



Full wwPDB EM Validation Report ⓘ

Mar 27, 2026 – 05:53 PM UTC

PDB ID : 7SJX / pdb_00007sjx
EMDB ID : EMD-25165
Title : Cryo-EM Structure of the PR-RT components of the HIV-1 Pol Polyprotein
Authors : Lyumkis, D.; Passos, D.; Arnold, E.; Harrison, J.J.E.K.; Ruiz, F.X.
Deposited on : 2021-10-19
Resolution : 8.20 Å(reported)
Based on initial models : 3BGR, 1DLO, 2HB4

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

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

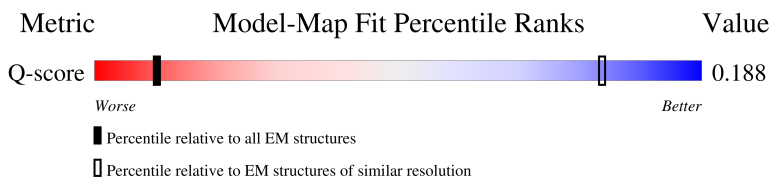
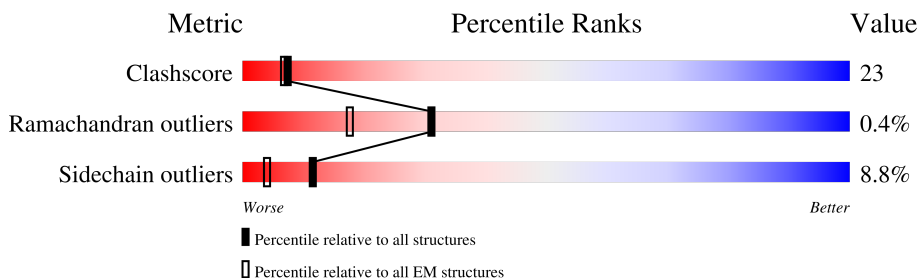
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 8.20 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	337 (7.70 - 8.70)

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

Mol	Chain	Length	Quality of chain
1	A	1053	
1	B	1053	

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 9215 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 Gag-Pol polyprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	634	Total	C	N	O	S	0	0
			5118	3319	852	935	12		
1	B	503	Total	C	N	O	S	0	0
			4097	2668	678	740	11		

There are 174 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-105	MET	-	initiating methionine	UNP P03366
A	-104	GLY	-	expression tag	UNP P03366
A	-103	SER	-	expression tag	UNP P03366
A	-102	SER	-	expression tag	UNP P03366
A	-101	HIS	-	expression tag	UNP P03366
A	-100	HIS	-	expression tag	UNP P03366
A	-99	HIS	-	expression tag	UNP P03366
A	-98	HIS	-	expression tag	UNP P03366
A	-97	HIS	-	expression tag	UNP P03366
A	-96	HIS	-	expression tag	UNP P03366
A	-95	MET	-	expression tag	UNP P03366
A	-94	ALA	-	expression tag	UNP P03366
A	-93	THR	-	expression tag	UNP P03366
A	-92	VAL	-	expression tag	UNP P03366
A	-91	LYS	-	expression tag	UNP P03366
A	-90	PHE	-	expression tag	UNP P03366
A	-89	LYS	-	expression tag	UNP P03366
A	-88	TYR	-	expression tag	UNP P03366
A	-87	LYS	-	expression tag	UNP P03366
A	-86	GLY	-	expression tag	UNP P03366
A	-85	GLU	-	expression tag	UNP P03366
A	-84	GLU	-	expression tag	UNP P03366
A	-83	LYS	-	expression tag	UNP P03366
A	-82	GLU	-	expression tag	UNP P03366
A	-81	VAL	-	expression tag	UNP P03366
A	-80	ASP	-	expression tag	UNP P03366

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-79	ILE	-	expression tag	UNP P03366
A	-78	SER	-	expression tag	UNP P03366
A	-77	LYS	-	expression tag	UNP P03366
A	-76	ILE	-	expression tag	UNP P03366
A	-75	LYS	-	expression tag	UNP P03366
A	-74	LYS	-	expression tag	UNP P03366
A	-73	VAL	-	expression tag	UNP P03366
A	-72	TRP	-	expression tag	UNP P03366
A	-71	ARG	-	expression tag	UNP P03366
A	-70	VAL	-	expression tag	UNP P03366
A	-69	GLY	-	expression tag	UNP P03366
A	-68	LYS	-	expression tag	UNP P03366
A	-67	MET	-	expression tag	UNP P03366
A	-66	ILE	-	expression tag	UNP P03366
A	-65	SER	-	expression tag	UNP P03366
A	-64	PHE	-	expression tag	UNP P03366
A	-63	THR	-	expression tag	UNP P03366
A	-62	TYR	-	expression tag	UNP P03366
A	-61	ASP	-	expression tag	UNP P03366
A	-60	GLU	-	expression tag	UNP P03366
A	-59	GLY	-	expression tag	UNP P03366
A	-58	GLY	-	expression tag	UNP P03366
A	-57	GLY	-	expression tag	UNP P03366
A	-56	LYS	-	expression tag	UNP P03366
A	-55	THR	-	expression tag	UNP P03366
A	-54	GLY	-	expression tag	UNP P03366
A	-53	ARG	-	expression tag	UNP P03366
A	-52	GLY	-	expression tag	UNP P03366
A	-51	ALA	-	expression tag	UNP P03366
A	-50	VAL	-	expression tag	UNP P03366
A	-49	SER	-	expression tag	UNP P03366
A	-48	GLU	-	expression tag	UNP P03366
A	-47	LYS	-	expression tag	UNP P03366
A	-46	ASP	-	expression tag	UNP P03366
A	-45	ALA	-	expression tag	UNP P03366
A	-44	PRO	-	expression tag	UNP P03366
A	-43	LYS	-	expression tag	UNP P03366
A	-42	GLU	-	expression tag	UNP P03366
A	-41	LEU	-	expression tag	UNP P03366
A	-40	LEU	-	expression tag	UNP P03366
A	-39	GLN	-	expression tag	UNP P03366
A	-38	MET	-	expression tag	UNP P03366

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-37	LEU	-	expression tag	UNP P03366
A	-36	GLU	-	expression tag	UNP P03366
A	-35	LYS	-	expression tag	UNP P03366
A	-34	GLN	-	expression tag	UNP P03366
A	-33	LYS	-	expression tag	UNP P03366
A	-32	LYS	-	expression tag	UNP P03366
A	-31	ALA	-	expression tag	UNP P03366
A	-30	LEU	-	expression tag	UNP P03366
A	-29	GLU	-	expression tag	UNP P03366
A	-28	VAL	-	expression tag	UNP P03366
A	-27	LEU	-	expression tag	UNP P03366
A	-26	PHE	-	expression tag	UNP P03366
A	-25	GLN	-	expression tag	UNP P03366
A	-24	GLY	-	expression tag	UNP P03366
A	-23	PRO	-	expression tag	UNP P03366
A	-22	MET	-	expression tag	UNP P03366
A	25	ALA	ASP	engineered mutation	UNP P03366
A	641	ASP	LEU	engineered mutation	UNP P03366
A	642	ASP	PHE	engineered mutation	UNP P03366
B	-105	MET	-	initiating methionine	UNP P03366
B	-104	GLY	-	expression tag	UNP P03366
B	-103	SER	-	expression tag	UNP P03366
B	-102	SER	-	expression tag	UNP P03366
B	-101	HIS	-	expression tag	UNP P03366
B	-100	HIS	-	expression tag	UNP P03366
B	-99	HIS	-	expression tag	UNP P03366
B	-98	HIS	-	expression tag	UNP P03366
B	-97	HIS	-	expression tag	UNP P03366
B	-96	HIS	-	expression tag	UNP P03366
B	-95	MET	-	expression tag	UNP P03366
B	-94	ALA	-	expression tag	UNP P03366
B	-93	THR	-	expression tag	UNP P03366
B	-92	VAL	-	expression tag	UNP P03366
B	-91	LYS	-	expression tag	UNP P03366
B	-90	PHE	-	expression tag	UNP P03366
B	-89	LYS	-	expression tag	UNP P03366
B	-88	TYR	-	expression tag	UNP P03366
B	-87	LYS	-	expression tag	UNP P03366
B	-86	GLY	-	expression tag	UNP P03366
B	-85	GLU	-	expression tag	UNP P03366
B	-84	GLU	-	expression tag	UNP P03366
B	-83	LYS	-	expression tag	UNP P03366

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-82	GLU	-	expression tag	UNP P03366
B	-81	VAL	-	expression tag	UNP P03366
B	-80	ASP	-	expression tag	UNP P03366
B	-79	ILE	-	expression tag	UNP P03366
B	-78	SER	-	expression tag	UNP P03366
B	-77	LYS	-	expression tag	UNP P03366
B	-76	ILE	-	expression tag	UNP P03366
B	-75	LYS	-	expression tag	UNP P03366
B	-74	LYS	-	expression tag	UNP P03366
B	-73	VAL	-	expression tag	UNP P03366
B	-72	TRP	-	expression tag	UNP P03366
B	-71	ARG	-	expression tag	UNP P03366
B	-70	VAL	-	expression tag	UNP P03366
B	-69	GLY	-	expression tag	UNP P03366
B	-68	LYS	-	expression tag	UNP P03366
B	-67	MET	-	expression tag	UNP P03366
B	-66	ILE	-	expression tag	UNP P03366
B	-65	SER	-	expression tag	UNP P03366
B	-64	PHE	-	expression tag	UNP P03366
B	-63	THR	-	expression tag	UNP P03366
B	-62	TYR	-	expression tag	UNP P03366
B	-61	ASP	-	expression tag	UNP P03366
B	-60	GLU	-	expression tag	UNP P03366
B	-59	GLY	-	expression tag	UNP P03366
B	-58	GLY	-	expression tag	UNP P03366
B	-57	GLY	-	expression tag	UNP P03366
B	-56	LYS	-	expression tag	UNP P03366
B	-55	THR	-	expression tag	UNP P03366
B	-54	GLY	-	expression tag	UNP P03366
B	-53	ARG	-	expression tag	UNP P03366
B	-52	GLY	-	expression tag	UNP P03366
B	-51	ALA	-	expression tag	UNP P03366
B	-50	VAL	-	expression tag	UNP P03366
B	-49	SER	-	expression tag	UNP P03366
B	-48	GLU	-	expression tag	UNP P03366
B	-47	LYS	-	expression tag	UNP P03366
B	-46	ASP	-	expression tag	UNP P03366
B	-45	ALA	-	expression tag	UNP P03366
B	-44	PRO	-	expression tag	UNP P03366
B	-43	LYS	-	expression tag	UNP P03366
B	-42	GLU	-	expression tag	UNP P03366
B	-41	LEU	-	expression tag	UNP P03366

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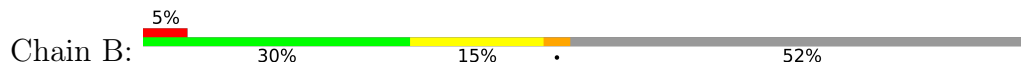
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Chain	Residue	Modelled	Actual	Comment	Reference
B	-40	LEU	-	expression tag	UNP P03366
B	-39	GLN	-	expression tag	UNP P03366
B	-38	MET	-	expression tag	UNP P03366
B	-37	LEU	-	expression tag	UNP P03366
B	-36	GLU	-	expression tag	UNP P03366
B	-35	LYS	-	expression tag	UNP P03366
B	-34	GLN	-	expression tag	UNP P03366
B	-33	LYS	-	expression tag	UNP P03366
B	-32	LYS	-	expression tag	UNP P03366
B	-31	ALA	-	expression tag	UNP P03366
B	-30	LEU	-	expression tag	UNP P03366
B	-29	GLU	-	expression tag	UNP P03366
B	-28	VAL	-	expression tag	UNP P03366
B	-27	LEU	-	expression tag	UNP P03366
B	-26	PHE	-	expression tag	UNP P03366
B	-25	GLN	-	expression tag	UNP P03366
B	-24	GLY	-	expression tag	UNP P03366
B	-23	PRO	-	expression tag	UNP P03366
B	-22	MET	-	expression tag	UNP P03366
B	25	ALA	ASP	engineered mutation	UNP P03366
B	635	ASP	LEU	engineered mutation	UNP P03366
B	636	ASP	PHE	engineered mutation	UNP P03366

GLY	ILE	GLN	GLU	PHE	GLY	ILE	ASP	PRO	TYR	THR	ASP	GLN	SER	GLN	THR	ASP	ILE	GLN	GLY	VAL	VAL	LYS	GLU	SER	LEU	GLN	MET	GLN	LYS	ASN	LYS	GLN	GLU	ILE	THR	LYS	LYS	LYS	ILE	GLN	ILE	LYS	ILE	GLN	ASN	GLY	PHE	GLY	ARG	VAL	THR	ASP	TYR	ASP	GLN	ARG	ASP	ALA	GLY	ALA	ASN	GLY	ILE	GLN	LYS	ASN	GLY	THR	TRP	LYS	ALA	VAL	GLN	MET	ASP	PRO	LYS	GLY	ARG	GLY	GLY	VAL	VAL	GLY	ILE	GLY	GLY	ASP
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ASN	SER	ASP	ILE	LYS	VAL	VAL	PRO	ARG	LYS	MET	LYS	ALA	ALA	LYS	ILE	THR	ASP	ILE	GLN	GLY	VAL	VAL	TYR	GLY	LYS	LEU	GLN	MET	GLN	LYS	ASN	LYS	GLN	GLU	ILE	THR	LYS	LYS	ASP	ASP	CYS	VAL	VAL	ASN	ALA	SER	GLY	ARG	GLN	ASP	ASP
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• Molecule 1: Gag-Pol polyprotein



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

LYS GLN MET ALA GLY ASP ASP CYS VAL ALA SER ARG GLN ASP GLU ASP

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	27555	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	0.95	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	7.185	Depositor
Minimum map value	-1.445	Depositor
Average map value	0.007	Depositor
Map value standard deviation	0.289	Depositor
Recommended contour level	0.85	Depositor
Map size (Å)	259.84, 259.84, 259.84	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.015, 1.015, 1.015	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.47	0/5244	0.61	3/7119 (0.0%)
1	B	0.49	0/4206	0.66	6/5715 (0.1%)
All	All	0.48	0/9450	0.63	9/12834 (0.1%)

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	93	ILE	N-CA-C	-10.63	100.54	110.53
1	B	50	ILE	N-CA-C	-7.91	105.00	112.83
1	B	63	LEU	N-CA-C	7.70	121.58	110.10
1	B	99	PHE	N-CA-C	7.61	121.51	109.64
1	B	93	ILE	CB-CA-C	7.27	121.55	112.02
1	A	41	ARG	N-CA-C	7.07	120.20	110.24
1	A	33	LEU	N-CA-C	6.93	120.76	109.59
1	B	83	ASN	N-CA-C	-5.64	102.05	110.23
1	A	84	ILE	N-CA-C	5.17	115.31	107.75

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	5118	0	5221	289	0
1	B	4097	0	4176	255	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	9215	0	9397	432	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 23.

All (432) 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:94:GLY:HA3	1:B:100:PRO:CG	1.38	1.48
1:A:102:SER:HB3	1:A:103:PRO:CD	1.48	1.43
1:A:95:CYS:SG	1:B:99:PHE:CE1	2.34	1.20
1:A:94:GLY:HA3	1:B:100:PRO:HG2	1.19	1.18
1:A:102:SER:HB3	1:A:103:PRO:HD3	1.23	1.14
1:A:42:TRP:CD1	1:A:57:ARG:HB3	1.86	1.09
1:A:102:SER:CB	1:A:103:PRO:HD3	1.83	1.08
1:A:26:THR:HG22	1:B:26:THR:N	1.69	1.07
1:A:99:PHE:HB2	1:A:100:PRO:HD2	1.35	1.06
1:A:26:THR:HG22	1:B:26:THR:H	0.92	1.06
1:A:94:GLY:CA	1:B:100:PRO:CG	2.34	1.06
1:A:50:ILE:HG22	1:B:49:GLY:CA	1.86	1.04
1:A:63:LEU:HD11	1:A:70:LYS:HE2	1.37	1.04
1:A:95:CYS:SG	1:B:99:PHE:CD1	2.50	1.03
1:B:15:ILE:HD13	1:B:33:LEU:CD1	1.88	1.03
1:A:100:PRO:HB3	1:B:93:ILE:HA	1.40	1.02
1:A:99:PHE:CB	1:A:100:PRO:HD2	1.90	1.02
1:A:32:VAL:HB	1:A:84:ILE:HD11	1.42	1.01
1:A:102:SER:CB	1:A:103:PRO:CD	2.34	0.99
1:A:94:GLY:HA3	1:B:100:PRO:HG3	1.39	0.98
1:A:42:TRP:CD1	1:A:57:ARG:CB	2.46	0.98
1:A:50:ILE:HG22	1:B:49:GLY:HA3	1.45	0.98
1:B:106:THR:HG21	1:B:220:ASP:N	1.78	0.97
1:A:100:PRO:HB3	1:B:93:ILE:CA	1.94	0.97
1:A:94:GLY:HA3	1:B:100:PRO:CD	1.94	0.97
1:A:32:VAL:HB	1:A:84:ILE:CD1	1.96	0.94
1:A:32:VAL:HB	1:A:84:ILE:CG1	1.97	0.94
1:A:52:GLY:C	1:B:51:GLY:HA3	1.92	0.94
1:A:102:SER:HB3	1:A:103:PRO:HD2	1.45	0.94
1:A:49:GLY:HA3	1:B:50:ILE:H	1.32	0.93
1:A:26:THR:CG2	1:B:26:THR:H	1.83	0.92
1:A:63:LEU:HD11	1:A:70:LYS:CE	2.01	0.90
1:A:42:TRP:CG	1:A:57:ARG:HB3	2.06	0.89

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:98:ASN:O	1:B:95:CYS:HA	1.71	0.89
1:A:100:PRO:HD3	1:B:93:ILE:HB	1.53	0.89
1:A:42:TRP:CD1	1:A:57:ARG:HA	2.06	0.89
1:A:42:TRP:NE1	1:A:57:ARG:HG2	1.88	0.89
1:A:49:GLY:HA3	1:B:50:ILE:N	1.88	0.89
1:B:15:ILE:HD13	1:B:33:LEU:HD12	1.55	0.89
1:A:33:LEU:HD12	1:A:75:VAL:HG11	1.54	0.88
1:B:90:LEU:HD23	1:B:93:ILE:HD11	1.55	0.88
1:A:100:PRO:CD	1:B:93:ILE:HB	2.04	0.87
1:A:50:ILE:HD13	1:B:47:ILE:CD1	2.04	0.87
1:A:99:PHE:CD2	1:B:1:PRO:HD2	2.11	0.86
1:A:98:ASN:HB2	1:B:96:THR:OG1	1.76	0.85
1:A:52:GLY:O	1:B:51:GLY:HA3	1.75	0.85
1:A:94:GLY:CA	1:B:100:PRO:CD	2.54	0.85
1:A:94:GLY:CA	1:B:100:PRO:HG2	2.01	0.85
1:A:99:PHE:CB	1:A:100:PRO:CD	2.54	0.84
1:A:54:ILE:HG12	1:B:50:ILE:O	1.78	0.84
1:A:50:ILE:H	1:B:49:GLY:HA3	1.44	0.83
1:A:42:TRP:CD1	1:A:57:ARG:CA	2.63	0.82
1:A:50:ILE:CD1	1:B:47:ILE:HD11	2.10	0.82
1:A:99:PHE:CE2	1:B:1:PRO:HD2	2.16	0.81
1:A:239:TRP:CD1	1:A:241:GLY:H	1.99	0.80
1:A:99:PHE:HB2	1:A:100:PRO:CD	2.12	0.80
1:B:15:ILE:CG2	1:B:20:LYS:HE3	2.11	0.79
1:A:626:ASN:OD1	1:A:626:ASN:N	2.16	0.79
1:B:32:VAL:HG12	1:B:80:THR:HG21	1.64	0.79
1:A:47:ILE:HD12	1:B:50:ILE:HG21	1.64	0.78
1:A:32:VAL:CB	1:A:84:ILE:HD11	2.12	0.78
1:A:100:PRO:HB3	1:B:93:ILE:CB	2.16	0.76
1:B:63:LEU:HD23	1:B:72:ILE:HG12	1.69	0.75
1:B:15:ILE:HG22	1:B:20:LYS:CE	2.16	0.75
1:A:267:TYR:HB2	1:A:274:TYR:HB3	1.69	0.74
1:A:50:ILE:HD13	1:B:47:ILE:HD13	1.68	0.74
1:A:42:TRP:CE2	1:A:57:ARG:HD3	2.23	0.74
1:A:50:ILE:HG12	1:B:54:ILE:HG12	1.69	0.74
1:A:48:GLY:HA2	1:A:53:PHE:CD2	2.23	0.73
1:B:224:ARG:HD3	1:B:246:ASN:HA	1.68	0.73
1:A:42:TRP:HD1	1:A:57:ARG:HA	1.51	0.73
1:A:49:GLY:HA3	1:B:50:ILE:CA	2.17	0.73
1:B:11:VAL:HB	1:B:67:CYS:SG	2.28	0.73
1:B:15:ILE:CD1	1:B:33:LEU:CD1	2.65	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:49:GLY:CA	1:B:50:ILE:H	2.02	0.73
1:B:15:ILE:HG21	1:B:20:LYS:HE3	1.69	0.73
1:B:106:THR:HG21	1:B:220:ASP:H	1.52	0.73
1:A:50:ILE:CG2	1:B:49:GLY:HA3	2.18	0.72
1:B:15:ILE:CG2	1:B:20:LYS:CE	2.67	0.72
1:A:507:TRP:HB3	1:A:607:ILE:HD11	1.69	0.72
1:A:99:PHE:CZ	1:B:3:ILE:HG13	2.24	0.72
1:A:50:ILE:CD1	1:B:47:ILE:CD1	2.67	0.72
1:A:47:ILE:HD11	1:A:54:ILE:HD11	1.71	0.72
1:A:47:ILE:HD12	1:B:50:ILE:CG2	2.18	0.72
1:B:90:LEU:HD22	1:B:95:CYS:SG	2.30	0.72
1:A:33:LEU:HD12	1:A:75:VAL:CG1	2.19	0.71
1:B:15:ILE:HD13	1:B:33:LEU:HD13	1.73	0.71
1:B:15:ILE:CD1	1:B:33:LEU:HD12	2.20	0.70
1:B:102:SER:OG	1:B:103:PRO:HD3	1.90	0.70
1:A:42:TRP:NE1	1:A:57:ARG:CG	2.54	0.70
1:B:90:LEU:HA	1:B:93:ILE:HD11	1.73	0.70
1:A:43:LYS:HG3	1:A:44:PRO:HD2	1.74	0.70
1:A:32:VAL:HB	1:A:84:ILE:HG13	1.74	0.69
1:A:63:LEU:CD1	1:A:70:LYS:HE2	2.19	0.69
1:A:409:GLU:OE2	1:A:411:GLN:NE2	2.26	0.69
1:B:122:GLN:NE2	1:B:230:THR:O	2.26	0.69
1:B:56:VAL:HG12	1:B:78:GLY:HA3	1.74	0.69
1:A:28:ALA:O	1:A:86:GLY:HA2	1.92	0.69
1:A:480:GLU:HA	1:A:483:TRP:HD1	1.57	0.68
1:B:408:GLN:HB2	1:B:499:LYS:HG2	1.76	0.68
1:A:48:GLY:CA	1:A:53:PHE:CD2	2.76	0.68
1:A:48:GLY:HA2	1:A:53:PHE:HD2	1.59	0.68
1:B:64:ILE:HG21	1:B:89:LEU:HD13	1.76	0.67
1:A:489:ALA:HB1	1:B:439:ASP:OD2	1.95	0.67
1:B:106:THR:CG2	1:B:220:ASP:N	2.56	0.67
1:A:100:PRO:CG	1:B:93:ILE:HB	2.25	0.67
1:A:50:ILE:N	1:B:49:GLY:HA3	2.09	0.66
1:B:189:VAL:HG23	1:B:190:GLN:HG2	1.76	0.66
1:A:118:PRO:HG3	1:A:177:LEU:HD23	1.77	0.66
1:A:95:CYS:HA	1:B:98:ASN:O	1.94	0.66
1:A:50:ILE:CG2	1:B:49:GLY:CA	2.68	0.66
1:A:11:VAL:HB	1:A:67:CYS:HB2	1.77	0.66
1:A:99:PHE:HZ	1:B:3:ILE:CG1	2.10	0.65
1:A:170:LYS:O	1:A:237:GLN:NE2	2.30	0.65
1:A:26:THR:CG2	1:B:25:ALA:HA	2.27	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:33:LEU:CD1	1:A:75:VAL:HG11	2.25	0.64
1:B:106:THR:HG21	1:B:219:LEU:C	2.22	0.64
1:B:107:VAL:CG2	1:B:258:ILE:HD12	2.28	0.64
1:A:51:GLY:HA2	1:B:54:ILE:HG23	1.79	0.64
1:A:42:TRP:CE2	1:A:57:ARG:CD	2.81	0.64
1:A:52:GLY:C	1:B:51:GLY:CA	2.68	0.64
1:A:99:PHE:HB3	1:A:100:PRO:HD2	1.78	0.64
1:B:15:ILE:CG2	1:B:36:MET:SD	2.86	0.63
1:A:26:THR:H	1:B:26:THR:HB	1.63	0.63
1:B:367:LEU:H	1:B:367:LEU:HD23	1.62	0.63
1:A:570:SER:OG	1:A:609:LYS:NZ	2.30	0.63
1:A:95:CYS:SG	1:B:99:PHE:HE1	2.19	0.62
1:A:100:PRO:CB	1:B:93:ILE:HB	2.28	0.62
1:A:36:MET:O	1:A:39:PRO:HD3	2.00	0.62
1:A:51:GLY:HA3	1:B:52:GLY:C	2.24	0.62
1:A:26:THR:CG2	1:B:26:THR:N	2.52	0.62
1:A:99:PHE:CE1	1:B:3:ILE:HG13	2.34	0.62
1:A:32:VAL:H	1:A:84:ILE:HG13	1.64	0.62
1:B:196:PRO:HG3	1:B:280:TYR:HB2	1.81	0.62
1:A:42:TRP:HB3	1:A:59:TYR:CE1	2.35	0.62
1:B:15:ILE:HG21	1:B:36:MET:SD	2.40	0.62
1:B:11:VAL:HG11	1:B:67:CYS:SG	2.40	0.62
1:B:123:TRP:HZ2	1:B:160:PHE:HE2	1.46	0.61
1:A:87:ARG:HA	1:A:90:LEU:HB2	1.81	0.61
1:A:445:ASP:OD1	1:A:445:ASP:N	2.29	0.61
1:A:67:CYS:SG	1:A:67:CYS:O	2.58	0.61
1:B:90:LEU:O	1:B:93:ILE:HG13	2.01	0.61
1:A:48:GLY:CA	1:A:53:PHE:HD2	2.12	0.61
1:B:11:VAL:CB	1:B:67:CYS:SG	2.89	0.61
1:B:133:LEU:HG	1:B:161:ALA:HB2	1.83	0.61
1:B:73:GLY:HA3	1:B:89:LEU:HD21	1.82	0.61
1:A:99:PHE:CZ	1:B:3:ILE:CG1	2.84	0.60
1:B:237:GLU:HG3	1:B:238:THR:H	1.66	0.60
1:A:47:ILE:CD1	1:B:50:ILE:HG21	2.32	0.60
1:A:98:ASN:O	1:B:95:CYS:CA	2.50	0.59
1:A:50:ILE:O	1:B:52:GLY:O	2.20	0.59
1:A:59:TYR:HB3	1:A:62:ILE:HD11	1.85	0.59
1:A:19:LEU:C	1:A:20:LYS:CG	2.76	0.59
1:A:26:THR:O	1:A:87:ARG:CG	2.51	0.59
1:B:335:TRP:H	1:B:335:TRP:CD1	2.21	0.59
1:A:363:LEU:HD21	1:A:377:THR:HG23	1.84	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:224:PHE:HB3	1:A:230:TYR:HB2	1.85	0.58
1:B:15:ILE:HG22	1:B:20:LYS:CD	2.34	0.58
1:A:50:ILE:CG2	1:B:47:ILE:HD12	2.33	0.58
1:A:50:ILE:HG12	1:B:47:ILE:HD11	1.85	0.58
1:A:99:PHE:HB3	1:A:100:PRO:CD	2.34	0.58
1:B:437:THR:OG1	1:B:438:ASN:N	2.34	0.58
1:A:235:LEU:HD21	1:A:245:ILE:HG23	1.86	0.57
1:A:520:THR:HA	1:A:575:ASN:HB2	1.86	0.57
1:A:50:ILE:HG22	1:B:49:GLY:HA2	1.80	0.57
1:A:163:LYS:HA	1:A:167:LYS:HA	1.85	0.57
1:B:54:ILE:HD12	1:B:79:PRO:HD2	1.85	0.57
1:B:432:TYR:OH	1:B:445:GLU:OE1	2.23	0.57
1:A:296:LEU:HA	1:A:300:LEU:O	2.04	0.57
1:A:578:THR:HG22	1:A:580:SER:H	1.69	0.57
1:A:50:ILE:CG1	1:B:47:ILE:HD11	2.34	0.57
1:B:180:ASN:OD1	1:B:253:LYS:N	2.37	0.57
1:A:164:LYS:HD2	1:A:169:ARG:HG3	1.87	0.56
1:A:205:VAL:HB	1:A:208:ALA:HB2	1.87	0.56
1:A:500:THR:OG1	1:A:502:PRO:O	2.23	0.56
1:A:39:PRO:HB2	1:A:59:TYR:CE1	2.41	0.56
1:A:49:GLY:HA3	1:B:50:ILE:CB	2.36	0.56
1:B:11:VAL:CG1	1:B:67:CYS:SG	2.93	0.56
1:A:94:GLY:C	1:B:100:PRO:HD3	2.29	0.56
1:A:580:SER:HG	1:A:583:ALA:H	1.51	0.56
1:A:42:TRP:CZ2	1:A:57:ARG:NE	2.73	0.56
1:A:576:ILE:HB	1:A:614:LEU:HD23	1.88	0.56
1:B:204:SER:HG	1:B:297:HIS:CE1	2.22	0.56
1:B:32:VAL:HG12	1:B:80:THR:CG2	2.36	0.56
1:A:100:PRO:HA	1:B:93:ILE:O	2.06	0.56
1:B:15:ILE:HG12	1:B:36:MET:SD	2.46	0.55
1:A:99:PHE:CE2	1:B:1:PRO:CD	2.89	0.55
1:B:205:VAL:HG23	1:B:317:LEU:HB3	1.89	0.55
1:A:50:ILE:HD11	1:B:54:ILE:HD11	1.89	0.55
1:A:248:SER:O	1:A:251:THR:OG1	2.22	0.55
1:A:321:THR:HG22	1:A:322:VAL:N	2.22	0.54
1:A:466:LYS:HE3	1:B:127:GLU:OE2	2.06	0.54
1:A:15:ILE:HG21	1:A:36:MET:SD	2.47	0.54
1:B:13:ILE:HA	1:B:65:GLU:O	2.07	0.54
1:B:457:ILE:HG23	1:B:458:TRP:CD2	2.43	0.54
1:A:14:LYS:HA	1:A:18:GLN:O	2.07	0.54
1:A:47:ILE:CD1	1:B:50:ILE:CG2	2.84	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:143:GLU:O	1:A:145:LYS:NZ	2.37	0.54
1:B:87:ARG:HA	1:B:90:LEU:HB2	1.89	0.54
1:A:89:LEU:HA	1:A:92:GLN:HG3	1.89	0.54
1:B:453:GLU:O	1:B:457:ILE:HG22	2.08	0.54
1:B:443:LEU:HD12	1:B:473:TRP:HZ3	1.73	0.54
1:A:94:GLY:H	1:B:100:PRO:HD2	1.72	0.54
1:A:100:PRO:HB3	1:B:93:ILE:HB	1.83	0.54
1:B:443:LEU:HD12	1:B:473:TRP:CZ3	2.43	0.54
1:A:257:PHE:HE1	1:A:290:GLU:HG3	1.73	0.53
1:A:98:ASN:O	1:B:96:THR:N	2.41	0.53
1:A:42:TRP:CE2	1:A:57:ARG:CG	2.91	0.53
1:A:285:ARG:O	1:A:288:ILE:HG22	2.09	0.53
1:B:279:ILE:HG12	1:B:288:VAL:HG12	1.90	0.53
1:A:162:ILE:HG13	1:A:164:LYS:H	1.72	0.53
1:A:28:ALA:O	1:A:86:GLY:CA	2.56	0.53
1:A:49:GLY:HA3	1:B:50:ILE:HB	1.90	0.53
1:A:100:PRO:HG3	1:B:93:ILE:HG22	1.91	0.53
1:A:94:GLY:C	1:B:100:PRO:CD	2.82	0.53
1:A:292:ARG:NH2	1:A:302:THR:OG1	2.42	0.53
1:A:487:TRP:CD1	1:A:488:GLN:HG3	2.44	0.52
1:B:14:LYS:HA	1:B:18:GLN:O	2.09	0.52
1:A:162:ILE:O	1:A:169:ARG:N	2.32	0.52
1:B:15:ILE:CG2	1:B:20:LYS:HD2	2.39	0.52
1:A:99:PHE:HZ	1:B:3:ILE:HG12	1.73	0.52
1:A:105:GLU:HA	1:A:105:GLU:OE1	2.10	0.52
1:B:187:TRP:HB2	1:B:253:LYS:HD3	1.92	0.52
1:A:100:PRO:HG3	1:B:93:ILE:CG2	2.39	0.52
1:A:115:MET:HB3	1:A:180:ARG:HH11	1.74	0.52
1:B:15:ILE:HG22	1:B:20:LYS:HD2	1.90	0.52
1:A:9:PRO:HD2	1:A:23:LEU:HD11	1.92	0.52
1:A:42:TRP:HE1	1:A:57:ARG:HG2	1.70	0.51
1:A:183:ASP:HB3	1:B:154:PRO:HB3	1.93	0.51
1:B:306:GLN:O	1:B:310:ARG:HB2	2.10	0.51
1:A:153:ASN:N	1:A:153:ASN:OD1	2.41	0.51
1:B:325:GLN:NE2	1:B:503:GLN:OE1	2.36	0.51
1:A:48:GLY:HA3	1:A:53:PHE:CE2	2.45	0.51
1:A:429:ASN:OD1	1:A:432:THR:OG1	2.29	0.51
1:B:123:TRP:CZ2	1:B:160:PHE:HE2	2.28	0.51
1:A:99:PHE:HD2	1:B:1:PRO:HD2	1.72	0.51
1:B:123:TRP:HE1	1:B:160:PHE:HD2	1.58	0.51
1:A:42:TRP:NE1	1:A:57:ARG:CB	2.73	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:191:PRO:HG3	1:A:313:TYR:CG	2.46	0.51
1:A:32:VAL:CG2	1:A:84:ILE:HD11	2.41	0.51
1:A:313:TYR:OH	1:A:350:GLN:OE1	2.28	0.51
1:A:99:PHE:HA	1:B:95:CYS:SG	2.52	0.50
1:A:102:SER:OG	1:A:103:PRO:HD3	2.07	0.50
1:A:277:SER:OG	1:A:284:HIS:ND1	2.36	0.50
1:B:161:ALA:HA	1:B:172:LYS:HA	1.93	0.50
1:A:49:GLY:HA3	1:B:50:ILE:C	2.35	0.50
1:B:15:ILE:HG23	1:B:36:MET:SD	2.51	0.50
1:A:42:TRP:CD2	1:A:57:ARG:HD3	2.46	0.50
1:B:102:SER:OG	1:B:103:PRO:CD	2.58	0.50
1:A:327:LEU:HD22	1:A:341:LEU:HD22	1.93	0.50
1:B:397:TYR:HD1	1:B:398:ASP:N	2.09	0.50
1:B:30:ASP:O	1:B:86:GLY:HA3	2.11	0.50
1:A:94:GLY:CA	1:B:100:PRO:HD2	2.39	0.50
1:B:297:HIS:O	1:B:301:ILE:HG12	2.12	0.49
1:B:107:VAL:HG23	1:B:258:ILE:HD12	1.94	0.49
1:B:93:ILE:HD12	1:B:95:CYS:SG	2.52	0.49
1:A:3:ILE:HD11	1:B:99:PHE:HE2	1.78	0.49
1:A:570:SER:HB2	1:A:574:VAL:HG11	1.94	0.49
1:A:43:LYS:CG	1:A:44:PRO:HD2	2.41	0.49
1:A:49:GLY:CA	1:B:50:ILE:HB	2.42	0.49
1:B:90:LEU:O	1:B:93:ILE:CG1	2.61	0.49
1:B:90:LEU:HA	1:B:93:ILE:CD1	2.43	0.48
1:A:50:ILE:CG1	1:B:47:ILE:CD1	2.91	0.48
1:B:336:THR:OG1	1:B:369:GLU:O	2.24	0.48
1:A:97:LEU:O	1:A:99:PHE:CE1	2.66	0.48
1:A:360:LEU:HG	1:A:384:LEU:HD11	1.95	0.48
1:B:10:LEU:HA	1:B:23:LEU:HA	1.96	0.48
1:A:5:LEU:HD12	1:B:90:LEU:HB3	1.96	0.48
1:A:32:VAL:N	1:A:84:ILE:HG13	2.27	0.48
1:B:164:LYS:HG3	1:B:165:LYS:HG3	1.95	0.48
1:B:248:LEU:HD22	1:B:252:TRP:HZ3	1.79	0.48
1:A:50:ILE:HG21	1:B:47:ILE:HD12	1.95	0.48
1:B:120:VAL:HG13	1:B:158:PRO:HD3	1.96	0.48
1:A:33:LEU:CD1	1:A:75:VAL:CG1	2.89	0.48
1:A:5:LEU:O	1:B:87:ARG:NH1	2.46	0.48
1:A:9:PRO:HD2	1:A:23:LEU:CD1	2.44	0.48
1:A:94:GLY:N	1:B:100:PRO:HD2	2.29	0.48
1:B:263:MET:O	1:B:266:ILE:N	2.46	0.48
1:A:441:ALA:O	1:A:594:SER:HA	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:496:PRO:HB2	1:B:498:VAL:HG23	1.96	0.48
1:A:26:THR:O	1:A:87:ARG:HG3	2.14	0.48
1:A:98:ASN:HB2	1:B:96:THR:HG1	1.76	0.47
1:A:266:ILE:HD13	1:A:275:VAL:HG22	1.95	0.47
1:A:444:ASN:ND2	1:A:590:GLN:O	2.46	0.47
1:A:192:ALA:HB1	1:A:430:LEU:HD12	1.95	0.47
1:A:449:LEU:HD11	1:A:472:LEU:HG	1.95	0.47
1:B:296:GLN:HA	1:B:299:THR:OG1	2.15	0.47
1:B:205:VAL:HG22	1:B:319:PRO:HD3	1.96	0.47
1:B:97:LEU:HB3	1:B:99:PHE:CE1	2.49	0.47
1:B:115:MET:HB3	1:B:182:ARG:HD2	1.96	0.47
1:A:554:THR:O	1:A:558:THR:N	2.42	0.47
1:B:70:LYS:HE2	1:B:72:ILE:HD11	1.97	0.47
1:A:538:TYR:CE1	1:A:546:LYS:HG2	2.49	0.47
1:A:606:LEU:HD21	1:A:612:VAL:HG11	1.96	0.47
1:A:42:TRP:CE2	1:A:57:ARG:HG2	2.46	0.47
1:A:42:TRP:CZ2	1:A:57:ARG:CD	2.98	0.46
1:A:19:LEU:HD23	1:A:19:LEU:HA	1.76	0.46
1:B:300:LYS:HA	1:B:300:LYS:HD3	1.69	0.46
1:A:50:ILE:HG12	1:B:47:ILE:CD1	2.44	0.46
1:A:26:THR:HG22	1:B:25:ALA:HA	1.98	0.46
1:B:9:PRO:HD2	1:B:23:LEU:HD11	1.96	0.46
1:B:90:LEU:CD2	1:B:95:CYS:SG	3.03	0.46
1:B:93:ILE:CD1	1:B:95:CYS:SG	3.03	0.46
1:B:471:GLU:O	1:B:474:GLU:HG2	2.16	0.46
1:B:219:LEU:HD12	1:B:220:ASP:H	1.80	0.46
1:B:266:ILE:HD13	1:B:266:ILE:HA	1.62	0.45
1:B:106:THR:OG1	1:B:218:PRO:O	2.22	0.45
1:B:133:LEU:HD13	1:B:231:ILE:HG22	1.98	0.45
1:B:64:ILE:CG2	1:B:71:ALA:HB3	2.46	0.45
1:B:107:VAL:HG21	1:B:258:ILE:HD12	1.97	0.45
1:A:50:ILE:HG21	1:B:47:ILE:CD1	2.47	0.45
1:A:590:GLN:N	1:A:591:PRO:HD3	2.31	0.45
1:A:554:THR:HB	1:A:557:LYS:HB2	1.99	0.45
1:B:82:VAL:HG13	1:B:84:ILE:HD11	1.98	0.45
1:A:215:ASP:HB3	1:A:217:ASP:OD1	2.16	0.45
1:B:8:ARG:HB3	1:B:23:LEU:HD13	1.99	0.45
1:A:26:THR:HB	1:B:26:THR:OG1	2.15	0.45
1:A:412:LYS:HD2	1:A:504:VAL:HG22	1.99	0.45
1:A:100:PRO:HB3	1:B:93:ILE:C	2.42	0.45
1:B:15:ILE:HG23	1:B:15:ILE:O	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:64:ILE:HG23	1:B:71:ALA:HB3	1.98	0.45
1:A:5:LEU:HB2	1:B:91:THR:HG23	1.99	0.45
1:B:217:VAL:O	1:B:248:LEU:HG	2.17	0.45
1:B:38:LEU:HD23	1:B:38:LEU:HA	1.78	0.45
1:A:26:THR:O	1:A:87:ARG:HD3	2.16	0.44
1:A:49:GLY:HA3	1:B:51:GLY:N	2.32	0.44
1:B:122:GLN:HE22	1:B:159:VAL:HG12	1.82	0.44
1:A:19:LEU:O	1:A:20:LYS:HG2	2.16	0.44
1:B:441:LYS:HE2	1:B:480:TYR:CZ	2.53	0.44
1:A:52:GLY:N	1:B:51:GLY:C	2.75	0.44
1:A:42:TRP:HB3	1:A:59:TYR:CZ	2.52	0.44
1:A:328:PRO:HG2	1:A:341:LEU:HD11	2.00	0.44
1:B:162:ILE:HD13	1:B:173:LEU:HD11	2.00	0.44
1:A:19:LEU:C	1:A:20:LYS:HG3	2.41	0.44
1:A:493:PRO:O	1:A:495:TRP:HD1	2.00	0.44
1:A:280:GLU:O	1:A:284:HIS:N	2.46	0.44
1:B:149:ILE:HD12	1:B:153:ASN:HB2	2.00	0.44
1:B:163:LYS:O	1:B:482:GLN:HG2	2.17	0.44
1:B:403:LEU:HD23	1:B:462:PRO:HB3	2.00	0.44
1:B:347:LEU:O	1:B:350:ALA:N	2.49	0.44
1:A:5:LEU:HB2	1:B:91:THR:CG2	2.48	0.43
1:A:161:ALA:HB1	1:A:168:TRP:HB3	1.99	0.43
1:B:85:ILE:HG22	1:B:90:LEU:HG	1.99	0.43
1:A:194:LEU:HD11	1:A:310:TRP:CZ3	2.52	0.43
1:A:274:TYR:HB2	1:A:310:TRP:NE1	2.33	0.43
1:A:487:TRP:O	1:B:409:LYS:HE3	2.17	0.43
1:A:26:THR:O	1:A:87:ARG:CD	2.66	0.43
1:A:42:TRP:CZ2	1:A:57:ARG:HD3	2.53	0.43
1:A:24:LEU:HD13	1:B:97:LEU:HD13	2.00	0.43
1:A:30:ASP:C	1:A:86:GLY:HA3	2.44	0.43
1:A:190:HIS:ND1	1:A:191:PRO:HD2	2.33	0.43
1:A:306:PRO:HB2	1:A:307:PRO:HD3	2.00	0.43
1:A:511:GLU:HG3	1:A:513:GLU:H	1.83	0.43
1:B:182:ARG:HA	1:B:182:ARG:HD3	1.81	0.43
1:A:350:GLN:HE21	1:A:350:GLN:HB3	1.57	0.43
1:B:177:ARG:HG3	1:B:486:ILE:HD13	2.01	0.43
1:B:234:ILE:O	1:B:237:GLU:HG2	2.19	0.43
1:A:540:THR:OG1	1:A:544:ARG:N	2.52	0.43
1:B:15:ILE:CG2	1:B:20:LYS:CD	2.96	0.43
1:B:254:GLY:O	1:B:258:ILE:HG12	2.18	0.43
1:A:311:MET:HE3	1:A:347:TRP:HE1	1.84	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:24:LEU:HA	1:A:85:ILE:HB	2.02	0.42
1:A:32:VAL:CB	1:A:84:ILE:HG13	2.46	0.42
1:A:73:GLY:HA3	1:A:89:LEU:HD21	2.01	0.42
1:A:154:PRO:HD2	1:A:155:TYR:CE2	2.54	0.42
1:B:73:GLY:HA3	1:B:89:LEU:CD2	2.49	0.42
1:B:99:PHE:HA	1:B:100:PRO:HD3	1.74	0.42
1:B:448:GLN:O	1:B:451:THR:HG22	2.19	0.42
1:A:115:MET:SD	1:A:180:ARG:NH1	2.92	0.42
1:A:219:ARG:HD2	1:A:231:GLN:CD	2.44	0.42
1:B:34:GLU:HB2	1:B:83:ASN:OD1	2.19	0.42
1:A:334:THR:O	1:A:338:ILE:HG13	2.19	0.42
1:A:91:THR:HG22	1:B:5:LEU:HB2	2.02	0.42
1:B:361:GLN:OE1	1:B:361:GLN:N	2.50	0.42
1:A:11:VAL:HG11	1:A:24:LEU:HD11	2.01	0.42
1:A:127:GLU:HA	1:A:130:ILE:HB	2.00	0.42
1:A:137:CYS:SG	1:A:138:THR:N	2.92	0.42
1:B:361:GLN:O	1:B:364:LYS:HB2	2.19	0.42
1:B:486:ILE:HA	1:B:487:PRO:HD3	1.90	0.42
1:A:1:PRO:HD2	1:B:99:PHE:HD2	1.85	0.42
1:A:387:ASN:O	1:A:391:LEU:HG	2.18	0.42
1:B:15:ILE:HG22	1:B:20:LYS:HE2	2.00	0.42
1:B:82:VAL:HG22	1:B:83:ASN:O	2.20	0.42
1:A:94:GLY:CA	1:B:100:PRO:HG3	2.26	0.42
1:A:491:TRP:HZ3	1:B:476:TRP:NE1	2.18	0.42
1:A:53:PHE:O	1:A:54:ILE:HG23	2.20	0.41
1:A:321:THR:CG2	1:A:322:VAL:N	2.82	0.41
1:A:575:ASN:ND2	1:A:613:TYR:HB3	2.34	0.41
1:B:24:LEU:HA	1:B:85:ILE:HB	2.02	0.41
1:A:100:PRO:HD3	1:B:93:ILE:CB	2.38	0.41
1:B:60:ASP:HA	1:B:74:THR:HA	2.02	0.41
1:B:364:LYS:HB2	1:B:364:LYS:HE3	1.85	0.41
1:A:146:ILE:HG13	1:A:232:TYR:HA	2.02	0.41
1:A:420:TYR:CZ	1:A:435:TYR:HB2	2.55	0.41
1:A:514:PRO:HD3	1:A:613:TYR:CZ	2.55	0.41
1:B:347:LEU:HD12	1:B:347:LEU:HA	1.85	0.41
1:A:425:GLU:HB3	1:A:426:PRO:HD2	2.03	0.41
1:B:360:ARG:HA	1:B:360:ARG:HD2	1.89	0.41
1:A:4:THR:HB	1:A:6:TRP:CD1	2.56	0.41
1:A:50:ILE:CG2	1:B:49:GLY:N	2.83	0.41
1:A:191:PRO:HD3	1:A:313:TYR:CZ	2.54	0.41
1:A:355:ILE:HG23	1:A:387:ASN:HD21	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:47:ILE:HD11	1:B:54:ILE:HD11	2.02	0.41
1:B:186:PHE:O	1:B:189:VAL:HG22	2.20	0.41
1:B:318:HIS:O	1:B:322:TRP:HE3	2.04	0.41
1:B:397:TYR:HE2	1:B:458:TRP:HB3	1.84	0.41
1:B:193:ILE:HA	1:B:194:PRO:HA	1.79	0.41
1:B:249:PRO:HD2	1:B:252:TRP:HE3	1.86	0.41
1:B:297:HIS:CD2	1:B:297:HIS:C	2.98	0.41
1:A:3:ILE:HD11	1:B:99:PHE:CE2	2.56	0.41
1:A:47:ILE:HD12	1:B:50:ILE:HG22	1.98	0.41
1:A:50:ILE:HG12	1:B:54:ILE:CG1	2.44	0.41
1:A:97:LEU:HA	1:B:96:THR:O	2.21	0.41
1:A:90:LEU:HD23	1:A:90:LEU:HA	1.90	0.41
1:A:104:ILE:H	1:A:104:ILE:HG12	1.71	0.41
1:A:437:ARG:HD2	1:A:440:GLY:HA2	2.02	0.41
1:A:486:TYR:HE2	1:A:488:GLN:HB2	1.87	0.41
1:B:36:MET:HE2	1:B:37:SER:O	2.21	0.41
1:B:64:ILE:HG22	1:B:71:ALA:O	2.21	0.41
1:A:48:GLY:HA3	1:A:53:PHE:CD2	2.53	0.40
1:A:191:PRO:HB2	1:A:320:TRP:CD2	2.56	0.40
1:A:321:THR:HG22	1:A:322:VAL:H	1.86	0.40
1:B:270:PHE:CE2	1:B:304:LEU:HD23	2.56	0.40
1:B:327:ILE:HG13	1:B:501:TRP:CH2	2.56	0.40
1:A:160:PHE:HE2	1:A:173:ASP:HB2	1.87	0.40
1:A:519:GLU:CD	1:A:519:GLU:H	2.28	0.40
1:A:47:ILE:HG12	1:A:56:VAL:HG11	2.03	0.40
1:A:146:ILE:HG23	1:A:230:TYR:HB3	2.03	0.40
1:A:205:VAL:HG22	1:A:271:ASP:O	2.21	0.40
1:B:231:ILE:HD11	1:B:243:TYR:HE2	1.86	0.40
1:A:257:PHE:CE2	1:A:291:LEU:HD13	2.57	0.40
1:B:102:SER:H	1:B:103:PRO:HD2	1.85	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	624/1053 (59%)	586 (94%)	35 (6%)	3 (0%)	24	63
1	B	495/1053 (47%)	473 (96%)	21 (4%)	1 (0%)	43	78
All	All	1119/2106 (53%)	1059 (95%)	56 (5%)	4 (0%)	31	67

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	102	SER
1	A	103	PRO
1	A	28	ALA
1	B	100	PRO

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	560/909 (62%)	509 (91%)	51 (9%)	9	27
1	B	452/909 (50%)	414 (92%)	38 (8%)	10	30
All	All	1012/1818 (56%)	923 (91%)	89 (9%)	11	28

All (89) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	15	ILE
1	A	19	LEU
1	A	20	LYS
1	A	41	ARG
1	A	54	ILE
1	A	55	LYS
1	A	64	ILE
1	A	93	ILE
1	A	99	PHE

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Mol	Chain	Res	Type
1	A	101	ILE
1	A	102	SER
1	A	104	ILE
1	A	106	THR
1	A	110	LYS
1	A	116	ASP
1	A	128	GLU
1	A	146	ILE
1	A	148	LYS
1	A	149	ILE
1	A	153	ASN
1	A	159	VAL
1	A	185	TRP
1	A	200	VAL
1	A	209	TYR
1	A	228	ILE
1	A	266	ILE
1	A	311	MET
1	A	326	VAL
1	A	329	GLU
1	A	345	LEU
1	A	350	GLN
1	A	374	ILE
1	A	430	LEU
1	A	445	ASP
1	A	454	GLN
1	A	455	LYS
1	A	483	TRP
1	A	500	THR
1	A	503	LEU
1	A	505	LYS
1	A	509	GLN
1	A	510	LEU
1	A	515	ILE
1	A	519	GLU
1	A	535	LYS
1	A	548	VAL
1	A	607	ILE
1	A	620	HIS
1	A	623	ILE
1	A	626	ASN
1	A	632	LEU

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Mol	Chain	Res	Type
1	B	3	ILE
1	B	15	ILE
1	B	20	LYS
1	B	31	THR
1	B	34	GLU
1	B	47	ILE
1	B	65	GLU
1	B	120	VAL
1	B	128	GLU
1	B	133	LEU
1	B	148	LYS
1	B	160	PHE
1	B	168	THR
1	B	169	LYS
1	B	191	LEU
1	B	193	ILE
1	B	231	ILE
1	B	241	ILE
1	B	266	ILE
1	B	274	ASN
1	B	288	VAL
1	B	296	GLN
1	B	300	LYS
1	B	304	LEU
1	B	308	LEU
1	B	310	ARG
1	B	335	TRP
1	B	346	LYS
1	B	434	ARG
1	B	437	THR
1	B	439	ASP
1	B	443	LEU
1	B	461	THR
1	B	472	THR
1	B	475	THR
1	B	480	TYR
1	B	486	ILE
1	B	494	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	98	ASN
1	A	233	ASN
1	A	350	GLN
1	A	417	GLN
1	A	545	GLN
1	B	69	HIS
1	B	122	GLN
1	B	236	ASN
1	B	274	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

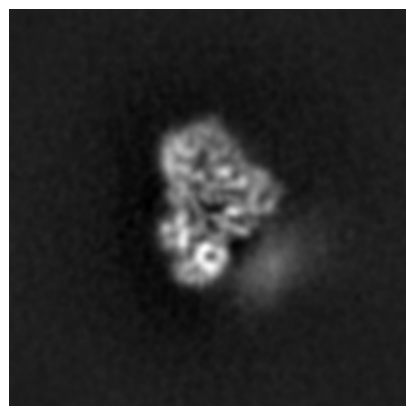
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-25165. These allow visual inspection of the internal detail of the map and identification of artifacts.

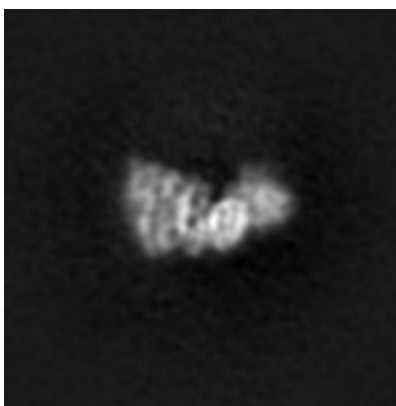
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

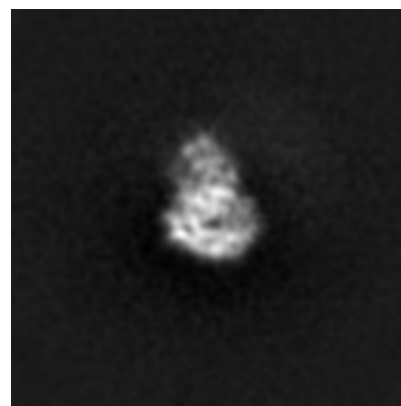
6.1.1 Primary map



X

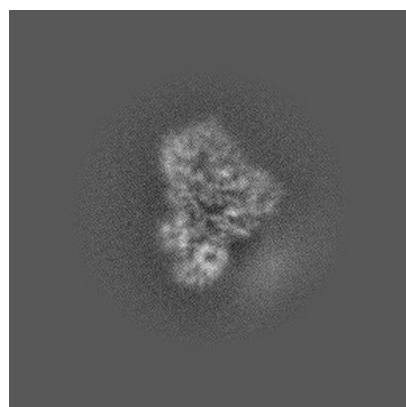


Y

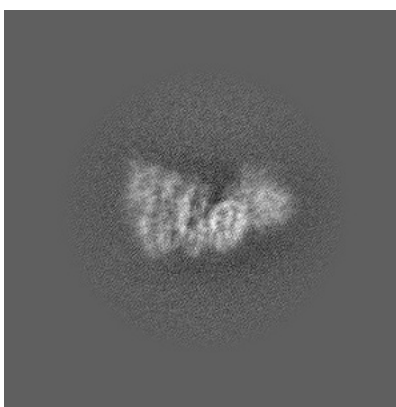


Z

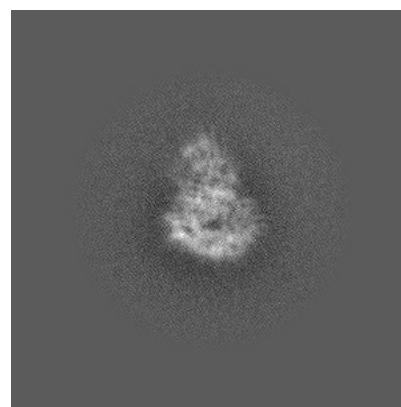
6.1.2 Raw map



X



Y

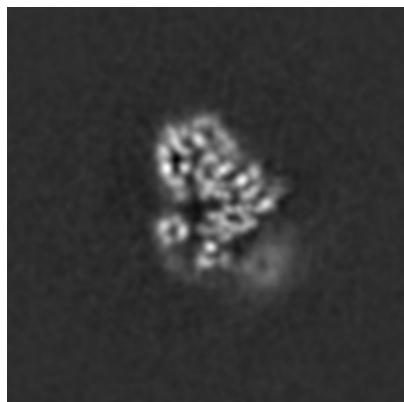


Z

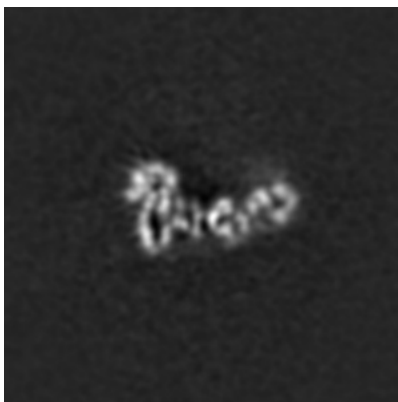
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

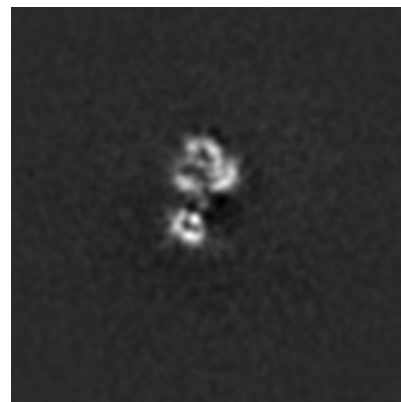
6.2.1 Primary map



X Index: 128

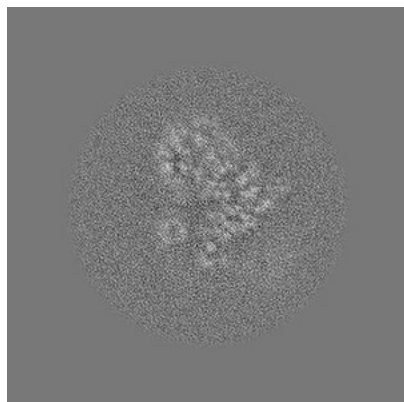


Y Index: 128

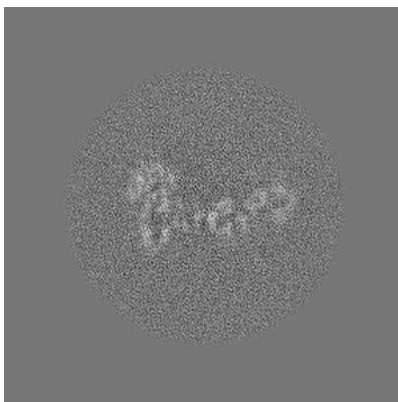


Z Index: 128

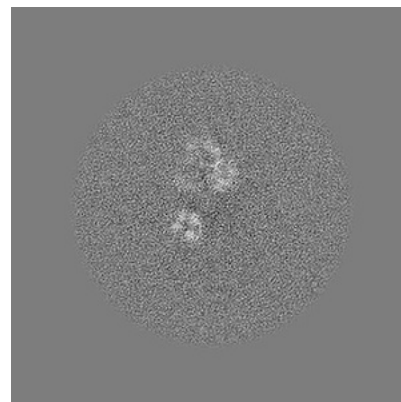
6.2.2 Raw map



X Index: 128



Y Index: 128

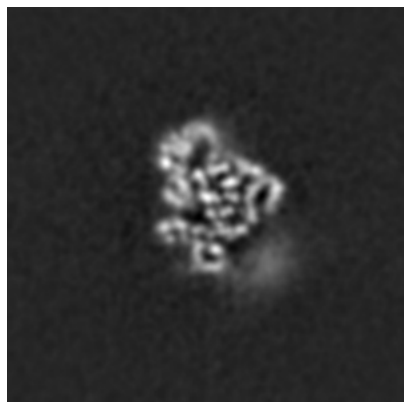


Z Index: 128

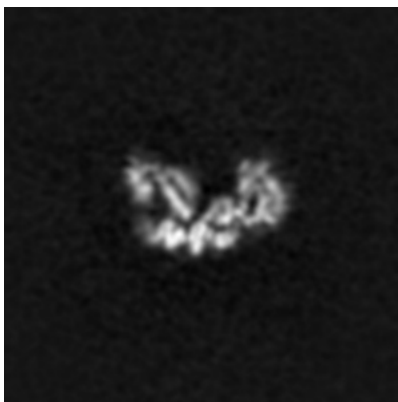
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

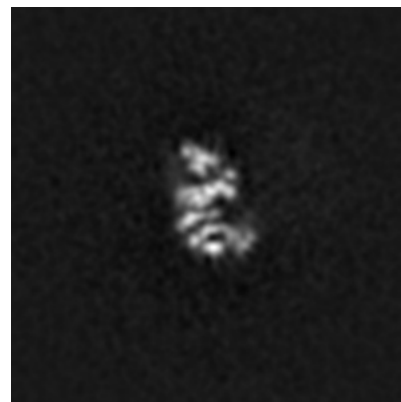
6.3.1 Primary map



X Index: 122

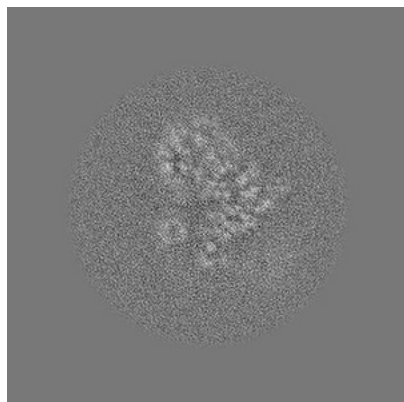


Y Index: 111

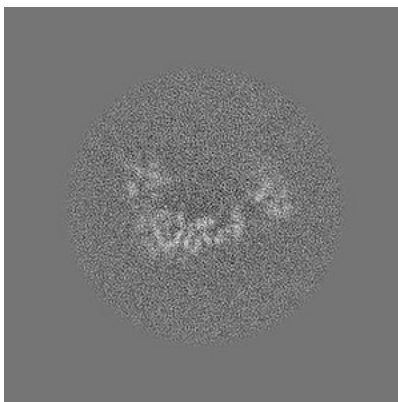


Z Index: 151

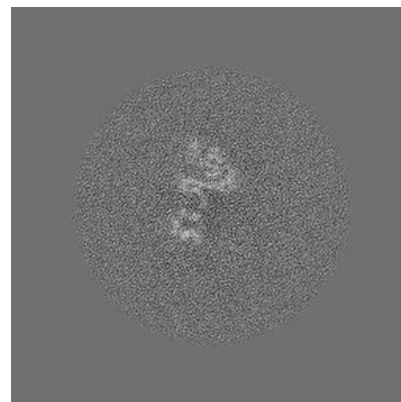
6.3.2 Raw map



X Index: 128



Y Index: 120



Z Index: 126

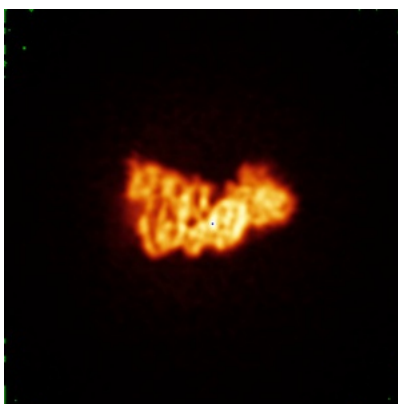
The images above show the largest variance slices of the map in three orthogonal directions.

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

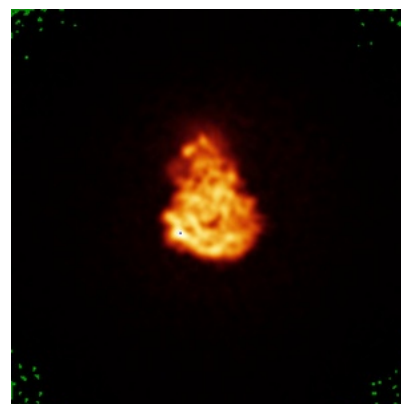
6.4.1 Primary map



X

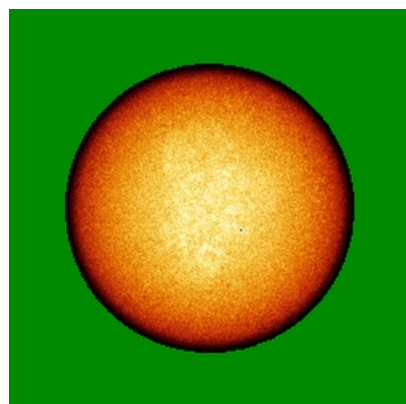


Y

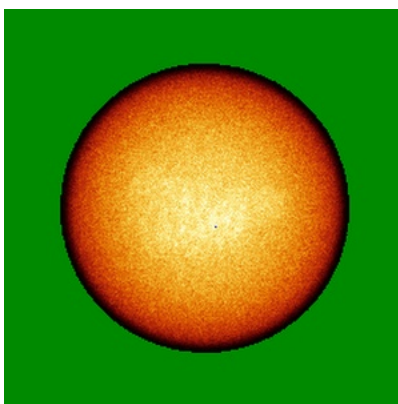


Z

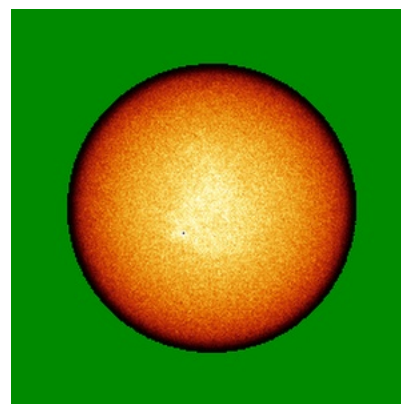
6.4.2 Raw map



X



Y

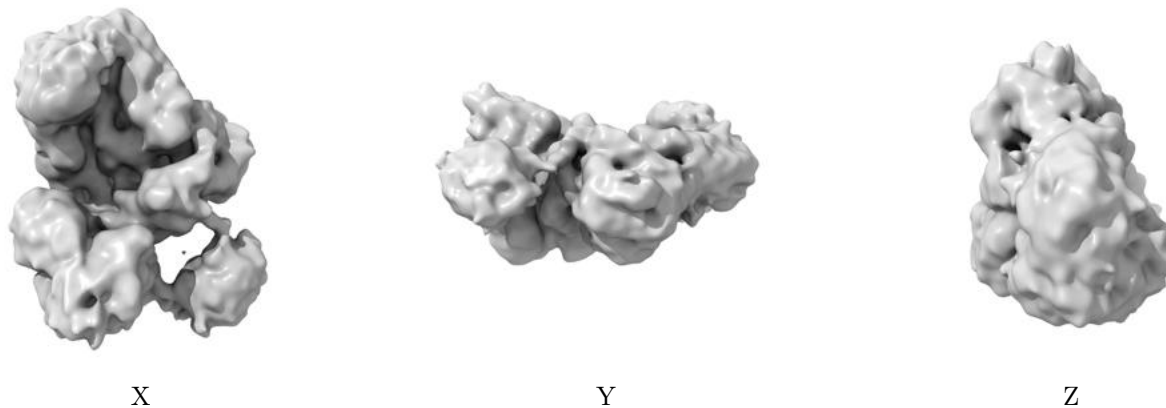


Z

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.

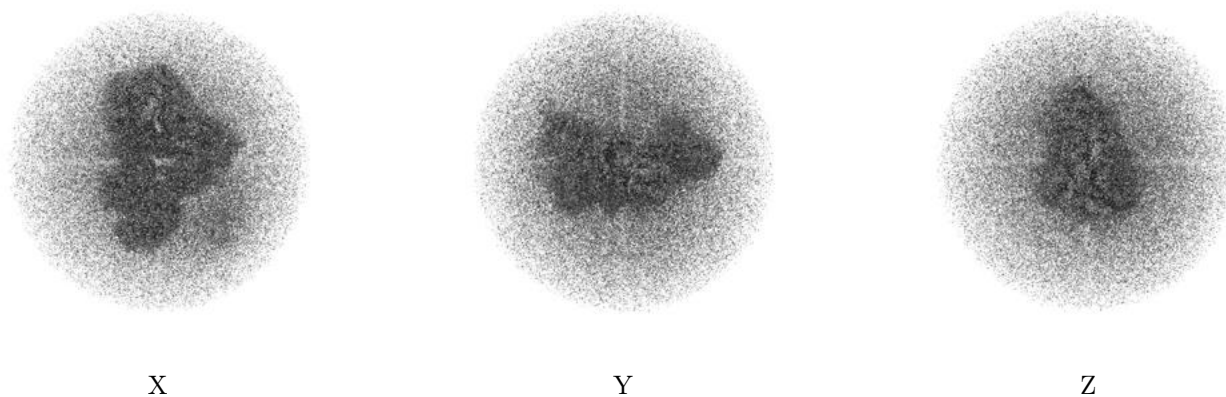
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.85. 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.

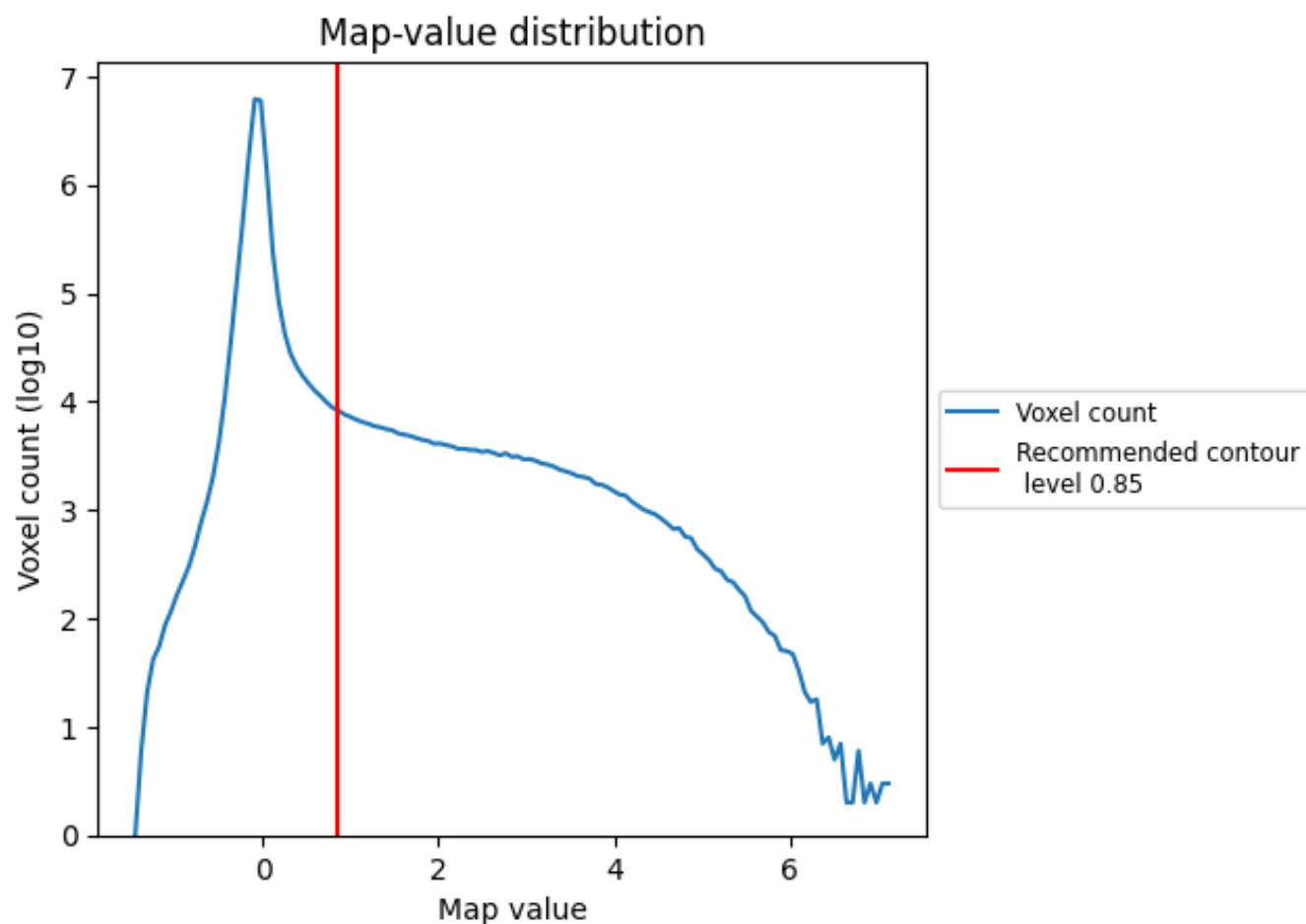
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

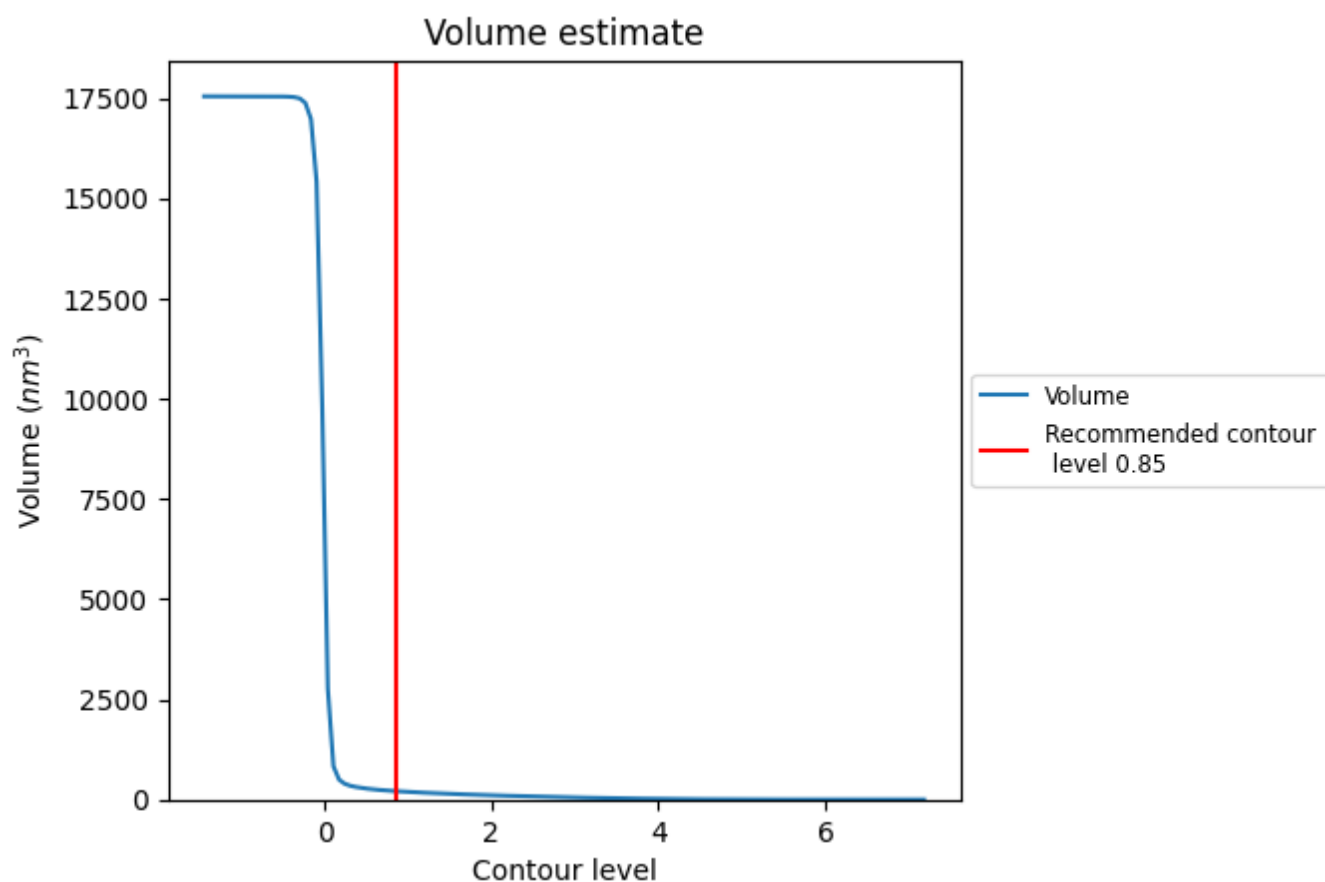
This section contains the results of statistical analysis of the map.

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.

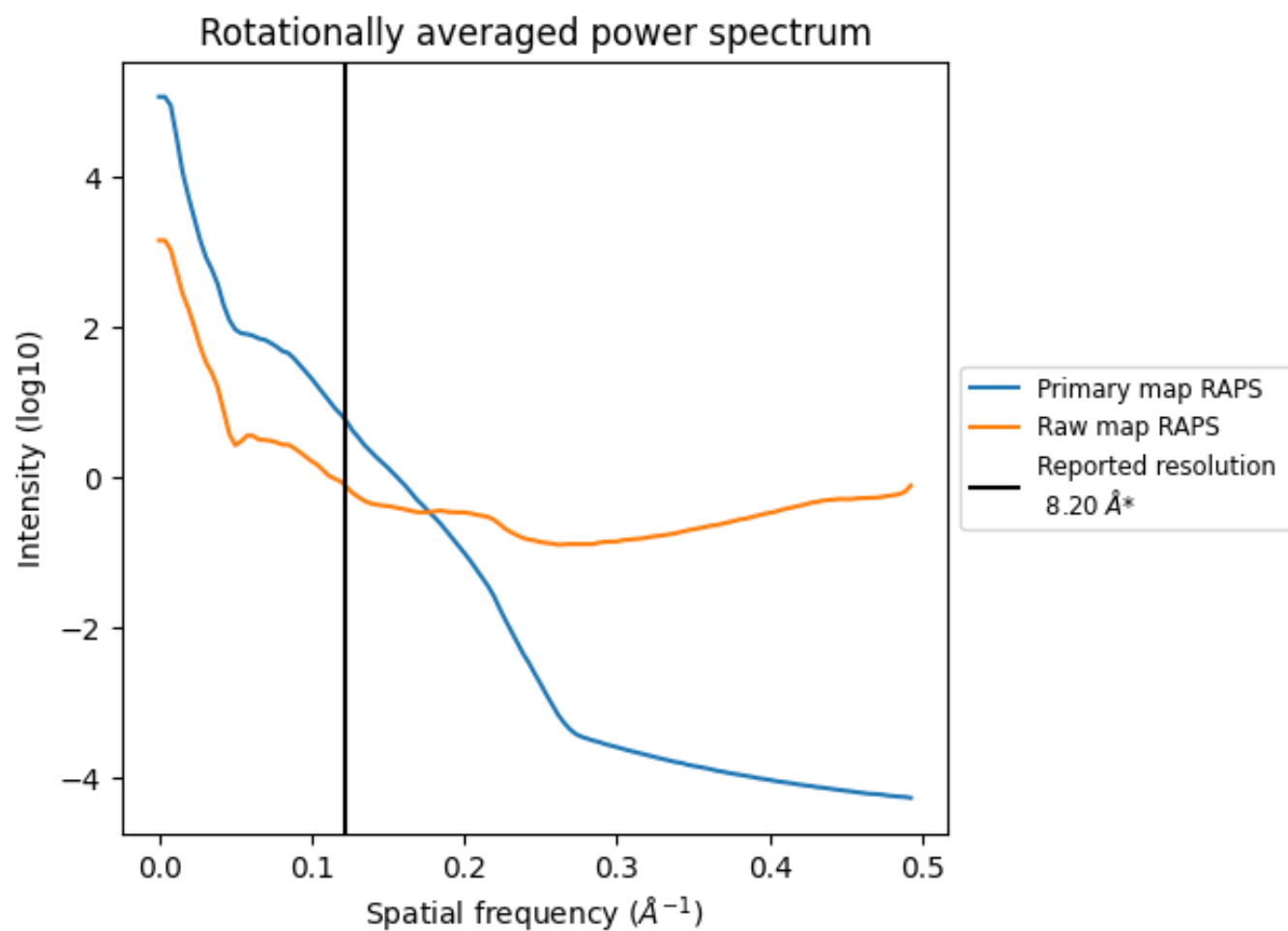
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 210 nm³; this corresponds to an approximate mass of 190 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 ⓘ

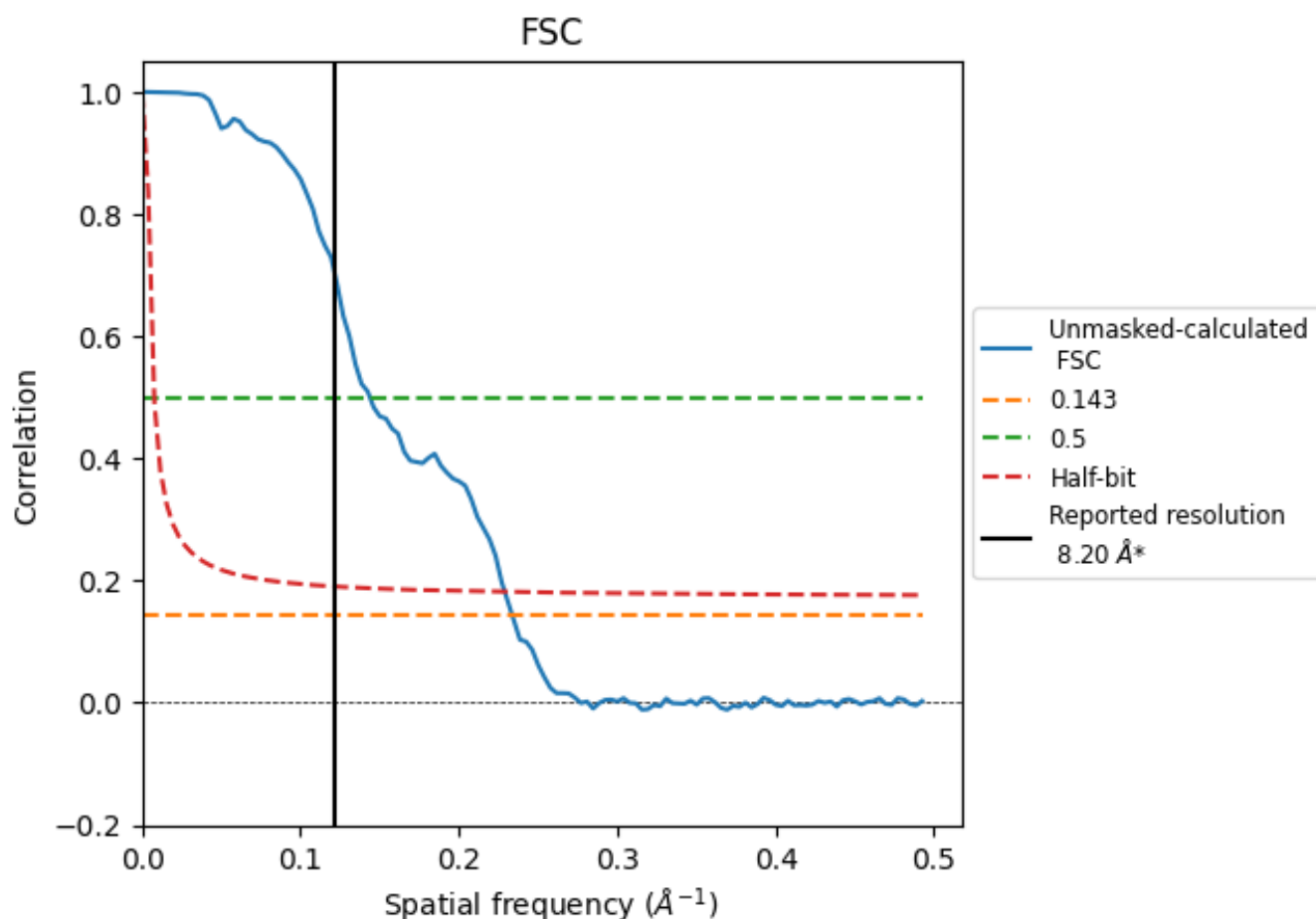


*Reported resolution corresponds to spatial frequency of 0.122 $\text{\AA}^{-1}$

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.122 Å⁻¹

8.2 Resolution estimates [i](#)

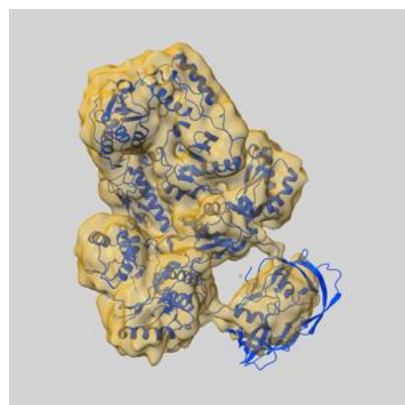
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	8.20	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.28	6.95	4.37

*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 4.28 differs from the reported value 8.2 by more than 10 %

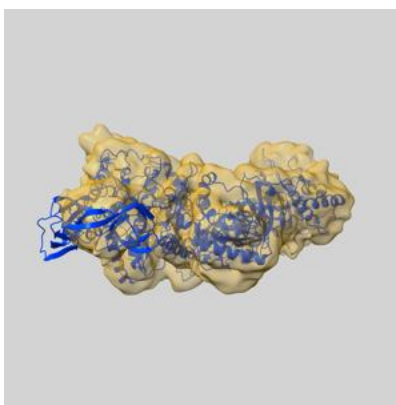
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-25165 and PDB model 7SJX. Per-residue inclusion information can be found in section [3](#) on page [8](#).

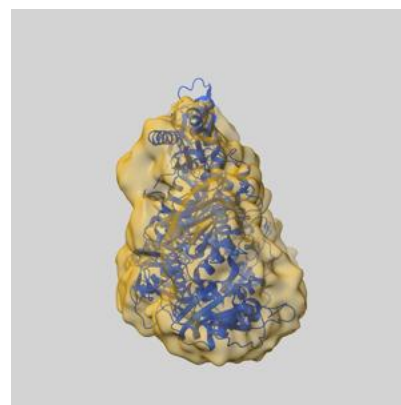
9.1 Map-model overlay [i](#)



X



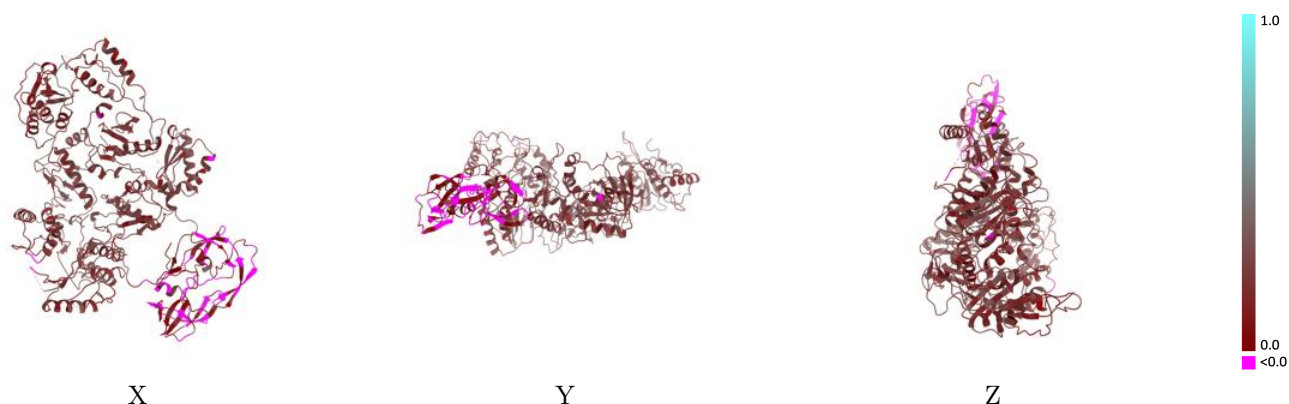
Y



Z

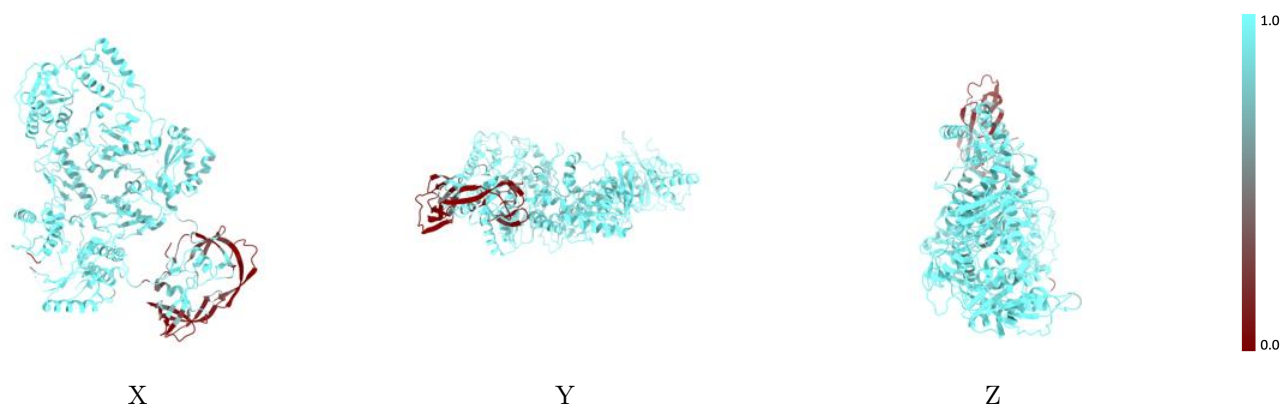
The images above show the 3D surface view of the map at the recommended contour level 0.85 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



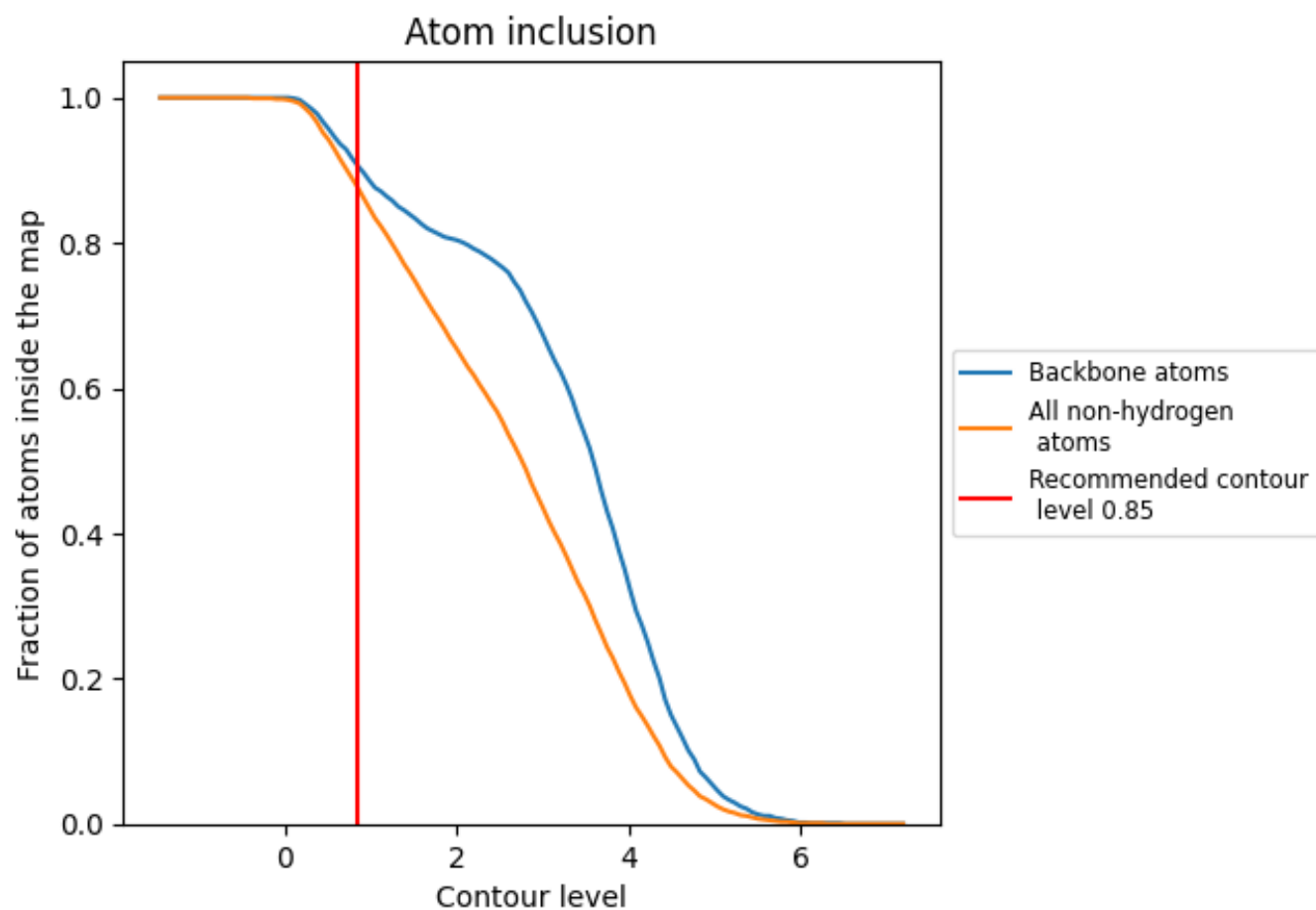
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.85).

9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 88% 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 (0.85) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8760	0.1880
A	0.8970	0.1880
B	0.8480	0.1890

