1	0	0	0	0
3	PW	1	0	0	0	0
3	PX	1	0	0	0	0
All	All	50784	0	47880	39	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 0.

All (39) 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)
2:PB:67:ARG:HG3	2:PB:67:ARG:HH21	1.70	0.57
2:PH:67:ARG:HH21	2:PH:67:ARG:HG3	1.71	0.55
2:PE:67:ARG:HH21	2:PE:67:ARG:HG3	1.71	0.54
1:PT:67:LEU:HD21	2:PA:258:ASP:HA	1.92	0.52
1:PQ:67:LEU:HD21	2:PJ:258:ASP:HA	1.92	0.51
1:PX:67:LEU:HD21	2:PE:258:ASP:HA	1.92	0.51
1:PS:67:LEU:HD21	2:PL:258:ASP:HA	1.93	0.51
1:PP:67:LEU:HD21	2:PI:258:ASP:HA	1.92	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:PU:67:LEU:HD21	2:PB:258:ASP:HA	1.95	0.48
1:PM:67:LEU:HD21	2:PF:258:ASP:HA	1.95	0.47
1:PW:76:TYR:CE1	1:PX:51:SER:HB3	2.50	0.47
1:PN:67:LEU:HD21	2:PG:258:ASP:HA	1.95	0.46
1:PQ:76:TYR:CE1	1:PR:51:SER:HB3	2.50	0.46
2:PG:67:ARG:HH21	2:PG:67:ARG:HG3	1.81	0.46
1:PT:76:TYR:CE1	1:PU:51:SER:HB3	2.50	0.46
1:PW:67:LEU:HD21	2:PD:258:ASP:HA	1.97	0.46
1:PO:76:TYR:CE1	1:PP:51:SER:HB3	2.51	0.46
1:PN:76:TYR:CE1	1:PO:51:SER:HB3	2.50	0.45
1:PU:76:TYR:CE1	1:PV:51:SER:HB3	2.52	0.45
1:PR:76:TYR:CE1	1:PS:51:SER:HB3	2.52	0.44
1:PM:76:TYR:CE1	1:PN:51:SER:HB3	2.52	0.44
1:PV:67:LEU:HD21	2:PC:258:ASP:HA	1.99	0.44
1:PS:76:TYR:CE1	1:PT:51:SER:HB3	2.53	0.44
1:PV:76:TYR:CE1	1:PW:51:SER:HB3	2.52	0.44
1:PM:51:SER:HB3	1:PX:76:TYR:CE1	2.53	0.43
1:PU:140:THR:HG21	2:PA:268:PRO:HD2	2.00	0.43
1:PP:76:TYR:CE1	1:PQ:51:SER:HB3	2.54	0.42
2:PE:77:MET:HB3	2:PE:134:TRP:CZ2	2.55	0.42
2:PI:31:ALA:HA	2:PJ:144:GLU:OE2	2.19	0.42
2:PC:393:GLN:HE21	2:PD:392:GLN:NE2	2.18	0.42
2:PB:77:MET:HB3	2:PB:134:TRP:CZ2	2.55	0.41
2:PH:77:MET:HB3	2:PH:134:TRP:CZ2	2.55	0.41
2:PG:77:MET:HB3	2:PG:134:TRP:CZ2	2.55	0.41
2:PK:393:GLN:HE21	2:PL:392:GLN:NE2	2.19	0.41
2:PL:67:ARG:HH21	2:PL:67:ARG:HG3	1.85	0.41
2:PI:393:GLN:HE21	2:PJ:392:GLN:NE2	2.19	0.41
2:PB:393:GLN:HE21	2:PC:392:GLN:NE2	2.18	0.41
2:PH:67:ARG:HH21	2:PH:67:ARG:CG	2.34	0.41
2:PH:393:GLN:HE21	2:PI:392:GLN:NE2	2.18	0.41

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	PM	138/141 (98%)	133 (96%)	5 (4%)	0	100	100
1	PN	138/141 (98%)	134 (97%)	4 (3%)	0	100	100
1	PO	138/141 (98%)	133 (96%)	5 (4%)	0	100	100
1	PP	138/141 (98%)	129 (94%)	9 (6%)	0	100	100
1	PQ	138/141 (98%)	133 (96%)	5 (4%)	0	100	100
1	PR	138/141 (98%)	132 (96%)	6 (4%)	0	100	100
1	PS	138/141 (98%)	131 (95%)	7 (5%)	0	100	100
1	PT	138/141 (98%)	132 (96%)	6 (4%)	0	100	100
1	PU	138/141 (98%)	133 (96%)	5 (4%)	0	100	100
1	PV	138/141 (98%)	132 (96%)	6 (4%)	0	100	100
1	PW	138/141 (98%)	132 (96%)	6 (4%)	0	100	100
1	PX	138/141 (98%)	130 (94%)	8 (6%)	0	100	100
2	PA	394/675 (58%)	376 (95%)	18 (5%)	0	100	100
2	PB	394/675 (58%)	378 (96%)	16 (4%)	0	100	100
2	PC	394/675 (58%)	379 (96%)	15 (4%)	0	100	100
2	PD	394/675 (58%)	378 (96%)	16 (4%)	0	100	100
2	PE	394/675 (58%)	378 (96%)	16 (4%)	0	100	100
2	PF	394/675 (58%)	376 (95%)	18 (5%)	0	100	100
2	PG	394/675 (58%)	378 (96%)	16 (4%)	0	100	100
2	PH	394/675 (58%)	378 (96%)	16 (4%)	0	100	100
2	PI	394/675 (58%)	377 (96%)	17 (4%)	0	100	100
2	PJ	394/675 (58%)	376 (95%)	18 (5%)	0	100	100
2	PK	394/675 (58%)	376 (95%)	18 (5%)	0	100	100
2	PL	394/675 (58%)	377 (96%)	17 (4%)	0	100	100
All	All	6384/9792 (65%)	6111 (96%)	273 (4%)	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	PM	116/117 (99%)	116 (100%)	0	100	100
1	PN	116/117 (99%)	116 (100%)	0	100	100
1	PO	116/117 (99%)	113 (97%)	3 (3%)	41	63
1	PP	116/117 (99%)	114 (98%)	2 (2%)	56	74
1	PQ	116/117 (99%)	114 (98%)	2 (2%)	56	74
1	PR	116/117 (99%)	115 (99%)	1 (1%)	75	86
1	PS	116/117 (99%)	115 (99%)	1 (1%)	75	86
1	PT	116/117 (99%)	115 (99%)	1 (1%)	75	86
1	PU	116/117 (99%)	113 (97%)	3 (3%)	41	63
1	PV	116/117 (99%)	115 (99%)	1 (1%)	75	86
1	PW	116/117 (99%)	115 (99%)	1 (1%)	75	86
1	PX	116/117 (99%)	116 (100%)	0	100	100
2	PA	331/568 (58%)	331 (100%)	0	100	100
2	PB	331/568 (58%)	331 (100%)	0	100	100
2	PC	331/568 (58%)	331 (100%)	0	100	100
2	PD	331/568 (58%)	331 (100%)	0	100	100
2	PE	331/568 (58%)	329 (99%)	2 (1%)	84	90
2	PF	331/568 (58%)	330 (100%)	1 (0%)	91	95
2	PG	331/568 (58%)	331 (100%)	0	100	100
2	PH	331/568 (58%)	330 (100%)	1 (0%)	91	95
2	PI	331/568 (58%)	330 (100%)	1 (0%)	91	95
2	PJ	331/568 (58%)	331 (100%)	0	100	100
2	PK	331/568 (58%)	330 (100%)	1 (0%)	91	95
2	PL	331/568 (58%)	331 (100%)	0	100	100
All	All	5364/8220 (65%)	5343 (100%)	21 (0%)	88	93

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	PO	40	THR

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Mol	Chain	Res	Type
1	PO	90	GLU
1	PO	107	SER
1	PP	40	THR
1	PP	90	GLU
1	PQ	40	THR
1	PQ	90	GLU
1	PR	40	THR
1	PS	2	PRO
1	PT	107	SER
1	PU	40	THR
1	PU	65	SER
1	PU	90	GLU
1	PV	107	SER
1	PW	107	SER
2	PE	51	ASN
2	PE	67	ARG
2	PF	37	THR
2	PH	67	ARG
2	PI	423	SER
2	PK	423	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
1	PM	133	ASN
1	PP	28	GLN
1	PQ	28	GLN
1	PS	133	ASN
1	PT	28	GLN
1	PV	133	ASN
1	PW	28	GLN
2	PA	305	ASN
2	PB	305	ASN
2	PB	392	GLN
2	PB	393	GLN
2	PC	53	GLN
2	PC	305	ASN
2	PD	172	GLN
2	PD	305	ASN
2	PD	392	GLN
2	PD	393	GLN
2	PE	305	ASN

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Mol	Chain	Res	Type
2	PE	393	GLN
2	PF	305	ASN
2	PF	393	GLN
2	PG	181	HIS
2	PG	393	GLN
2	PH	181	HIS
2	PH	305	ASN
2	PH	393	GLN
2	PI	305	ASN
2	PI	393	GLN
2	PJ	53	GLN
2	PJ	305	ASN
2	PJ	393	GLN
2	PK	305	ASN
2	PL	51	ASN
2	PL	181	HIS
2	PL	305	ASN
2	PL	392	GLN
2	PL	393	GLN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

36 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
2	HIP	PJ	291	2	10,14,15	1.63	2 (20%)	6,20,22	1.77	2 (33%)
2	HIP	PI	291	2	10,14,15	1.56	2 (20%)	6,20,22	1.64	1 (16%)
2	HIP	PJ	243	2	10,14,15	2.09	4 (40%)	6,20,22	1.27	0
2	HIP	PC	291	2	10,14,15	1.66	2 (20%)	6,20,22	1.76	1 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	HIP	PG	243	2	10,14,15	2.11	4 (40%)	6,20,22	1.31	0
2	HIP	PA	291	2	10,14,15	1.51	2 (20%)	6,20,22	1.66	1 (16%)
2	HIP	PA	243	2	10,14,15	2.12	4 (40%)	6,20,22	1.30	0
2	HIP	PC	243	2	10,14,15	2.00	4 (40%)	6,20,22	1.31	0
2	HIP	PF	243	2	10,14,15	2.00	4 (40%)	6,20,22	1.29	0
2	HIP	PE	243	2	10,14,15	2.10	4 (40%)	6,20,22	1.27	0
2	HIP	PF	196	2	10,14,15	2.17	4 (40%)	6,20,22	1.18	0
2	HIP	PD	196	2	10,14,15	2.09	3 (30%)	6,20,22	1.18	0
2	HIP	PH	291	2	10,14,15	1.63	2 (20%)	6,20,22	1.70	1 (16%)
2	HIP	PI	243	2	10,14,15	2.03	4 (40%)	6,20,22	1.32	0
2	HIP	PK	243	2	10,14,15	2.05	4 (40%)	6,20,22	1.29	0
2	HIP	PG	196	2	10,14,15	2.10	3 (30%)	6,20,22	1.15	0
2	HIP	PF	291	2	10,14,15	1.66	3 (30%)	6,20,22	1.74	1 (16%)
2	HIP	PH	243	2	10,14,15	2.02	4 (40%)	6,20,22	1.30	0
2	HIP	PL	243	2	10,14,15	2.02	4 (40%)	6,20,22	1.30	0
2	HIP	PI	196	2	10,14,15	2.20	4 (40%)	6,20,22	1.16	0
2	HIP	PK	291	2	10,14,15	1.57	2 (20%)	6,20,22	1.71	1 (16%)
2	HIP	PB	196	2	10,14,15	2.08	3 (30%)	6,20,22	1.09	0
2	HIP	PB	243	2	10,14,15	2.10	4 (40%)	6,20,22	1.26	0
2	HIP	PC	196	2	10,14,15	2.14	3 (30%)	6,20,22	1.13	0
2	HIP	PJ	196	2	10,14,15	2.09	4 (40%)	6,20,22	1.18	0
2	HIP	PB	291	2	10,14,15	1.59	2 (20%)	6,20,22	1.63	1 (16%)
2	HIP	PK	196	2	10,14,15	2.12	3 (30%)	6,20,22	1.13	0
2	HIP	PE	196	2	10,14,15	2.14	3 (30%)	6,20,22	1.15	0
2	HIP	PA	196	2	10,14,15	2.15	4 (40%)	6,20,22	1.12	0
2	HIP	PG	291	2	10,14,15	1.67	2 (20%)	6,20,22	1.75	1 (16%)
2	HIP	PD	291	2	10,14,15	1.68	2 (20%)	6,20,22	1.73	1 (16%)
2	HIP	PD	243	2	10,14,15	2.06	4 (40%)	6,20,22	1.33	0
2	HIP	PE	291	2	10,14,15	1.54	2 (20%)	6,20,22	1.68	2 (33%)
2	HIP	PH	196	2	10,14,15	2.10	3 (30%)	6,20,22	1.11	0
2	HIP	PL	291	2	10,14,15	1.65	2 (20%)	6,20,22	1.60	1 (16%)
2	HIP	PL	196	2	10,14,15	2.15	3 (30%)	6,20,22	1.13	0

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	HIP	PJ	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PI	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PJ	243	2	-	1/5/12/14	0/1/1/1
2	HIP	PC	291	2	-	1/5/12/14	0/1/1/1
2	HIP	PG	243	2	-	3/5/12/14	0/1/1/1
2	HIP	PA	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PA	243	2	-	3/5/12/14	0/1/1/1
2	HIP	PC	243	2	-	3/5/12/14	0/1/1/1
2	HIP	PF	243	2	-	3/5/12/14	0/1/1/1
2	HIP	PE	243	2	-	1/5/12/14	0/1/1/1
2	HIP	PF	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PD	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PH	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PI	243	2	-	3/5/12/14	0/1/1/1
2	HIP	PK	243	2	-	2/5/12/14	0/1/1/1
2	HIP	PG	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PF	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PH	243	2	-	2/5/12/14	0/1/1/1
2	HIP	PL	243	2	-	1/5/12/14	0/1/1/1
2	HIP	PI	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PK	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PB	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PB	243	2	-	1/5/12/14	0/1/1/1
2	HIP	PC	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PJ	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PB	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PK	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PE	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PA	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PG	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PD	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PD	243	2	-	1/5/12/14	0/1/1/1
2	HIP	PE	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PH	196	2	-	2/5/12/14	0/1/1/1
2	HIP	PL	291	2	-	0/5/12/14	0/1/1/1
2	HIP	PL	196	2	-	2/5/12/14	0/1/1/1

All (113) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	PF	196	HIP	CG-ND1	5.07	1.44	1.37
2	PG	196	HIP	CG-ND1	4.92	1.44	1.37
2	PI	196	HIP	CG-ND1	4.92	1.44	1.37
2	PL	196	HIP	CG-ND1	4.90	1.44	1.37
2	PD	196	HIP	CG-ND1	4.85	1.44	1.37
2	PJ	196	HIP	CG-ND1	4.84	1.44	1.37
2	PE	196	HIP	CG-ND1	4.83	1.44	1.37
2	PK	196	HIP	CG-ND1	4.80	1.43	1.37
2	PC	196	HIP	CG-ND1	4.78	1.43	1.37
2	PB	196	HIP	CG-ND1	4.65	1.43	1.37
2	PH	196	HIP	CG-ND1	4.61	1.43	1.37
2	PA	196	HIP	CG-ND1	4.53	1.43	1.37
2	PG	243	HIP	CG-ND1	4.18	1.43	1.37
2	PE	243	HIP	CG-ND1	4.12	1.43	1.37
2	PA	243	HIP	CG-ND1	4.08	1.43	1.37
2	PI	243	HIP	CG-ND1	4.07	1.43	1.37
2	PD	243	HIP	CG-ND1	4.06	1.43	1.37
2	PB	243	HIP	CG-ND1	4.06	1.42	1.37
2	PJ	243	HIP	CG-ND1	4.05	1.42	1.37
2	PK	243	HIP	CG-ND1	4.04	1.42	1.37
2	PL	243	HIP	CG-ND1	4.00	1.42	1.37
2	PH	243	HIP	CG-ND1	3.99	1.42	1.37
2	PC	243	HIP	CG-ND1	3.98	1.42	1.37
2	PF	243	HIP	CG-ND1	3.96	1.42	1.37
2	PA	196	HIP	P-O1P	3.65	1.50	1.47
2	PA	243	HIP	P-O1P	3.65	1.50	1.47
2	PJ	243	HIP	P-O1P	3.54	1.50	1.47
2	PD	291	HIP	CG-ND1	3.54	1.42	1.37
2	PG	291	HIP	CG-ND1	3.51	1.42	1.37
2	PG	243	HIP	P-O1P	3.49	1.50	1.47
2	PK	291	HIP	CG-ND1	3.43	1.42	1.37
2	PE	243	HIP	P-O1P	3.40	1.50	1.47
2	PB	243	HIP	P-O1P	3.39	1.50	1.47
2	PC	291	HIP	CG-ND1	3.37	1.42	1.37
2	PL	291	HIP	CG-ND1	3.37	1.42	1.37
2	PH	291	HIP	CG-ND1	3.36	1.42	1.37
2	PJ	291	HIP	CG-ND1	3.35	1.42	1.37
2	PK	243	HIP	P-O1P	3.33	1.50	1.47
2	PE	291	HIP	CG-ND1	3.32	1.42	1.37
2	PC	196	HIP	P-O1P	3.32	1.50	1.47
2	PI	291	HIP	CG-ND1	3.31	1.41	1.37
2	PH	196	HIP	P-O1P	3.30	1.50	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	PE	196	HIP	P-O1P	3.28	1.50	1.47
2	PI	196	HIP	P-O1P	3.27	1.50	1.47
2	PF	291	HIP	CG-ND1	3.25	1.41	1.37
2	PL	243	HIP	P-O1P	3.23	1.50	1.47
2	PA	291	HIP	CG-ND1	3.19	1.41	1.37
2	PL	196	HIP	P-O1P	3.19	1.50	1.47
2	PD	243	HIP	P-O1P	3.17	1.50	1.47
2	PB	291	HIP	CG-ND1	3.16	1.41	1.37
2	PK	196	HIP	P-O1P	3.16	1.50	1.47
2	PI	243	HIP	P-O1P	3.16	1.50	1.47
2	PH	243	HIP	P-O1P	3.13	1.50	1.47
2	PB	243	HIP	P-O3P	-3.08	1.48	1.54
2	PB	196	HIP	P-O1P	3.07	1.50	1.47
2	PF	243	HIP	P-O1P	3.06	1.50	1.47
2	PC	243	HIP	P-O1P	3.05	1.50	1.47
2	PE	243	HIP	P-O3P	-3.01	1.48	1.54
2	PD	243	HIP	P-O3P	-2.96	1.48	1.54
2	PF	196	HIP	P-O1P	2.96	1.49	1.47
2	PJ	196	HIP	P-O1P	2.91	1.49	1.47
2	PD	196	HIP	P-O1P	2.90	1.49	1.47
2	PC	243	HIP	P-O3P	-2.90	1.48	1.54
2	PG	196	HIP	P-O1P	2.89	1.49	1.47
2	PF	291	HIP	P-O3P	-2.88	1.48	1.54
2	PJ	243	HIP	P-O3P	-2.88	1.48	1.54
2	PF	243	HIP	P-O3P	-2.88	1.48	1.54
2	PI	243	HIP	P-O3P	-2.87	1.48	1.54
2	PD	291	HIP	P-O3P	-2.87	1.48	1.54
2	PG	243	HIP	P-O3P	-2.87	1.48	1.54
2	PH	243	HIP	P-O3P	-2.86	1.48	1.54
2	PJ	291	HIP	P-O3P	-2.86	1.48	1.54
2	PC	291	HIP	P-O3P	-2.85	1.48	1.54
2	PG	291	HIP	P-O3P	-2.85	1.49	1.54
2	PL	243	HIP	P-O3P	-2.85	1.49	1.54
2	PL	291	HIP	P-O3P	-2.85	1.49	1.54
2	PA	243	HIP	P-O3P	-2.82	1.49	1.54
2	PK	243	HIP	P-O3P	-2.80	1.49	1.54
2	PH	291	HIP	P-O3P	-2.78	1.49	1.54
2	PB	291	HIP	P-O3P	-2.74	1.49	1.54
2	PK	196	HIP	P-O2P	-2.53	1.49	1.54
2	PB	196	HIP	P-O2P	-2.52	1.49	1.54
2	PH	196	HIP	P-O2P	-2.50	1.49	1.54
2	PE	196	HIP	P-O2P	-2.47	1.49	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	PL	196	HIP	P-O2P	-2.46	1.49	1.54
2	PC	196	HIP	P-O2P	-2.45	1.49	1.54
2	PD	196	HIP	P-O2P	-2.45	1.49	1.54
2	PI	196	HIP	P-O2P	-2.45	1.49	1.54
2	PA	196	HIP	P-O2P	-2.43	1.49	1.54
2	PG	196	HIP	P-O2P	-2.43	1.49	1.54
2	PF	196	HIP	P-O2P	-2.43	1.49	1.54
2	PJ	196	HIP	P-O2P	-2.39	1.49	1.54
2	PK	291	HIP	P-O1P	2.34	1.49	1.47
2	PI	291	HIP	P-O1P	2.31	1.49	1.47
2	PI	196	HIP	P-O3P	-2.28	1.50	1.54
2	PD	243	HIP	P-O2P	-2.22	1.50	1.54
2	PE	291	HIP	P-O1P	2.21	1.49	1.47
2	PA	243	HIP	P-O2P	-2.20	1.50	1.54
2	PG	243	HIP	P-O2P	-2.17	1.50	1.54
2	PA	291	HIP	P-O1P	2.17	1.49	1.47
2	PB	243	HIP	P-O2P	-2.15	1.50	1.54
2	PH	243	HIP	P-O2P	-2.14	1.50	1.54
2	PC	243	HIP	P-O2P	-2.13	1.50	1.54
2	PE	243	HIP	P-O2P	-2.12	1.50	1.54
2	PK	243	HIP	P-O2P	-2.12	1.50	1.54
2	PF	243	HIP	P-O2P	-2.11	1.50	1.54
2	PF	196	HIP	P-O3P	-2.10	1.50	1.54
2	PJ	243	HIP	P-O2P	-2.09	1.50	1.54
2	PI	243	HIP	P-O2P	-2.08	1.50	1.54
2	PF	291	HIP	P-O1P	2.06	1.49	1.47
2	PL	243	HIP	P-O2P	-2.06	1.50	1.54
2	PJ	196	HIP	P-O3P	-2.05	1.50	1.54
2	PA	196	HIP	P-O3P	-2.03	1.50	1.54

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	PJ	291	HIP	CB-CA-C	3.17	117.41	111.47
2	PC	291	HIP	CB-CA-C	3.14	117.35	111.47
2	PF	291	HIP	CB-CA-C	3.11	117.30	111.47
2	PD	291	HIP	CB-CA-C	3.10	117.28	111.47
2	PG	291	HIP	CB-CA-C	3.07	117.22	111.47
2	PH	291	HIP	CB-CA-C	3.04	117.16	111.47
2	PB	291	HIP	CB-CA-C	2.87	116.85	111.47
2	PK	291	HIP	CB-CA-C	2.65	116.44	111.47
2	PL	291	HIP	CB-CA-C	2.62	116.39	111.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	PE	291	HIP	CB-CA-C	2.38	115.92	111.47
2	PA	291	HIP	CB-CA-C	2.36	115.89	111.47
2	PI	291	HIP	CB-CA-C	2.35	115.87	111.47
2	PJ	291	HIP	O2P-P-O3P	2.04	114.57	106.57
2	PE	291	HIP	O3P-P-O1P	2.01	117.79	113.44

There are no chirality outliers.

All (49) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	PA	243	HIP	O-C-CA-CB
2	PB	243	HIP	O-C-CA-CB
2	PC	243	HIP	O-C-CA-CB
2	PC	291	HIP	O-C-CA-CB
2	PD	243	HIP	O-C-CA-CB
2	PE	243	HIP	O-C-CA-CB
2	PF	243	HIP	O-C-CA-CB
2	PG	243	HIP	O-C-CA-CB
2	PH	243	HIP	O-C-CA-CB
2	PI	243	HIP	O-C-CA-CB
2	PJ	243	HIP	O-C-CA-CB
2	PK	243	HIP	O-C-CA-CB
2	PL	243	HIP	O-C-CA-CB
2	PA	196	HIP	N-CA-CB-CG
2	PB	196	HIP	N-CA-CB-CG
2	PC	196	HIP	N-CA-CB-CG
2	PD	196	HIP	N-CA-CB-CG
2	PE	196	HIP	N-CA-CB-CG
2	PF	196	HIP	N-CA-CB-CG
2	PG	196	HIP	N-CA-CB-CG
2	PH	196	HIP	N-CA-CB-CG
2	PI	196	HIP	N-CA-CB-CG
2	PJ	196	HIP	N-CA-CB-CG
2	PK	196	HIP	N-CA-CB-CG
2	PL	196	HIP	N-CA-CB-CG
2	PA	243	HIP	CA-CB-CG-ND1
2	PC	243	HIP	CA-CB-CG-ND1
2	PF	243	HIP	CA-CB-CG-ND1
2	PG	243	HIP	CA-CB-CG-ND1
2	PH	243	HIP	CA-CB-CG-ND1
2	PI	243	HIP	CA-CB-CG-ND1
2	PA	196	HIP	C-CA-CB-CG

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Mol	Chain	Res	Type	Atoms
2	PB	196	HIP	C-CA-CB-CG
2	PC	196	HIP	C-CA-CB-CG
2	PD	196	HIP	C-CA-CB-CG
2	PE	196	HIP	C-CA-CB-CG
2	PF	196	HIP	C-CA-CB-CG
2	PG	196	HIP	C-CA-CB-CG
2	PH	196	HIP	C-CA-CB-CG
2	PI	196	HIP	C-CA-CB-CG
2	PJ	196	HIP	C-CA-CB-CG
2	PK	196	HIP	C-CA-CB-CG
2	PL	196	HIP	C-CA-CB-CG
2	PA	243	HIP	CA-CB-CG-CD2
2	PC	243	HIP	CA-CB-CG-CD2
2	PF	243	HIP	CA-CB-CG-CD2
2	PG	243	HIP	CA-CB-CG-CD2
2	PI	243	HIP	CA-CB-CG-CD2
2	PK	243	HIP	CA-CB-CG-ND1

There are no ring outliers.

No monomer is involved in short contacts.

5.5　Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6　Ligand geometry ⓘ

Of 12 ligands modelled in this entry, 12 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7　Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-18633. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections ⓘ
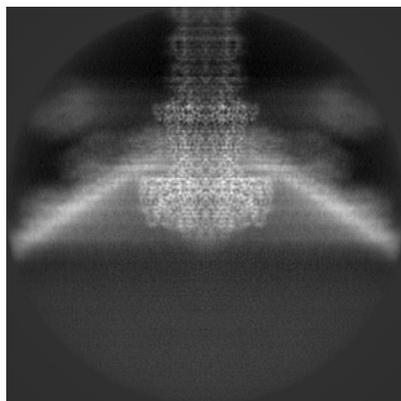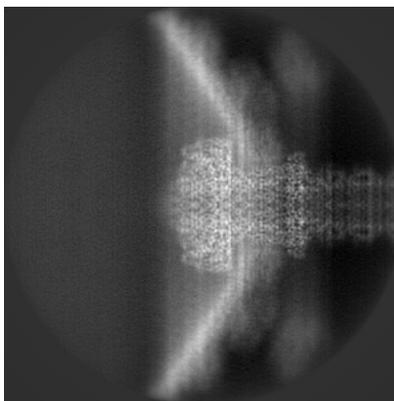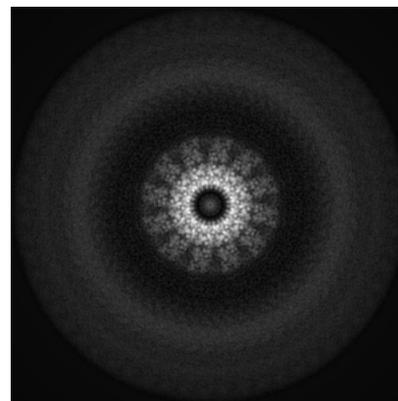
6.1.1 Primary map

| X | Y | Z |

6.1.2 Raw map

| X | Y | Z |
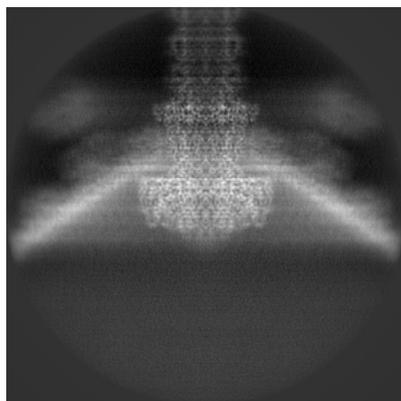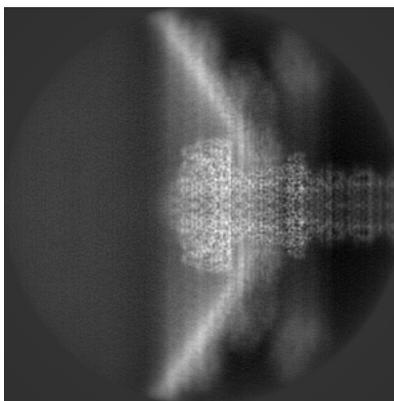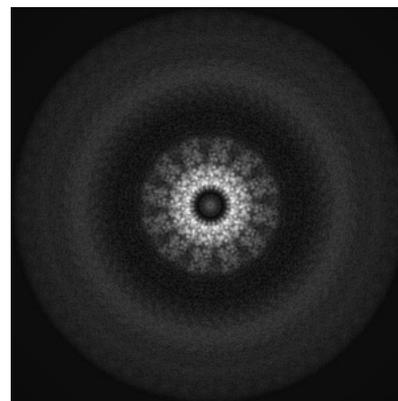
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
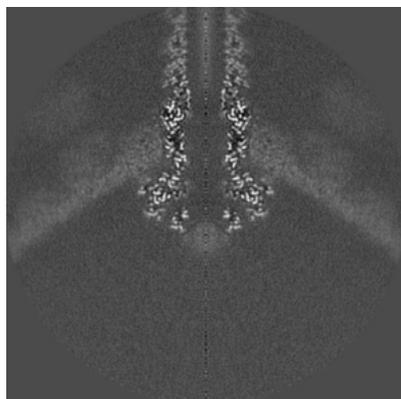
6.2.1 Primary map
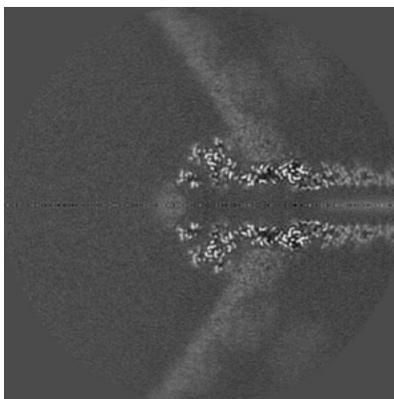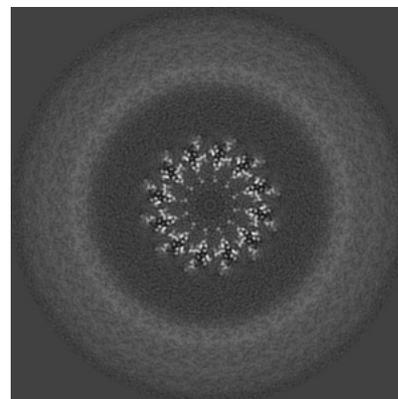
| X Index: 176 | Y Index: 176 | Z Index: 176 |

6.2.2 Raw map
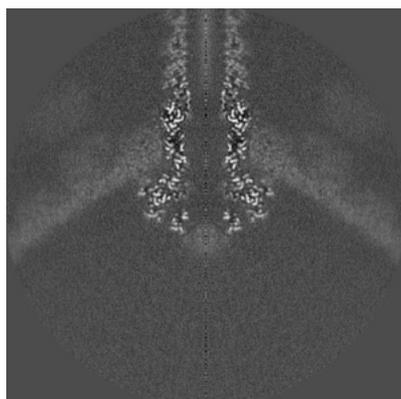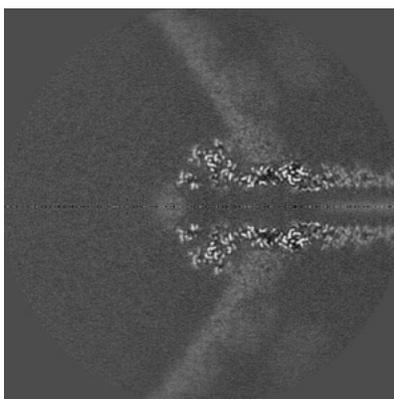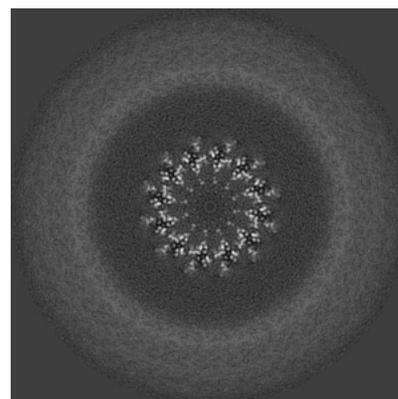
| X Index: 176 | Y Index: 176 | Z Index: 176 |

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

6.3　Largest variance slices ⓘ

6.3.1　Primary map
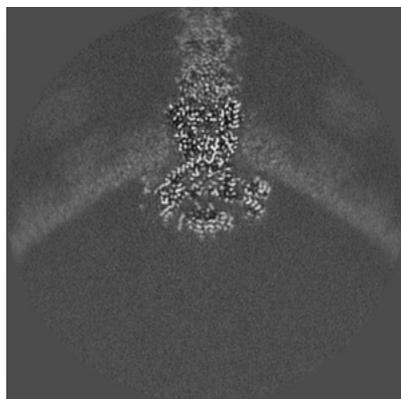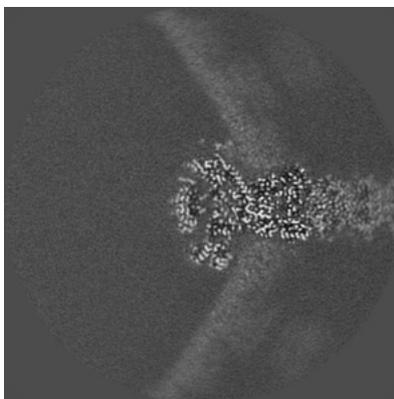
| X Index: 154 | Y Index: 154 | Z Index: 199 |
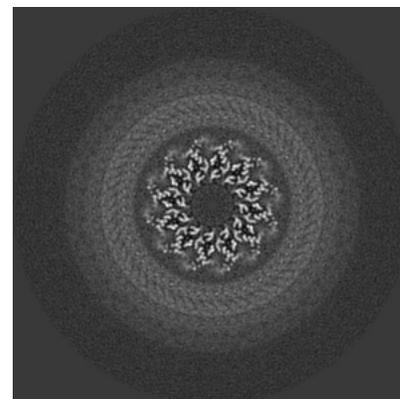
6.3.2　Raw map
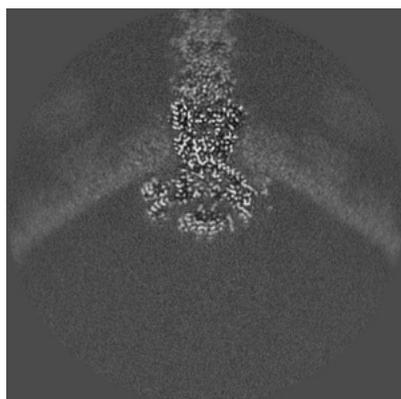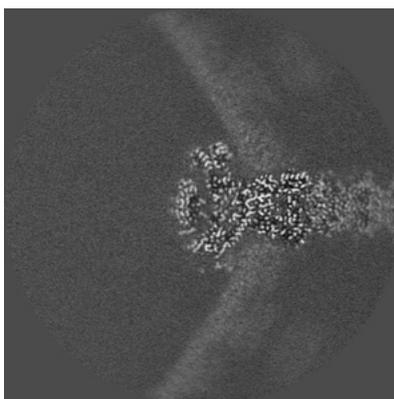
| X Index: 198 | Y Index: 198 | Z Index: 199 |
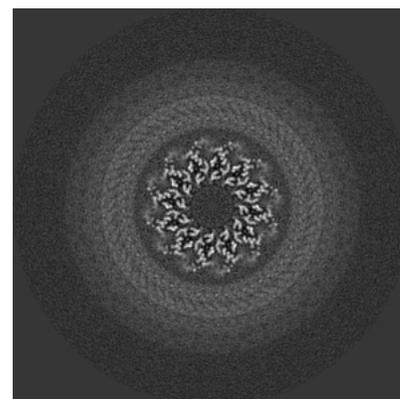
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map

X   Y   Z

6.4.2 Raw map

X   Y   Z
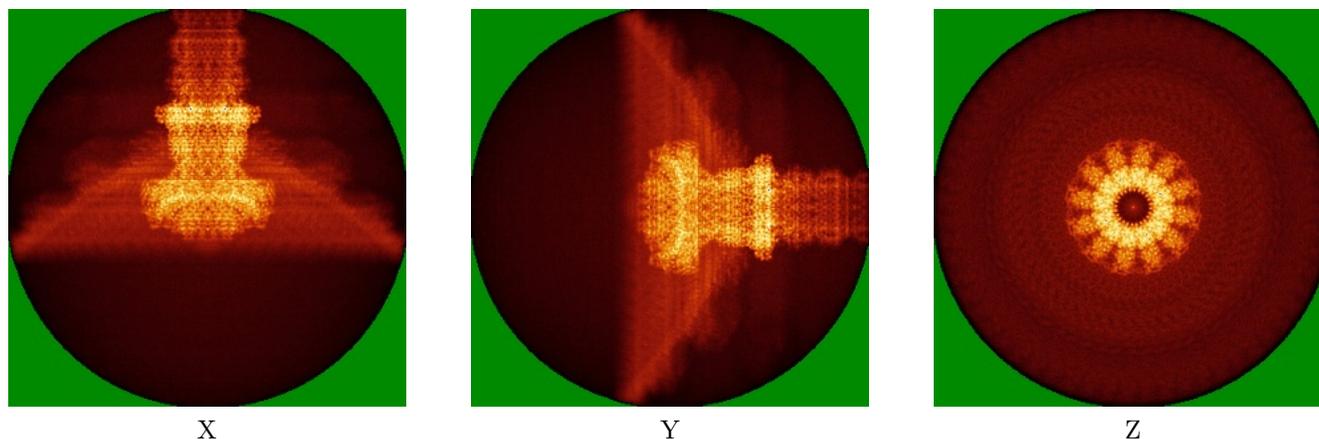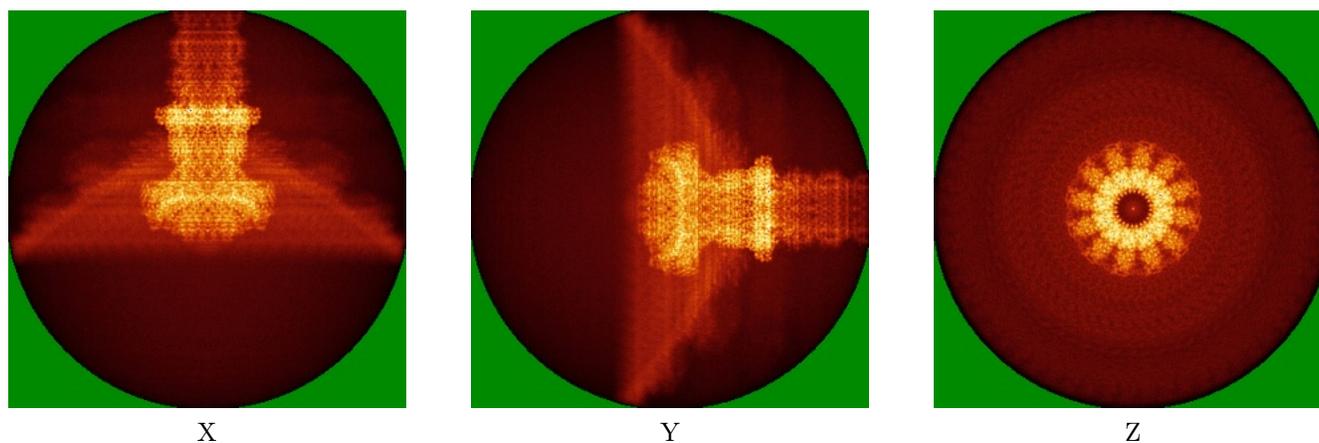
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X　　　　　　　　　　　　Y　　　　　　　　　　　　Z
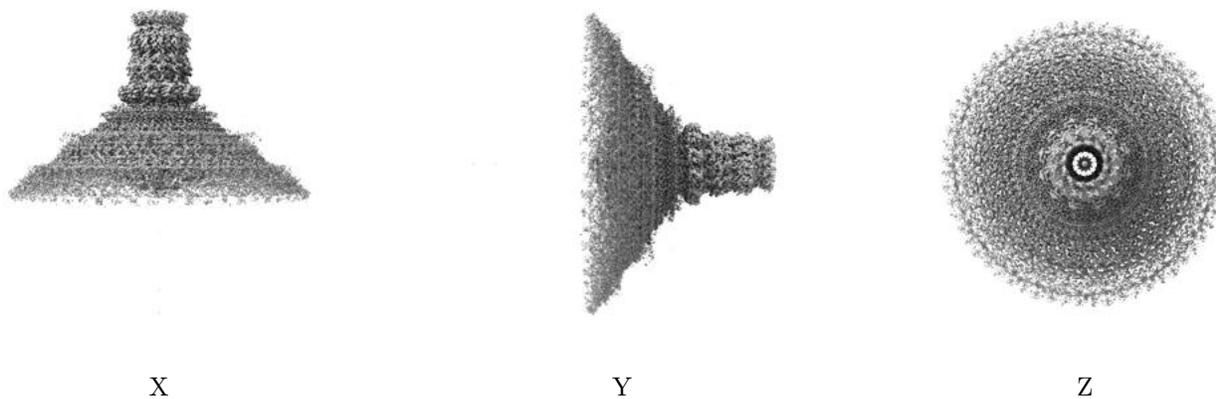
The images above show the 3D surface view of the map at the recommended contour level 0.008. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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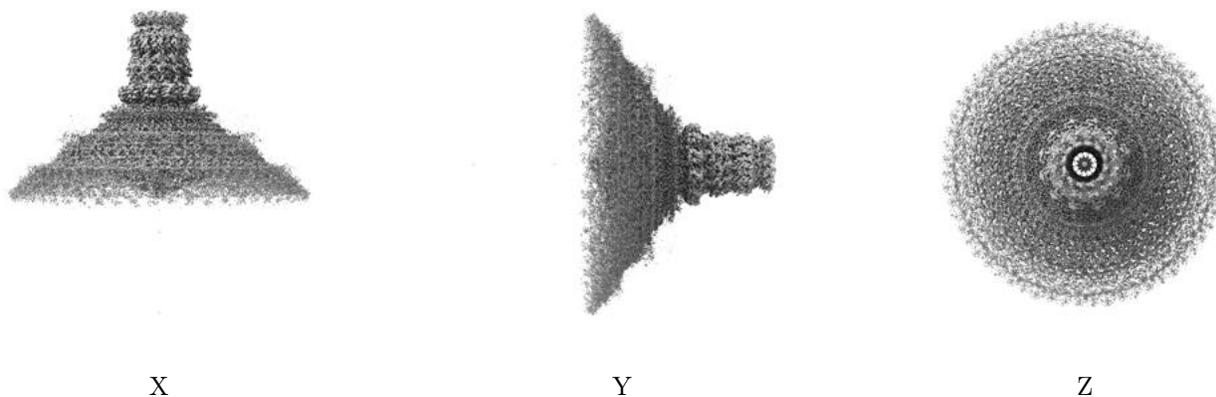
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

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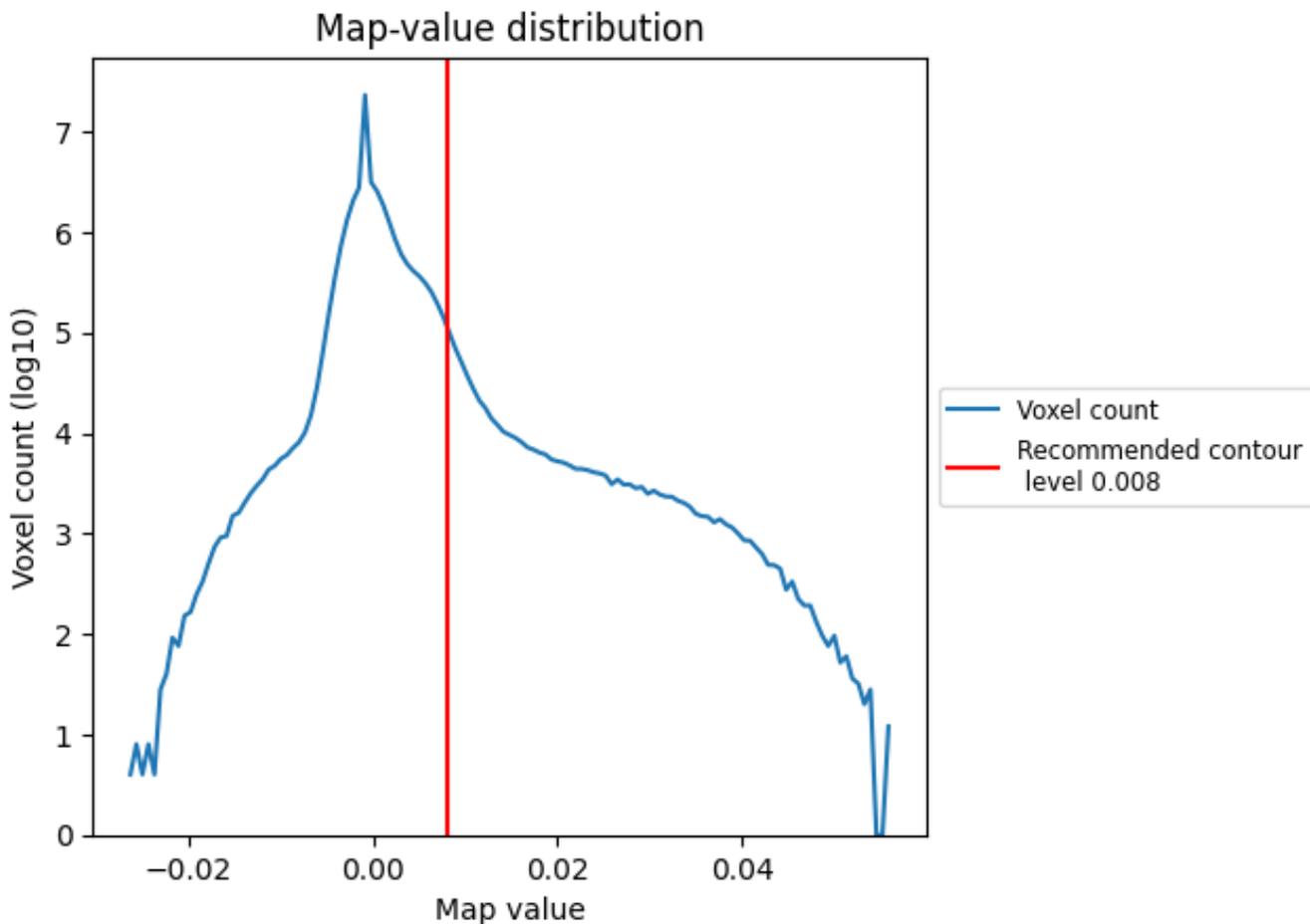
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2   Volume estimate ⓘ
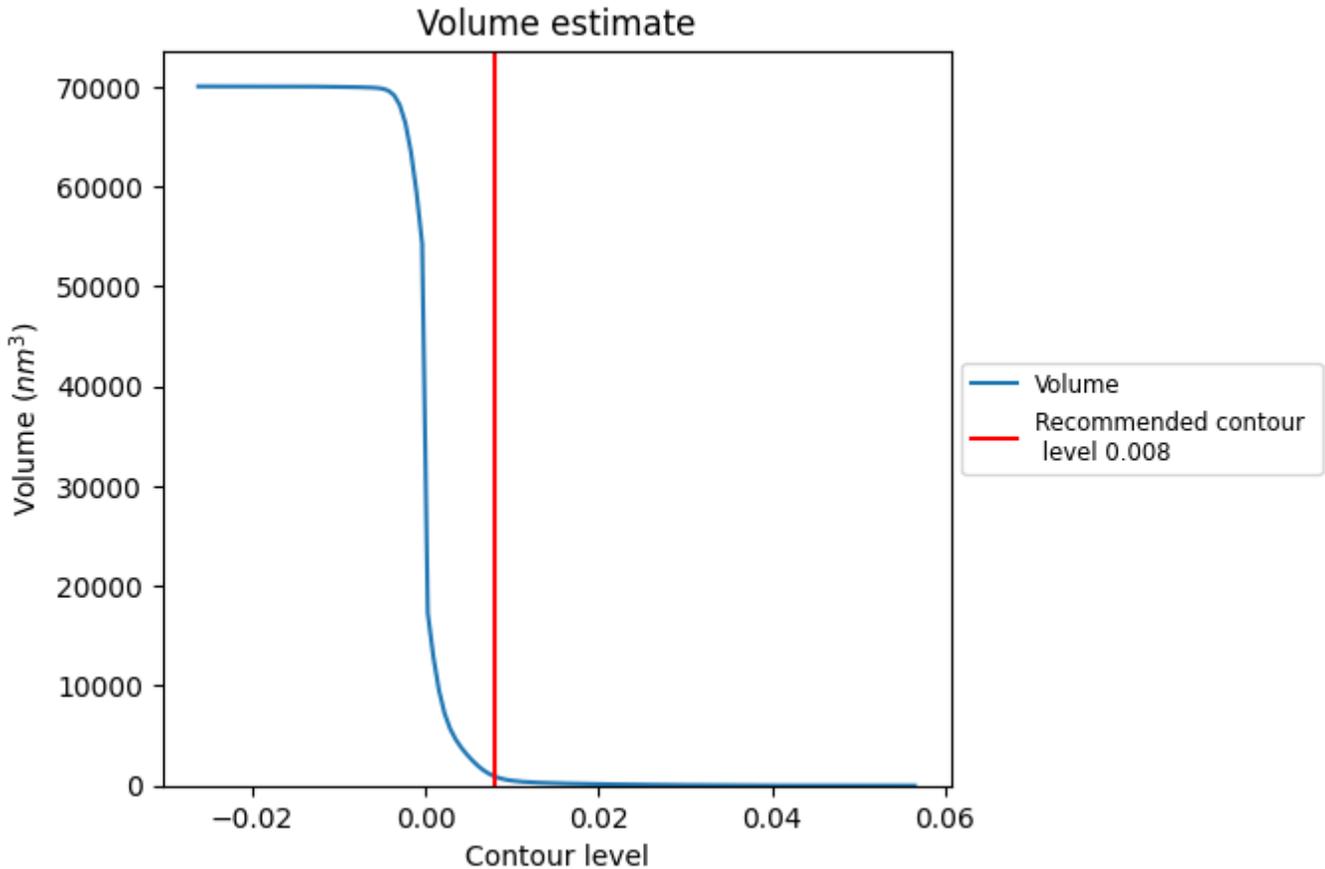
The volume at the recommended contour level is 916 nm^3; this corresponds to an approximate mass of 827 kDa.

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 ⓘ
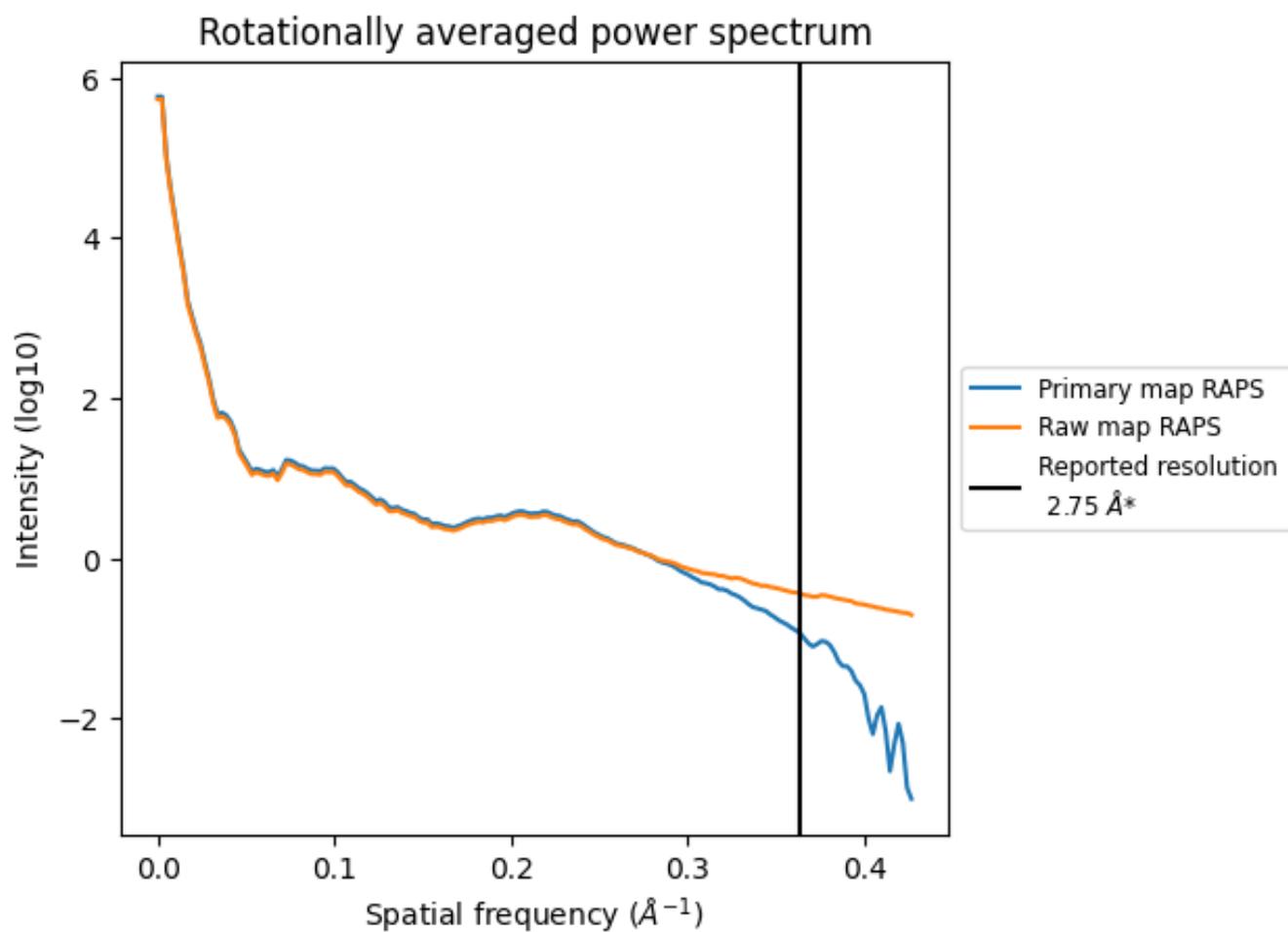
*Reported resolution corresponds to spatial frequency of 0.364 Å^{-1}

8 Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC ⓘ
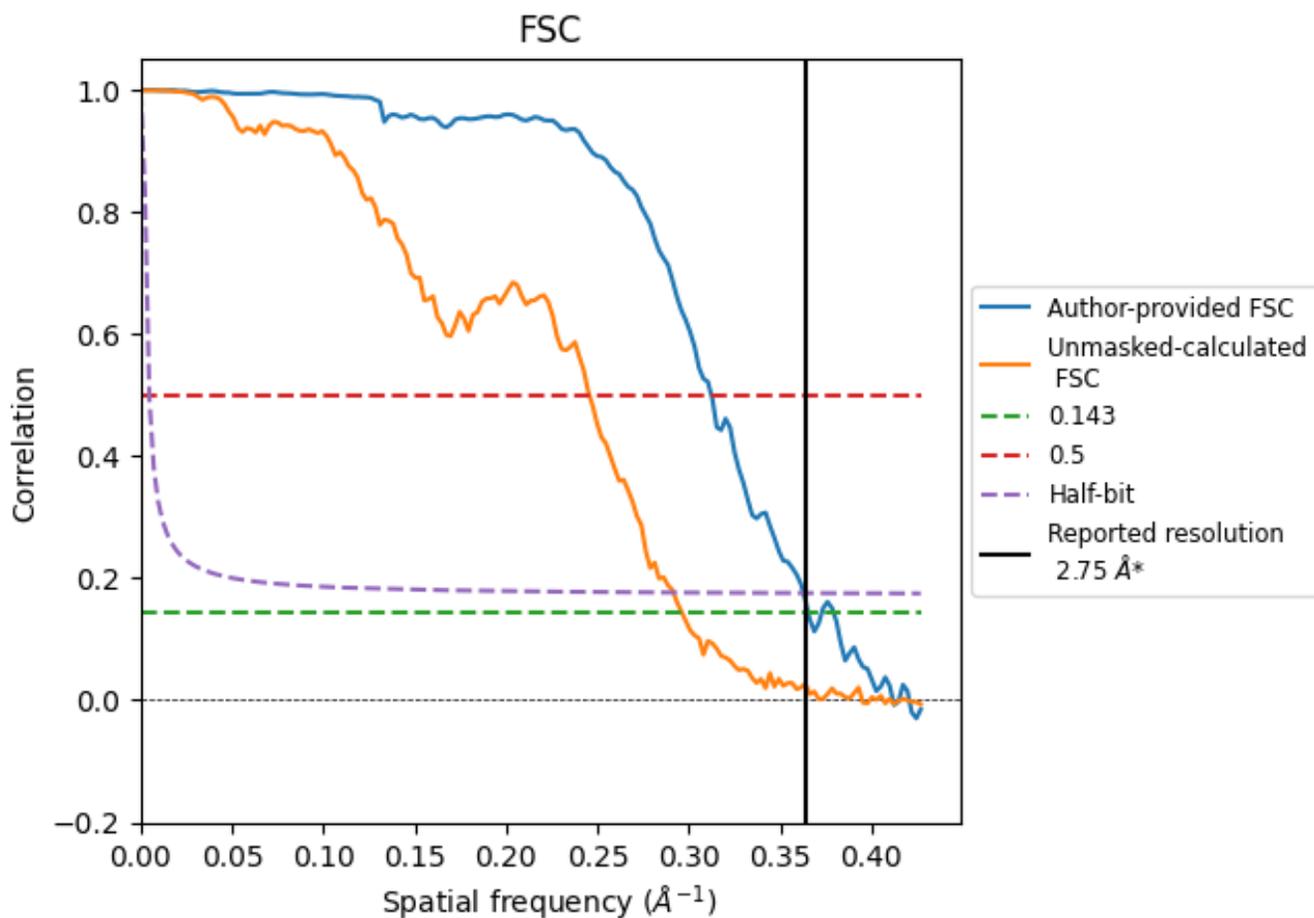
*Reported resolution corresponds to spatial frequency of 0.364 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.75	-	-
Author-provided FSC curve	2.74	3.20	2.76
Unmasked-calculated*	3.37	4.07	3.43

*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 3.37 differs from the reported value 2.75 by more than 10 %

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-18633 and PDB model 8QSI. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay (i)


X　　　　　　　　　　　　　Y　　　　　　　　　　　　　Z
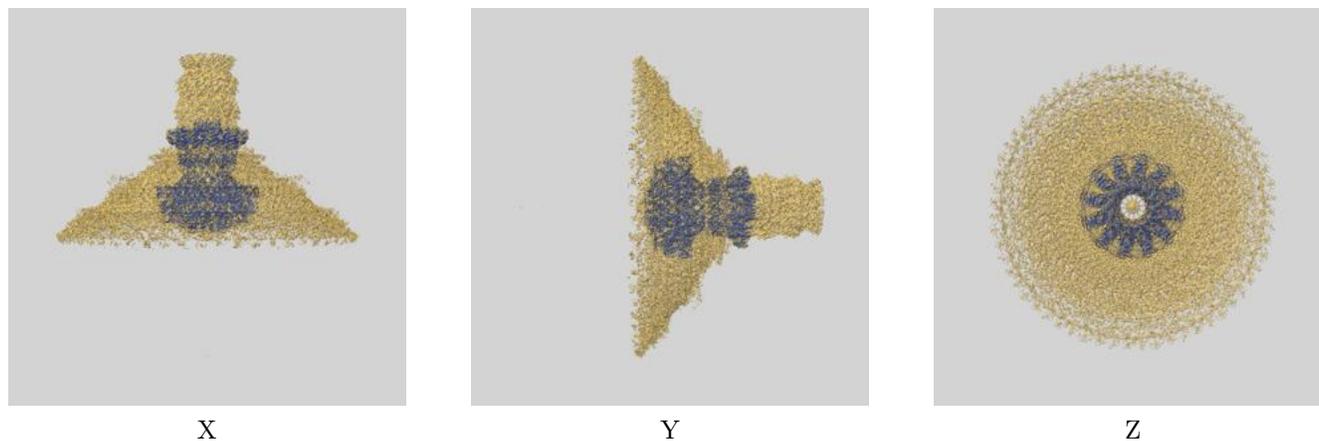
The images above show the 3D surface view of the map at the recommended contour level 0.008 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2　Q-score mapped to coordinate model ⓘ

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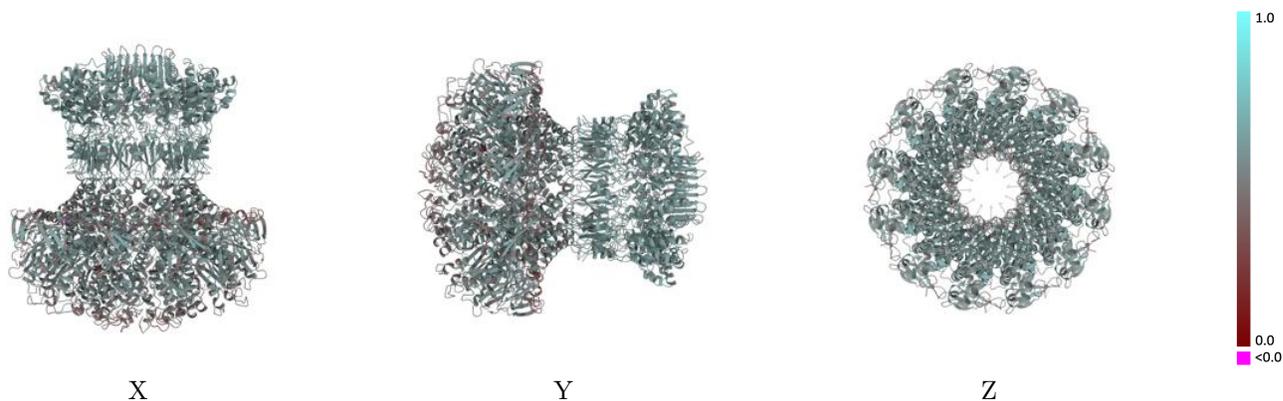
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3　Atom inclusion mapped to coordinate model ⓘ

X　　　　　　　　　　　　Y　　　　　　　　　　　　Z
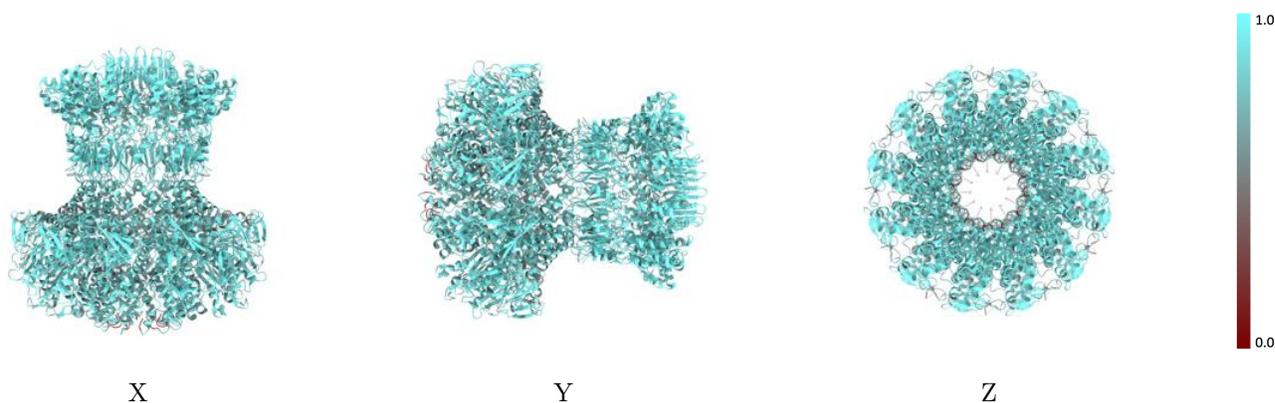
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.008).

9.4   Atom inclusion ⓘ
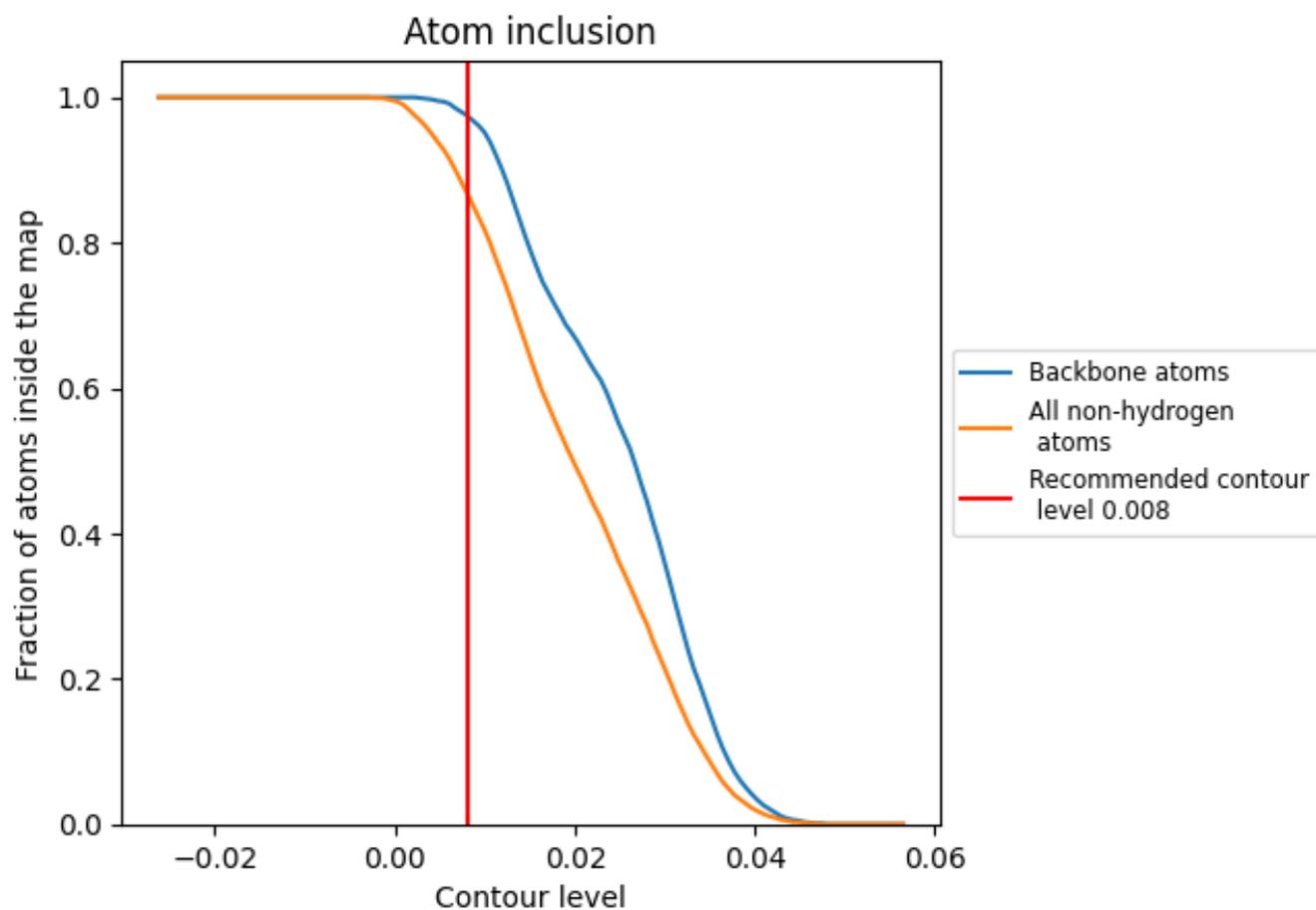
At the recommended contour level, 98% of all backbone atoms, 87% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.008) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8690	0.5320
PA	0.8480	0.5190
PB	0.8550	0.5200
PC	0.8520	0.5180
PD	0.8540	0.5190
PE	0.8520	0.5190
PF	0.8550	0.5160
PG	0.8520	0.5190
PH	0.8550	0.5200
PI	0.8520	0.5200
PJ	0.8510	0.5190
PK	0.8530	0.5190
PL	0.8520	0.5190
PM	0.9200	0.5730
PN	0.9140	0.5710
PO	0.9160	0.5730
PP	0.9160	0.5700
PQ	0.9120	0.5720
PR	0.9150	0.5690
PS	0.9200	0.5730
PT	0.9210	0.5700
PU	0.9110	0.5720
PV	0.9130	0.5700
PW	0.9150	0.5690
PX	0.9140	0.5700

1.0

0.0
<0.0