



Full wwPDB EM Validation Report ⓘ

Dec 13, 2023 – 04:40 PM JST

PDB ID : 8HRJ
EMDB ID : EMD-34975
Title : SARS-CoV-2 Delta variant spike protein
Authors : Xu, J.; Cheng, H.; Liu, N.; Wang, H.W.
Deposited on : 2022-12-15
Resolution : 3.10 Å (reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

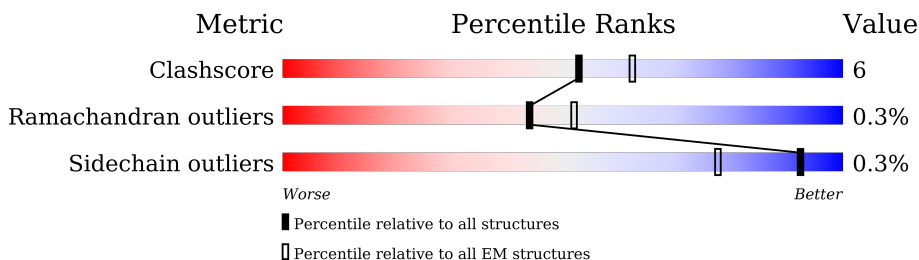
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

1 Overall quality at a glance

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

The reported resolution of this entry is 3.10 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	1249	
1	B	1249	
1	C	1249	

2 Entry composition i

There is only 1 type of molecule in this entry. The entry contains 24531 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 Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1041	8170	5233	1360	1539	38	0	0
1	B	1044	8191	5245	1366	1542	38	0	0
1	C	1041	8170	5233	1360	1539	38	0	0

There are 303 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	MET	-	initiating methionine	UNP P0DTC2
A	-3	PRO	-	expression tag	UNP P0DTC2
A	-2	ARG	-	expression tag	UNP P0DTC2
A	-1	GLY	-	expression tag	UNP P0DTC2
A	0	PRO	-	expression tag	UNP P0DTC2
A	1	VAL	-	expression tag	UNP P0DTC2
A	2	ALA	-	expression tag	UNP P0DTC2
A	3	ALA	-	expression tag	UNP P0DTC2
A	4	LEU	-	expression tag	UNP P0DTC2
A	5	LEU	-	expression tag	UNP P0DTC2
A	6	LEU	-	expression tag	UNP P0DTC2
A	7	LEU	-	expression tag	UNP P0DTC2
A	8	ILE	-	expression tag	UNP P0DTC2
A	9	LEU	-	expression tag	UNP P0DTC2
A	10	HIS	-	expression tag	UNP P0DTC2
A	11	GLY	-	expression tag	UNP P0DTC2
A	12	ALA	-	expression tag	UNP P0DTC2
A	13	TRP	-	expression tag	UNP P0DTC2
A	14	SER	-	expression tag	UNP P0DTC2
A	67	VAL	ALA	variant	UNP P0DTC2
A	?	-	HIS	deletion	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	95	ILE	THR	variant	UNP P0DTC2
A	?	-	GLY	deletion	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	VAL	deletion	UNP P0DTC2
A	?	-	TYR	deletion	UNP P0DTC2
A	142	ASP	TYR	conflict	UNP P0DTC2
A	210A	ILE	LEU	conflict	UNP P0DTC2
A	210D	GLU	-	insertion	UNP P0DTC2
A	210E	PRO	-	insertion	UNP P0DTC2
A	210F	GLU	-	insertion	UNP P0DTC2
A	339	ASP	GLY	variant	UNP P0DTC2
A	371	LEU	SER	variant	UNP P0DTC2
A	373	PRO	SER	variant	UNP P0DTC2
A	375	PHE	SER	variant	UNP P0DTC2
A	417	ASN	LYS	variant	UNP P0DTC2
A	440	LYS	ASN	variant	UNP P0DTC2
A	446	SER	GLY	variant	UNP P0DTC2
A	477	ASN	SER	variant	UNP P0DTC2
A	478	LYS	THR	variant	UNP P0DTC2
A	484	ALA	GLU	variant	UNP P0DTC2
A	493	ARG	GLN	variant	UNP P0DTC2
A	496	SER	GLY	variant	UNP P0DTC2
A	498	ARG	GLN	variant	UNP P0DTC2
A	501	TYR	ASN	variant	UNP P0DTC2
A	505	HIS	TYR	variant	UNP P0DTC2
A	547	LYS	THR	variant	UNP P0DTC2
A	614	GLY	ASP	variant	UNP P0DTC2
A	655	TYR	HIS	variant	UNP P0DTC2
A	679	LYS	ASN	variant	UNP P0DTC2
A	681	HIS	PRO	variant	UNP P0DTC2
A	682	GLY	ARG	conflict	UNP P0DTC2
A	683	SER	ARG	conflict	UNP P0DTC2
A	685	SER	ARG	conflict	UNP P0DTC2
A	764	LYS	ASN	variant	UNP P0DTC2
A	796	TYR	ASP	variant	UNP P0DTC2
A	856	LYS	ASN	variant	UNP P0DTC2
A	954	HIS	GLN	variant	UNP P0DTC2
A	969	LYS	ASN	variant	UNP P0DTC2
A	981	PHE	LEU	variant	UNP P0DTC2
A	986	PRO	LYS	engineered mutation	UNP P0DTC2
A	987	PRO	VAL	engineered mutation	UNP P0DTC2
A	1209	LEU	-	expression tag	UNP P0DTC2
A	1210	VAL	-	expression tag	UNP P0DTC2
A	1211	PRO	-	expression tag	UNP P0DTC2
A	1212	ARG	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1213	GLY	-	expression tag	UNP P0DTC2
A	1214	SER	-	expression tag	UNP P0DTC2
A	1215	GLY	-	expression tag	UNP P0DTC2
A	1216	TYR	-	expression tag	UNP P0DTC2
A	1217	ILE	-	expression tag	UNP P0DTC2
A	1218	PRO	-	expression tag	UNP P0DTC2
A	1219	GLU	-	expression tag	UNP P0DTC2
A	1220	ALA	-	expression tag	UNP P0DTC2
A	1221	PRO	-	expression tag	UNP P0DTC2
A	1222	ARG	-	expression tag	UNP P0DTC2
A	1223	ASP	-	expression tag	UNP P0DTC2
A	1224	GLY	-	expression tag	UNP P0DTC2
A	1225	GLN	-	expression tag	UNP P0DTC2
A	1226	ALA	-	expression tag	UNP P0DTC2
A	1227	TYR	-	expression tag	UNP P0DTC2
A	1228	VAL	-	expression tag	UNP P0DTC2
A	1229	ARG	-	expression tag	UNP P0DTC2
A	1230	LYS	-	expression tag	UNP P0DTC2
A	1231	ASP	-	expression tag	UNP P0DTC2
A	1232	GLY	-	expression tag	UNP P0DTC2
A	1233	GLU	-	expression tag	UNP P0DTC2
A	1234	TRP	-	expression tag	UNP P0DTC2
A	1235	VAL	-	expression tag	UNP P0DTC2
A	1236	LEU	-	expression tag	UNP P0DTC2
A	1237	LEU	-	expression tag	UNP P0DTC2
A	1238	SER	-	expression tag	UNP P0DTC2
A	1239	THR	-	expression tag	UNP P0DTC2
A	1240	PHE	-	expression tag	UNP P0DTC2
A	1241	LEU	-	expression tag	UNP P0DTC2
A	1242	HIS	-	expression tag	UNP P0DTC2
A	1243	HIS	-	expression tag	UNP P0DTC2
A	1244	HIS	-	expression tag	UNP P0DTC2
A	1245	HIS	-	expression tag	UNP P0DTC2
A	1246	HIS	-	expression tag	UNP P0DTC2
A	1247	HIS	-	expression tag	UNP P0DTC2
B	-4	MET	-	initiating methionine	UNP P0DTC2
B	-3	PRO	-	expression tag	UNP P0DTC2
B	-2	ARG	-	expression tag	UNP P0DTC2
B	-1	GLY	-	expression tag	UNP P0DTC2
B	0	PRO	-	expression tag	UNP P0DTC2
B	1	VAL	-	expression tag	UNP P0DTC2
B	2	ALA	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	3	ALA	-	expression tag	UNP P0DTC2
B	4	LEU	-	expression tag	UNP P0DTC2
B	5	LEU	-	expression tag	UNP P0DTC2
B	6	LEU	-	expression tag	UNP P0DTC2
B	7	LEU	-	expression tag	UNP P0DTC2
B	8	ILE	-	expression tag	UNP P0DTC2
B	9	LEU	-	expression tag	UNP P0DTC2
B	10	HIS	-	expression tag	UNP P0DTC2
B	11	GLY	-	expression tag	UNP P0DTC2
B	12	ALA	-	expression tag	UNP P0DTC2
B	13	TRP	-	expression tag	UNP P0DTC2
B	14	SER	-	expression tag	UNP P0DTC2
B	67	VAL	ALA	variant	UNP P0DTC2
B	?	-	HIS	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	95	ILE	THR	variant	UNP P0DTC2
B	?	-	GLY	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	?	-	TYR	deletion	UNP P0DTC2
B	142	ASP	TYR	conflict	UNP P0DTC2
B	210A	ILE	LEU	conflict	UNP P0DTC2
B	210D	GLU	-	insertion	UNP P0DTC2
B	210E	PRO	-	insertion	UNP P0DTC2
B	210F	GLU	-	insertion	UNP P0DTC2
B	339	ASP	GLY	variant	UNP P0DTC2
B	371	LEU	SER	variant	UNP P0DTC2
B	373	PRO	SER	variant	UNP P0DTC2
B	375	PHE	SER	variant	UNP P0DTC2
B	417	ASN	LYS	variant	UNP P0DTC2
B	440	LYS	ASN	variant	UNP P0DTC2
B	446	SER	GLY	variant	UNP P0DTC2
B	477	ASN	SER	variant	UNP P0DTC2
B	478	LYS	THR	variant	UNP P0DTC2
B	484	ALA	GLU	variant	UNP P0DTC2
B	493	ARG	GLN	variant	UNP P0DTC2
B	496	SER	GLY	variant	UNP P0DTC2
B	498	ARG	GLN	variant	UNP P0DTC2
B	501	TYR	ASN	variant	UNP P0DTC2
B	505	HIS	TYR	variant	UNP P0DTC2
B	547	LYS	THR	variant	UNP P0DTC2
B	614	GLY	ASP	variant	UNP P0DTC2
B	655	TYR	HIS	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	679	LYS	ASN	variant	UNP P0DTC2
B	681	HIS	PRO	variant	UNP P0DTC2
B	682	GLY	ARG	conflict	UNP P0DTC2
B	683	SER	ARG	conflict	UNP P0DTC2
B	685	SER	ARG	conflict	UNP P0DTC2
B	764	LYS	ASN	variant	UNP P0DTC2
B	796	TYR	ASP	variant	UNP P0DTC2
B	856	LYS	ASN	variant	UNP P0DTC2
B	954	HIS	GLN	variant	UNP P0DTC2
B	969	LYS	ASN	variant	UNP P0DTC2
B	981	PHE	LEU	variant	UNP P0DTC2
B	986	PRO	LYS	engineered mutation	UNP P0DTC2
B	987	PRO	VAL	engineered mutation	UNP P0DTC2
B	1209	LEU	-	expression tag	UNP P0DTC2
B	1210	VAL	-	expression tag	UNP P0DTC2
B	1211	PRO	-	expression tag	UNP P0DTC2
B	1212	ARG	-	expression tag	UNP P0DTC2
B	1213	GLY	-	expression tag	UNP P0DTC2
B	1214	SER	-	expression tag	UNP P0DTC2
B	1215	GLY	-	expression tag	UNP P0DTC2
B	1216	TYR	-	expression tag	UNP P0DTC2
B	1217	ILE	-	expression tag	UNP P0DTC2
B	1218	PRO	-	expression tag	UNP P0DTC2
B	1219	GLU	-	expression tag	UNP P0DTC2
B	1220	ALA	-	expression tag	UNP P0DTC2
B	1221	PRO	-	expression tag	UNP P0DTC2
B	1222	ARG	-	expression tag	UNP P0DTC2
B	1223	ASP	-	expression tag	UNP P0DTC2
B	1224	GLY	-	expression tag	UNP P0DTC2
B	1225	GLN	-	expression tag	UNP P0DTC2
B	1226	ALA	-	expression tag	UNP P0DTC2
B	1227	TYR	-	expression tag	UNP P0DTC2
B	1228	VAL	-	expression tag	UNP P0DTC2
B	1229	ARG	-	expression tag	UNP P0DTC2
B	1230	LYS	-	expression tag	UNP P0DTC2
B	1231	ASP	-	expression tag	UNP P0DTC2
B	1232	GLY	-	expression tag	UNP P0DTC2
B	1233	GLU	-	expression tag	UNP P0DTC2
B	1234	TRP	-	expression tag	UNP P0DTC2
B	1235	VAL	-	expression tag	UNP P0DTC2
B	1236	LEU	-	expression tag	UNP P0DTC2
B	1237	LEU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1238	SER	-	expression tag	UNP P0DTC2
B	1239	THR	-	expression tag	UNP P0DTC2
B	1240	PHE	-	expression tag	UNP P0DTC2
B	1241	LEU	-	expression tag	UNP P0DTC2
B	1242	HIS	-	expression tag	UNP P0DTC2
B	1243	HIS	-	expression tag	UNP P0DTC2
B	1244	HIS	-	expression tag	UNP P0DTC2
B	1245	HIS	-	expression tag	UNP P0DTC2
B	1246	HIS	-	expression tag	UNP P0DTC2
B	1247	HIS	-	expression tag	UNP P0DTC2
C	-4	MET	-	initiating methionine	UNP P0DTC2
C	-3	PRO	-	expression tag	UNP P0DTC2
C	-2	ARG	-	expression tag	UNP P0DTC2
C	-1	GLY	-	expression tag	UNP P0DTC2
C	0	PRO	-	expression tag	UNP P0DTC2
C	1	VAL	-	expression tag	UNP P0DTC2
C	2	ALA	-	expression tag	UNP P0DTC2
C	3	ALA	-	expression tag	UNP P0DTC2
C	4	LEU	-	expression tag	UNP P0DTC2
C	5	LEU	-	expression tag	UNP P0DTC2
C	6	LEU	-	expression tag	UNP P0DTC2
C	7	LEU	-	expression tag	UNP P0DTC2
C	8	ILE	-	expression tag	UNP P0DTC2
C	9	LEU	-	expression tag	UNP P0DTC2
C	10	HIS	-	expression tag	UNP P0DTC2
C	11	GLY	-	expression tag	UNP P0DTC2
C	12	ALA	-	expression tag	UNP P0DTC2
C	13	TRP	-	expression tag	UNP P0DTC2
C	14	SER	-	expression tag	UNP P0DTC2
C	67	VAL	ALA	variant	UNP P0DTC2
C	?	-	HIS	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	95	ILE	THR	variant	UNP P0DTC2
C	?	-	GLY	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	?	-	TYR	deletion	UNP P0DTC2
C	142	ASP	TYR	conflict	UNP P0DTC2
C	210A	ILE	LEU	conflict	UNP P0DTC2
C	210D	GLU	-	insertion	UNP P0DTC2
C	210E	PRO	-	insertion	UNP P0DTC2
C	210F	GLU	-	insertion	UNP P0DTC2
C	339	ASP	GLY	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	371	LEU	SER	variant	UNP P0DTC2
C	373	PRO	SER	variant	UNP P0DTC2
C	375	PHE	SER	variant	UNP P0DTC2
C	417	ASN	LYS	variant	UNP P0DTC2
C	440	LYS	ASN	variant	UNP P0DTC2
C	446	SER	GLY	variant	UNP P0DTC2
C	477	ASN	SER	variant	UNP P0DTC2
C	478	LYS	THR	variant	UNP P0DTC2
C	484	ALA	GLU	variant	UNP P0DTC2
C	493	ARG	GLN	variant	UNP P0DTC2
C	496	SER	GLY	variant	UNP P0DTC2
C	498	ARG	GLN	variant	UNP P0DTC2
C	501	TYR	ASN	variant	UNP P0DTC2
C	505	HIS	TYR	variant	UNP P0DTC2
C	547	LYS	THR	variant	UNP P0DTC2
C	614	GLY	ASP	variant	UNP P0DTC2
C	655	TYR	HIS	variant	UNP P0DTC2
C	679	LYS	ASN	variant	UNP P0DTC2
C	681	HIS	PRO	variant	UNP P0DTC2
C	682	GLY	ARG	conflict	UNP P0DTC2
C	683	SER	ARG	conflict	UNP P0DTC2
C	685	SER	ARG	conflict	UNP P0DTC2
C	764	LYS	ASN	variant	UNP P0DTC2
C	796	TYR	ASP	variant	UNP P0DTC2
C	856	LYS	ASN	variant	UNP P0DTC2
C	954	HIS	GLN	variant	UNP P0DTC2
C	969	LYS	ASN	variant	UNP P0DTC2
C	981	PHE	LEU	variant	UNP P0DTC2
C	986	PRO	LYS	engineered mutation	UNP P0DTC2
C	987	PRO	VAL	engineered mutation	UNP P0DTC2
C	1209	LEU	-	expression tag	UNP P0DTC2
C	1210	VAL	-	expression tag	UNP P0DTC2
C	1211	PRO	-	expression tag	UNP P0DTC2
C	1212	ARG	-	expression tag	UNP P0DTC2
C	1213	GLY	-	expression tag	UNP P0DTC2
C	1214	SER	-	expression tag	UNP P0DTC2
C	1215	GLY	-	expression tag	UNP P0DTC2
C	1216	TYR	-	expression tag	UNP P0DTC2
C	1217	ILE	-	expression tag	UNP P0DTC2
C	1218	PRO	-	expression tag	UNP P0DTC2
C	1219	GLU	-	expression tag	UNP P0DTC2
C	1220	ALA	-	expression tag	UNP P0DTC2

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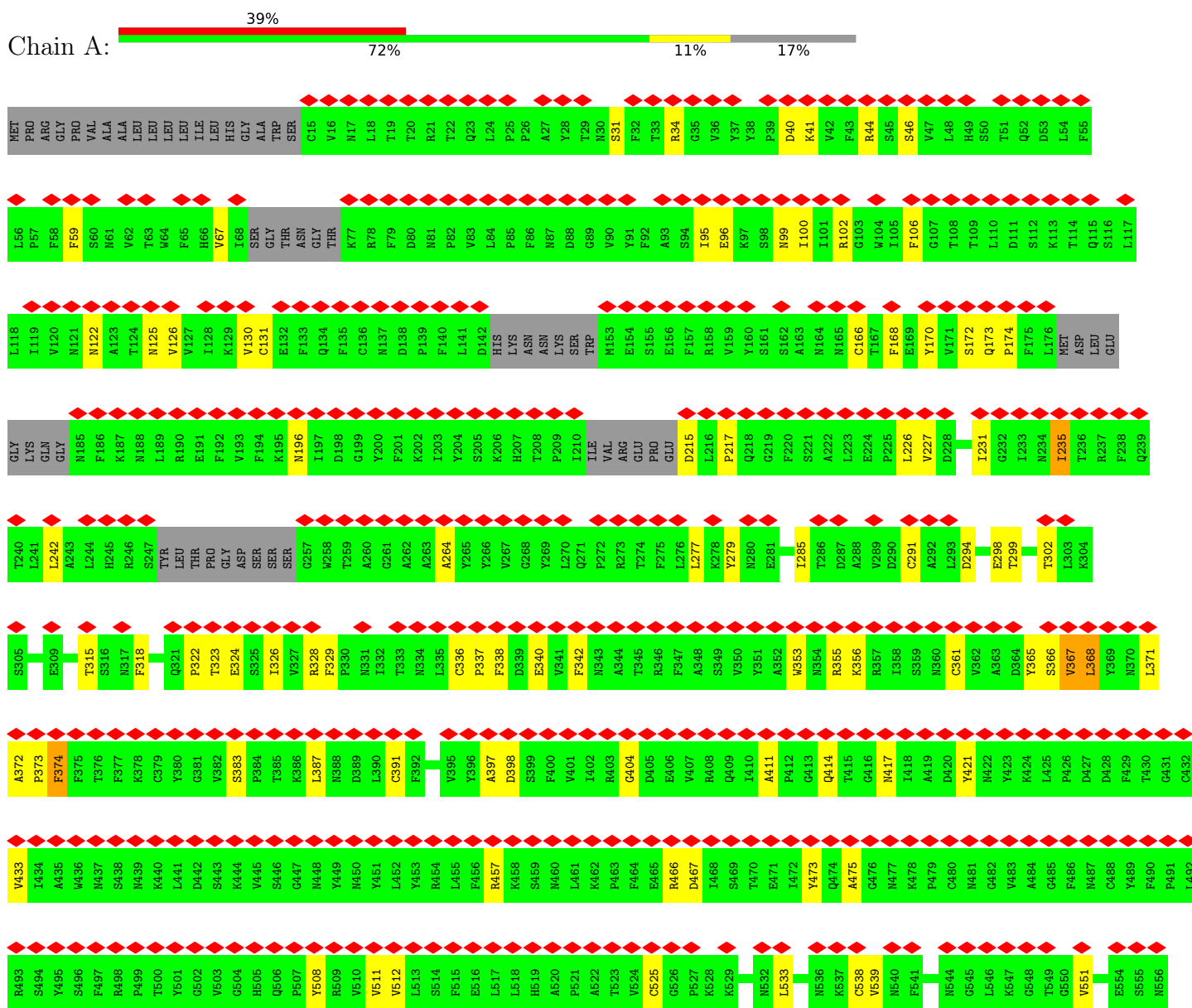
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Chain	Residue	Modelled	Actual	Comment	Reference
C	1221	PRO	-	expression tag	UNP P0DTC2
C	1222	ARG	-	expression tag	UNP P0DTC2
C	1223	ASP	-	expression tag	UNP P0DTC2
C	1224	GLY	-	expression tag	UNP P0DTC2
C	1225	GLN	-	expression tag	UNP P0DTC2
C	1226	ALA	-	expression tag	UNP P0DTC2
C	1227	TYR	-	expression tag	UNP P0DTC2
C	1228	VAL	-	expression tag	UNP P0DTC2
C	1229	ARG	-	expression tag	UNP P0DTC2
C	1230	LYS	-	expression tag	UNP P0DTC2
C	1231	ASP	-	expression tag	UNP P0DTC2
C	1232	GLY	-	expression tag	UNP P0DTC2
C	1233	GLU	-	expression tag	UNP P0DTC2
C	1234	TRP	-	expression tag	UNP P0DTC2
C	1235	VAL	-	expression tag	UNP P0DTC2
C	1236	LEU	-	expression tag	UNP P0DTC2
C	1237	LEU	-	expression tag	UNP P0DTC2
C	1238	SER	-	expression tag	UNP P0DTC2
C	1239	THR	-	expression tag	UNP P0DTC2
C	1240	PHE	-	expression tag	UNP P0DTC2
C	1241	LEU	-	expression tag	UNP P0DTC2
C	1242	HIS	-	expression tag	UNP P0DTC2
C	1243	HIS	-	expression tag	UNP P0DTC2
C	1244	HIS	-	expression tag	UNP P0DTC2
C	1245	HIS	-	expression tag	UNP P0DTC2
C	1246	HIS	-	expression tag	UNP P0DTC2
C	1247	HIS	-	expression tag	UNP P0DTC2

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: Spike glycoprotein



ILE	Y1138	K964	F623	GLY	F566	T500	K440	Y380
ASP	D1139	Q965	R624	SER	G567	Y501	L441	G381
LEU	P1140	A972	K625	ASP	R677	G502	D442	V382
GLN	L1141	L977	V626	LEU	D569	V503	S443	S383
LEU	P1143	L978	T627	ALA	A570	G504	K444	P384
GLY	P1143	N978	LEU	D571	D571	H505	S446	T385
LYS	E1144	D978	ALA	T676	T676	Q506	S447	K386
TYR	L1144	D979	ASP	GLN	GLN	P507	N448	L387
GLU	L1145	I980	ALA	THR	THR	Y508	N388	D389
GLN	D1146	F981	GLY	LYS	LYS	R509	Y449	D389
GLU	L1146	S982	PHE	SER	SER	V510	N450	L390
LEU	S1147	R983	ILE	SER	HIS	V511	Y451	C391
VAL		L984	LYS	GLY	GLY	V512	F392	F392
PRO		D985	GLN	ASP	ASP	L513	Y453	T393
ARG		L986	TYR	TYR	TYR	S114	R454	N394
GLY		P986	GLY	GLY	GLY	F515	L455	V395
SER		P987	GLY	SER	SER	E516	F456	Y396
GLY		E988	CYS	VAL	VAL	L517	R457	A397
TYR		Y989	ASP	ALA	ALA	L518	K458	D398
ILE		V991	ILE	SER	SER	H519	S459	S399
PRO		Q992	ALA	Q690	Q690	A520	N460	F400
GLU		I993	ALA	S691	S691	P521	L461	V401
ASP		L996	ARG	L699	L699	A522	K462	I402
GLY		I997	LEU	W703	W703	T523	P463	R403
GLN		R1000	LEU	W710	W710	V524	F464	G404
ALA		L1001	LEU	A713	A713	C525	E465	D405
VAL		Q1002	ARG	W722	W722	G526	E406	E406
ARG		V1008	LYS	V740	V740	P527	V407	V407
GLY		R1019	GLY	W741	W741	K528	R408	R408
ASP		R1019	SER	Y741	Y741	K529	I468	Q409
GLY		K1028	ILE	I742	I742	S530	S469	Q409
LEU		F1042	ALA	D745	D745	T531	T470	I410
SER		H1048	VAL	S746	S746	I472	A411	A411
THR		P1057	THR	T747	T747	N532	P412	P412
LEU		V1065	VAL	E748	E748	L533	G413	G413
PHE		T1066	ASN	L752	L752	V534	Q414	Q414
LEU		E1072	ASN	L753	L753	K535	T415	T415
HIS		K1086	LEU	L755	L755	N536	G416	G416
HIS		S1097	LEU	W755	W755	K537	N417	N417
HIS		W1102	ARG	O755	O755	C538	I418	I418
HIS		T1116	ASP	Y756	Y756	V539	A419	A419
HIS		V1122	LEU	F759	F759	N540	D420	D420
LEU		M1135	LEU	L763	L763	F541	Y421	Y421
			ALA	P792	P792	N542	M422	M422
			LYS	L945	L945	F483	Y423	Y423
			ASN	D950	D950	A484	K424	K424
			ASN	H954	H954	G485	L425	L425
			ASN	H954	H954	F486	P426	P426
			GLU	H954	H954	G548	D427	D427
			SER	L959	L959	C488	D428	D428
			LEU			Y489	F429	F429
						F490	T430	T430
						P491	G432	G432
						L492	V433	V433
						R493	I434	I434
						S494	A435	A435
						Y495	W436	W436
						S496	N437	N437
						F497	S438	S438
						R498	M439	M439
						P499		

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	75650	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50.00	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	4.714	Depositor
Minimum map value	-2.977	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.081	Depositor
Recommended contour level	0.45	Depositor
Map size (\AA)	440.32, 440.32, 440.32	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	0.86, 0.86, 0.86	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	0.27	0/8359	0.50	0/11367
1	B	0.27	0/8380	0.50	0/11395
1	C	0.27	0/8359	0.49	0/11367
All	All	0.27	0/25098	0.50	0/34129

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts i

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8170	0	8006	96	0
1	B	8191	0	8029	89	0
1	C	8170	0	8006	104	0
All	All	24531	0	24041	273	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 6.

All (273) 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:C:391:CYS:HA	1:C:525:CYS:HB3	1.45	0.98

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:375:PHE:HE1	1:B:434:ILE:HG23	1.27	0.96
1:B:391:CYS:HA	1:B:525:CYS:HB3	1.48	0.94
1:B:176:LEU:HG	1:B:190:ARG:HE	1.48	0.79
1:C:132:GLU:HB3	1:C:164:ASN:HB3	1.64	0.77
1:A:372:ALA:HB1	1:A:373:PRO:HD2	1.66	0.77
1:A:391:CYS:HB2	1:A:525:CYS:HA	1.65	0.76
1:A:126:VAL:HG13	1:A:174:PRO:HA	1.69	0.74
1:A:46:SER:HA	1:A:279:TYR:O	1.89	0.73
1:B:96:GLU:O	1:B:188:ASN:HB2	1.89	0.72
1:A:365:TYR:HA	1:A:368:LEU:HD23	1.72	0.72
1:B:83:VAL:HG11	1:B:237:ARG:HH11	1.56	0.70
1:B:81:ASN:HD21	1:B:242:LEU:HD23	1.57	0.70
1:B:375:PHE:CE1	1:B:434:ILE:HG23	2.19	0.70
1:C:804:GLN:NE2	1:C:935:GLN:OE1	2.26	0.69
1:B:113:LYS:HG3	1:B:114:THR:HG23	1.76	0.68
1:A:40:ASP:OD2	1:A:44:ARG:NH1	2.26	0.68
1:C:112:SER:HB3	1:C:134:GLN:NE2	2.08	0.68
1:C:203:ILE:HB	1:C:227:VAL:HB	1.75	0.68
1:C:422:ASN:HD21	1:C:454:ARG:H	1.41	0.68
1:A:983:ARG:HG2	1:C:390:LEU:HD21	1.76	0.67
1:B:546:LEU:HD11	1:B:573:THR:HG21	1.78	0.66
1:C:676:THR:HB	1:C:691:SER:H	1.61	0.66
1:B:439:ASN:ND2	1:B:506:GLN:OE1	2.30	0.65
1:C:902:MET:HB3	1:C:916:LEU:HD11	1.79	0.64
1:C:40:ASP:OD2	1:C:44:ARG:NH2	2.31	0.64
1:C:329:PHE:O	1:C:580:GLN:NE2	2.30	0.64
1:B:370:ASN:O	1:B:371:LEU:C	2.36	0.64
1:B:848:ASP:OD1	1:B:849:LEU:N	2.30	0.64
1:A:1126:CYS:HB2	1:A:1132:ILE:HD13	1.81	0.63
1:C:115:GLN:HG2	1:C:233:ILE:HG21	1.79	0.63
1:C:1116:THR:HG22	1:C:1138:TYR:HB3	1.81	0.62
1:B:1126:CYS:HB2	1:B:1132:ILE:HD13	1.81	0.62
1:C:540:ASN:HB3	1:C:549:THR:HG22	1.81	0.62
1:C:404:GLY:HA2	1:C:508:TYR:HD2	1.65	0.61
1:A:318:PHE:O	1:A:592:PHE:HA	1.99	0.61
1:A:226:LEU:HG	1:A:227:VAL:HG23	1.82	0.61
1:C:391:CYS:HA	1:C:525:CYS:CB	2.26	0.61
1:A:1142:GLN:HG3	1:A:1143:PRO:HD3	1.83	0.61
1:B:126:VAL:HB	1:B:174:PRO:HA	1.81	0.61
1:C:367:VAL:HG23	1:C:368:LEU:HD12	1.83	0.61
1:C:1048:HIS:HA	1:C:1066:THR:HG22	1.83	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:172:SER:OG	1:B:173:GLN:N	2.34	0.60
1:B:804:GLN:NE2	1:B:935:GLN:OE1	2.34	0.60
1:B:173:GLN:OE1	1:B:174:PRO:HD2	2.01	0.60
1:A:659:SER:HB3	1:A:698:SER:HB2	1.83	0.60
1:A:131:CYS:HB3	1:A:166:CYS:HA	1.84	0.59
1:A:404:GLY:HA2	1:A:508:TYR:HD2	1.68	0.59
1:A:433:VAL:HG22	1:A:512:VAL:HG22	1.83	0.59
1:C:991:VAL:HG23	1:C:992:GLN:HE21	1.68	0.59
1:A:96:GLU:OE2	1:A:100:ILE:N	2.32	0.58
1:C:117:LEU:HD11	1:C:231:ILE:HG21	1.85	0.58
1:B:358:ILE:HB	1:B:395:VAL:HB	1.85	0.58
1:B:1072:GLU:HG2	1:C:894:LEU:HD21	1.85	0.58
1:C:89:GLY:HA3	1:C:270:LEU:HD12	1.84	0.58
1:C:126:VAL:HB	1:C:172:SER:HB2	1.84	0.58
1:A:869:MET:HG2	1:C:699:LEU:HD21	1.86	0.57
1:A:326:ILE:HG22	1:A:328:ARG:HG2	1.86	0.57
1:A:329:PHE:O	1:A:580:GLN:NE2	2.38	0.57
1:A:763:LEU:HG	1:A:1008:VAL:HG21	1.86	0.57
1:B:310:LYS:HG3	1:B:600:PRO:HA	1.86	0.57
1:B:139:PRO:HA	1:B:158:ARG:O	2.05	0.57
1:A:353:TRP:O	1:A:466:ARG:NH2	2.31	0.56
1:B:95:ILE:HG13	1:B:186:PHE:HB2	1.88	0.56
1:A:756:TYR:OH	1:A:994:ASP:OD1	2.24	0.56
1:A:99:ASN:O	1:A:102:ARG:NH1	2.40	0.55
1:A:931:ILE:O	1:A:934:ILE:HG22	2.06	0.55
1:B:99:ASN:O	1:B:102:ARG:NH1	2.38	0.55
1:B:376:THR:O	1:B:377:PHE:HB2	2.05	0.55
1:B:707:TYR:HB3	1:C:792:PRO:HG3	1.88	0.55
1:C:763:LEU:HG	1:C:1008:VAL:HG21	1.87	0.55
1:B:100:ILE:HG22	1:B:242:LEU:HD12	1.88	0.55
1:C:722:VAL:HG22	1:C:1065:VAL:HG22	1.89	0.54
1:B:978:ASN:OD1	1:B:979:ASP:N	2.40	0.54
1:A:337:PRO:HB2	1:A:340:GLU:OE1	2.07	0.54
1:B:226:LEU:HG	1:B:227:VAL:HG23	1.88	0.54
1:B:599:THR:HB	1:B:608:VAL:HG12	1.88	0.54
1:B:675:GLN:O	1:B:676:THR:C	2.45	0.54
1:C:357:ARG:NH2	1:C:396:TYR:OH	2.41	0.54
1:A:894:LEU:HB3	1:C:713:ALA:HB3	1.89	0.54
1:C:433:VAL:HG22	1:C:512:VAL:HG22	1.88	0.54
1:A:291:CYS:HB2	1:A:298:GLU:HA	1.89	0.54
1:B:1048:HIS:HA	1:B:1066:THR:HG22	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:125:ASN:HA	1:B:174:PRO:HD3	1.89	0.54
1:B:68:ILE:HG22	1:B:78:ARG:HB2	1.90	0.54
1:C:756:TYR:HE2	1:C:997:ILE:HG21	1.73	0.54
1:A:31:SER:O	1:A:59:PHE:HA	2.07	0.53
1:B:131:CYS:HB2	1:B:133:PHE:CD1	2.43	0.53
1:C:328:ARG:NH2	1:C:578:ASP:OD2	2.29	0.53
1:B:319:ARG:HH22	1:C:740:MET:HG2	1.74	0.53
1:B:81:ASN:ND2	1:B:242:LEU:HD23	2.24	0.53
1:B:1116:THR:HG22	1:B:1138:TYR:HB3	1.90	0.52
1:C:226:LEU:HD23	1:C:227:VAL:HG23	1.91	0.52
1:B:716:THR:OG1	1:B:1071:GLN:O	2.20	0.52
1:C:988:GLU:O	1:C:992:GLN:HG2	2.09	0.52
1:B:993:ILE:O	1:B:997:ILE:HG12	2.10	0.52
1:A:383:SER:HB2	1:C:456:PHE:HE1	1.74	0.51
1:A:170:TYR:HE1	1:A:172:SER:HB2	1.75	0.51
1:B:64:TRP:HE1	1:B:264:ALA:HB1	1.74	0.51
1:C:409:GLN:OE1	1:C:416:GLY:HA3	2.11	0.51
1:A:748:GLU:O	1:A:752:LEU:HG	2.11	0.51
1:C:979:ASP:O	1:C:983:ARG:HB2	2.11	0.51
1:A:196:ASN:HD22	1:A:235:ILE:HG21	1.76	0.51
1:B:763:LEU:HG	1:B:1008:VAL:HG21	1.92	0.51
1:C:377:PHE:CD1	1:C:434:ILE:HG12	2.46	0.50
1:A:417:ASN:O	1:A:421:TYR:HB2	2.12	0.50
1:C:133:PHE:CE1	1:C:160:TYR:HB3	2.47	0.50
1:A:457:ARG:NH1	1:A:467:ASP:OD2	2.45	0.50
1:B:433:VAL:HG22	1:B:512:VAL:HG22	1.93	0.50
1:C:823:PHE:CD1	1:C:1057:PRO:HD3	2.46	0.50
1:C:490:PHE:CE2	1:C:492:LEU:HB2	2.46	0.50
1:C:915:VAL:O	1:C:919:ASN:ND2	2.43	0.50
1:B:139:PRO:HB3	1:B:159:VAL:HA	1.94	0.50
1:B:375:PHE:HE1	1:B:434:ILE:CG2	2.11	0.50
1:B:404:GLY:HA2	1:B:508:TYR:CD2	2.47	0.50
1:C:112:SER:HB3	1:C:134:GLN:HE21	1.73	0.50
1:B:131:CYS:HB2	1:B:133:PHE:CE1	2.47	0.50
1:C:68:ILE:HD12	1:C:78:ARG:HG3	1.93	0.50
1:C:338:PHE:HD2	1:C:368:LEU:HD11	1.77	0.50
1:B:231:ILE:HG22	1:B:233:ILE:HG23	1.93	0.49
1:B:495:TYR:HB3	1:B:497:PHE:CE1	2.46	0.49
1:A:173:GLN:HG3	1:A:174:PRO:HD2	1.94	0.49
1:A:342:PHE:CZ	1:A:511:VAL:HG21	2.47	0.49
1:A:961:THR:O	1:A:965:GLN:HG2	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:988:GLU:O	1:B:992:GLN:HG2	2.12	0.49
1:C:823:PHE:HD1	1:C:1057:PRO:HD3	1.76	0.49
1:C:985:ASP:HB3	1:C:987:PRO:HD2	1.95	0.49
1:A:713:ALA:HB3	1:B:894:LEU:HB3	1.93	0.49
1:C:950:ASP:O	1:C:954:HIS:ND1	2.44	0.49
1:B:118:LEU:HD21	1:B:120:VAL:HG23	1.95	0.48
1:C:409:GLN:NE2	1:C:418:ILE:HG12	2.28	0.48
1:C:336:CYS:HB2	1:C:337:PRO:HD2	1.94	0.48
1:C:519:HIS:HB3	1:C:565:PHE:HE1	1.77	0.48
1:A:371:LEU:O	1:A:372:ALA:HB2	2.13	0.48
1:A:323:THR:O	1:A:539:VAL:HG12	2.14	0.48
1:A:41:LYS:HE2	1:C:562:PHE:HB2	1.96	0.48
1:A:299:THR:HA	1:A:302:THR:HG22	1.96	0.48
1:A:373:PRO:O	1:A:373:PRO:HG2	2.13	0.48
1:C:931:ILE:O	1:C:934:ILE:HG22	2.13	0.48
1:A:46:SER:CA	1:A:279:TYR:O	2.61	0.48
1:B:294:ASP:N	1:B:294:ASP:OD1	2.46	0.48
1:C:1028:LYS:NZ	1:C:1042:PHE:O	2.44	0.48
1:C:676:THR:HB	1:C:691:SER:N	2.28	0.47
1:B:130:VAL:HG12	1:B:168:PHE:HB3	1.96	0.47
1:A:884:SER:OG	1:A:887:THR:OG1	2.32	0.47
1:B:533:LEU:HD21	1:B:585:LEU:HD11	1.96	0.47
1:C:395:VAL:HG23	1:C:524:VAL:HG11	1.95	0.47
1:A:338:PHE:HE2	1:A:365:TYR:CE1	2.32	0.47
1:B:119:ILE:HG23	1:B:128:ILE:HG13	1.96	0.47
1:C:497:PHE:CE2	1:C:507:PRO:HB3	2.49	0.47
1:C:988:GLU:OE1	1:C:988:GLU:N	2.45	0.47
1:A:702:GLU:OE2	1:B:790:LYS:NZ	2.34	0.47
1:C:445:VAL:O	1:C:498:ARG:NH1	2.46	0.47
1:A:605:SER:OG	1:A:606:ASN:N	2.47	0.47
1:B:374:PHE:O	1:B:375:PHE:HB2	2.14	0.47
1:B:984:LEU:HD13	1:B:988:GLU:HB3	1.97	0.47
1:C:358:ILE:HB	1:C:395:VAL:HB	1.96	0.47
1:A:777:ASN:O	1:A:781:VAL:HG23	2.15	0.47
1:C:533:LEU:HD23	1:C:533:LEU:H	1.80	0.47
1:A:294:ASP:OD1	1:A:294:ASP:N	2.46	0.46
1:B:662:CYS:HB2	1:B:697:MET:HG2	1.97	0.46
1:C:439:ASN:CG	1:C:506:GLN:HG2	2.36	0.46
1:A:41:LYS:HG2	1:C:562:PHE:HD2	1.78	0.46
1:C:742:ILE:O	1:C:1000:ARG:NH1	2.48	0.46
1:A:853:GLN:HG2	1:A:963:VAL:HG21	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:350:VAL:HG12	1:C:422:ASN:HB3	1.97	0.46
1:B:1088:HIS:HB3	1:B:1120:THR:HG21	1.98	0.46
1:B:80:ASP:OD1	1:B:80:ASP:N	2.49	0.46
1:C:444:LYS:HG3	1:C:447:GLY:H	1.81	0.46
1:B:977:LEU:HD23	1:B:977:LEU:H	1.81	0.46
1:A:130:VAL:HG12	1:A:168:PHE:HB3	1.97	0.45
1:A:398:ASP:O	1:A:511:VAL:HA	2.16	0.45
1:A:1002:GLN:HE22	1:C:1002:GLN:NE2	2.14	0.45
1:B:605:SER:OG	1:B:606:ASN:N	2.49	0.45
1:A:858:LEU:HD13	1:A:959:LEU:HD22	1.97	0.45
1:B:121:ASN:HD21	1:B:176:LEU:HB2	1.82	0.45
1:B:494:SER:OG	1:B:495:TYR:N	2.48	0.45
1:A:298:GLU:HG2	1:A:315:THR:CG2	2.47	0.45
1:A:328:ARG:NH2	1:A:580:GLN:HB2	2.32	0.45
1:A:815:ARG:HD2	1:A:819:GLU:HB3	1.98	0.45
1:B:368:LEU:O	1:B:370:ASN:N	2.49	0.45
1:B:912:THR:OG1	1:B:914:ASN:OD1	2.22	0.45
1:A:736:VAL:HG11	1:A:1004:LEU:HD11	1.98	0.45
1:B:722:VAL:HA	1:B:1064:HIS:O	2.17	0.45
1:C:977:LEU:HD22	1:C:993:ILE:HD12	1.99	0.45
1:A:336:CYS:HB3	1:A:361:CYS:HB2	1.28	0.45
1:A:372:ALA:HB1	1:A:373:PRO:CD	2.42	0.45
1:A:959:LEU:HD23	1:A:959:LEU:HA	1.85	0.45
1:B:578:ASP:HB3	1:B:581:THR:O	2.17	0.45
1:A:355:ARG:HG2	1:A:466:ARG:HH12	1.83	0.45
1:C:756:TYR:CE2	1:C:997:ILE:HG21	2.52	0.44
1:A:356:LYS:HB2	1:A:397:ALA:HB3	1.99	0.44
1:A:1048:HIS:HA	1:A:1066:THR:HG22	1.99	0.44
1:C:46:SER:HA	1:C:279:TYR:O	2.17	0.44
1:C:959:LEU:HD23	1:C:959:LEU:HA	1.85	0.44
1:A:411:ALA:HB3	1:A:414:GLN:HG3	1.98	0.44
1:C:611:LEU:HD12	1:C:650:LEU:HD13	1.99	0.44
1:A:355:ARG:NH2	1:A:356:LYS:O	2.51	0.44
1:C:168:PHE:CE2	1:C:229:LEU:HD22	2.53	0.44
1:A:538:CYS:HB3	1:A:551:VAL:HG23	1.99	0.44
1:B:376:THR:HG22	1:B:377:PHE:H	1.83	0.44
1:B:111:ASP:OD1	1:B:113:LYS:HG2	2.17	0.44
1:B:417:ASN:O	1:B:421:TYR:HB2	2.18	0.44
1:A:366:SER:C	1:A:368:LEU:H	2.22	0.43
1:B:118:LEU:HD13	1:B:133:PHE:CE2	2.53	0.43
1:C:1097:SER:HB2	1:C:1102:TRP:CD2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:323:THR:HG23	1:A:324:GLU:OE1	2.18	0.43
1:B:142:ASP:O	1:B:156:GLU:HB3	2.18	0.43
1:C:560:LEU:HB2	1:C:561:PRO:HD2	2.00	0.43
1:B:703:ASN:OD1	1:B:704:SER:N	2.51	0.43
1:C:87:ASN:O	1:C:89:GLY:N	2.52	0.43
1:C:138:ASP:N	1:C:138:ASP:OD1	2.51	0.43
1:A:533:LEU:H	1:A:533:LEU:HD23	1.84	0.43
1:A:67:VAL:HG21	1:A:242:LEU:HD22	2.00	0.43
1:A:277:LEU:HD23	1:A:285:ILE:HD13	2.01	0.43
1:C:710:ASN:N	1:C:710:ASN:OD1	2.52	0.43
1:C:1102:TRP:HB2	1:C:1135:ASN:ND2	2.33	0.43
1:A:960:ASN:OD1	1:A:964:LYS:HE2	2.19	0.43
1:C:825:LYS:HB3	1:C:945:LEU:HD12	2.01	0.43
1:A:34:ARG:NH1	1:A:217:PRO:O	2.51	0.43
1:A:130:VAL:HG11	1:A:231:ILE:HD12	2.01	0.43
1:B:528:LYS:HA	1:B:528:LYS:HD3	1.80	0.43
1:B:742:ILE:O	1:B:1000:ARG:NH1	2.52	0.43
1:C:502:GLY:O	1:C:506:GLN:NE2	2.52	0.43
1:B:366:SER:HA	1:B:369:TYR:CE2	2.54	0.42
1:C:169:GLU:OE1	1:C:169:GLU:N	2.52	0.42
1:C:393:THR:O	1:C:523:THR:OG1	2.36	0.42
1:A:95:ILE:HG22	1:A:264:ALA:HB3	2.00	0.42
1:A:322:PRO:HB3	1:A:538:CYS:SG	2.60	0.42
1:A:473:TYR:CE2	1:A:475:ALA:HB2	2.55	0.42
1:A:979:ASP:OD1	1:A:980:ILE:N	2.52	0.42
1:B:984:LEU:HD12	1:B:985:ASP:O	2.20	0.42
1:C:462:LYS:HD3	1:C:463:PRO:HD2	2.01	0.42
1:A:122:ASN:N	1:A:125:ASN:O	2.52	0.42
1:A:106:PHE:HB3	1:A:235:ILE:CD1	2.50	0.42
1:A:758:SER:H	1:C:965:GLN:NE2	2.18	0.42
1:C:387:LEU:H	1:C:387:LEU:HD23	1.85	0.42
1:C:83:VAL:HG11	1:C:237:ARG:NH2	2.35	0.42
1:C:336:CYS:HB3	1:C:361:CYS:HB3	1.55	0.42
1:A:170:TYR:CE1	1:A:172:SER:HB2	2.55	0.41
1:A:373:PRO:O	1:A:373:PRO:CG	2.69	0.41
1:C:854:LYS:HB2	1:C:854:LYS:HE2	1.80	0.41
1:C:118:LEU:HD21	1:C:133:PHE:CE2	2.55	0.41
1:C:1086:LYS:HD2	1:C:1122:VAL:HG21	2.03	0.41
1:A:387:LEU:H	1:A:387:LEU:HD23	1.84	0.41
1:C:168:PHE:HE2	1:C:229:LEU:HD22	1.86	0.41
1:C:294:ASP:OD1	1:C:297:SER:OG	2.30	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1072:GLU:OE1	1:C:1072:GLU:N	2.50	0.41
1:A:726:ILE:HD13	1:A:945:LEU:HD13	2.02	0.41
1:B:336:CYS:HA	1:B:361:CYS:HB2	2.03	0.41
1:B:27:ALA:HB3	1:B:64:TRP:HB3	2.03	0.41
1:B:1072:GLU:HG2	1:C:894:LEU:CD2	2.48	0.41
1:B:87:ASN:HD22	1:B:269:TYR:HE2	1.69	0.41
1:C:676:THR:HG22	1:C:690:GLN:HB3	2.01	0.41
1:B:339:ASP:OD1	1:B:340:GLU:N	2.53	0.41
1:A:421:TYR:CD1	1:A:457:ARG:HB3	2.56	0.41
1:A:715:PRO:HA	1:A:1072:GLU:HA	2.03	0.41
1:C:825:LYS:HB2	1:C:825:LYS:HE2	1.84	0.41
1:A:215:ASP:OD1	1:A:215:ASP:N	2.53	0.41
1:A:569:ILE:HD12	1:A:569:ILE:H	1.86	0.41
1:A:722:VAL:HA	1:A:1064:HIS:O	2.20	0.41
1:A:754:LEU:HD23	1:A:754:LEU:HA	1.91	0.41
1:B:930:ALA:O	1:B:934:ILE:HG12	2.21	0.41
1:B:1017:GLU:OE1	1:C:1019:ARG:NH2	2.54	0.40
1:B:495:TYR:HB3	1:B:497:PHE:CD1	2.56	0.40
1:A:736:VAL:HG22	1:A:858:LEU:HD22	2.03	0.40
1:B:101:ILE:HA	1:B:242:LEU:HD13	2.04	0.40
1:C:40:ASP:OD1	1:C:40:ASP:N	2.52	0.40
1:C:856:LYS:HA	1:C:856:LYS:HD3	1.89	0.40
1:A:787:GLN:OE1	1:C:703:ASN:ND2	2.36	0.40
1:B:551:VAL:HG12	1:B:588:THR:O	2.22	0.40
1:C:109:THR:HG22	1:C:114:THR:HG22	2.04	0.40
1:C:1139:ASP:HA	1:C:1140:PRO:HD3	1.97	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [\(i\)](#)

5.3.1 Protein backbone [\(i\)](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1023/1249 (82%)	970 (95%)	50 (5%)	3 (0%)	41	73
1	B	1026/1249 (82%)	967 (94%)	53 (5%)	6 (1%)	25	59
1	C	1023/1249 (82%)	974 (95%)	49 (5%)	0	100	100
All	All	3072/3747 (82%)	2911 (95%)	152 (5%)	9 (0%)	44	73

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	371	LEU
1	B	377	PHE
1	A	235	ILE
1	A	374	PHE
1	B	368	LEU
1	B	373	PRO
1	B	375	PHE
1	B	528	LYS
1	A	367	VAL

5.3.2 Protein sidechains [i](#)

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	912/1086 (84%)	909 (100%)	3 (0%)	92	96
1	B	913/1086 (84%)	910 (100%)	3 (0%)	92	96
1	C	912/1086 (84%)	909 (100%)	3 (0%)	92	96
All	All	2737/3258 (84%)	2728 (100%)	9 (0%)	92	96

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	367	VAL
1	A	368	LEU
1	A	374	PHE
1	B	368	LEU

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Mol	Chain	Res	Type
1	B	370	ASN
1	B	983	ARG
1	C	675	GLN
1	C	676	THR
1	C	690	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1002	GLN
1	B	81	ASN
1	B	439	ASN
1	B	804	GLN
1	C	165	ASN
1	C	804	GLN
1	C	935	GLN
1	C	965	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides 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

There are no chain breaks in this entry.

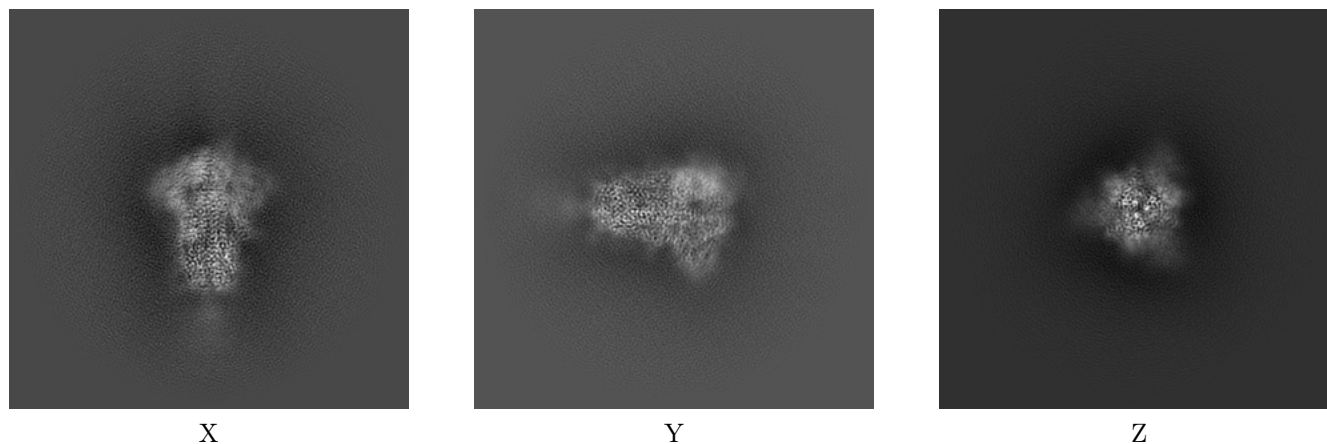
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-34975. These allow visual inspection of the internal detail of the map and identification of artifacts.

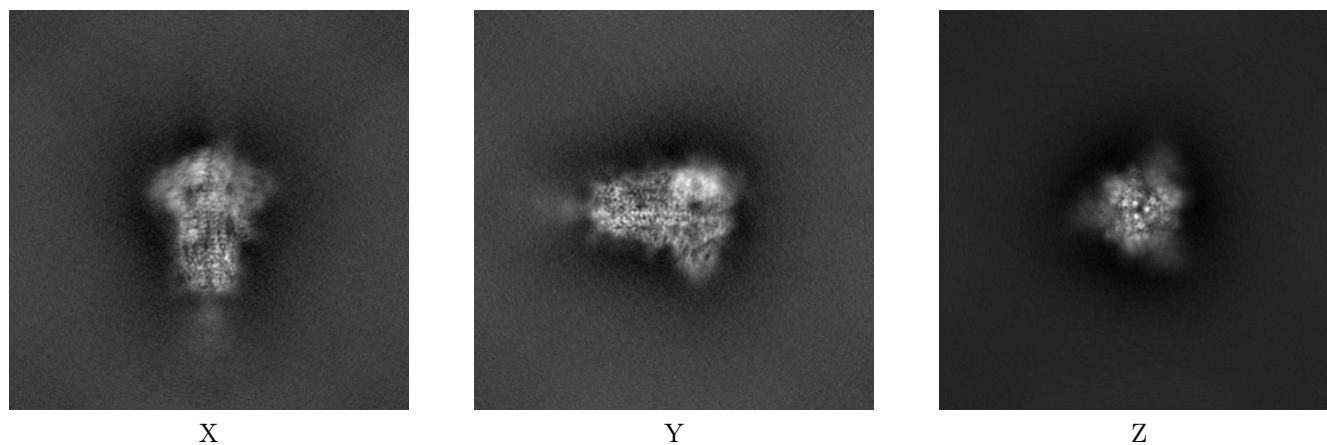
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

6.1.1 Primary map



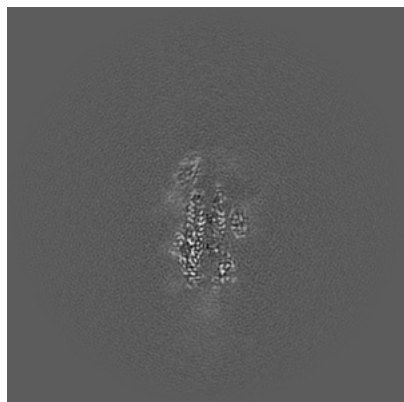
6.1.2 Raw map



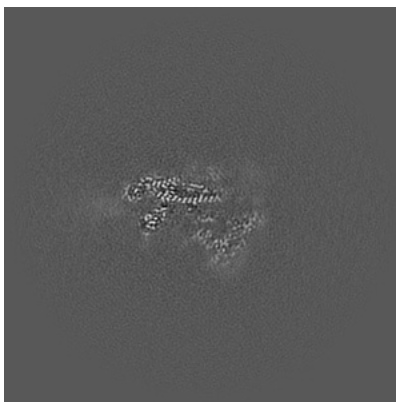
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

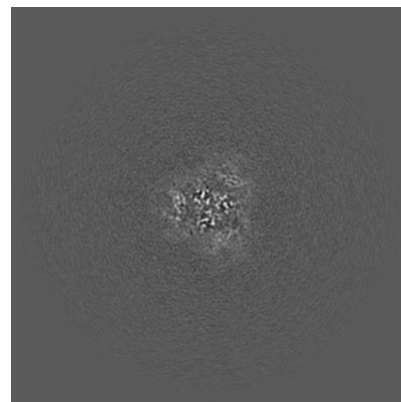
6.2.1 Primary map



X Index: 256

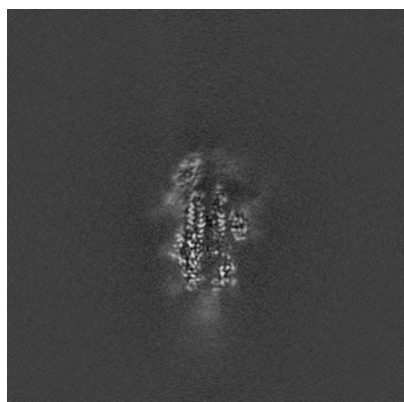


Y Index: 256

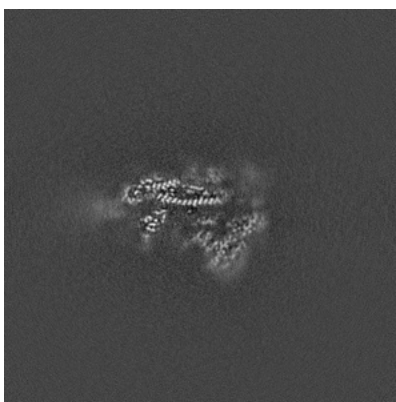


Z Index: 256

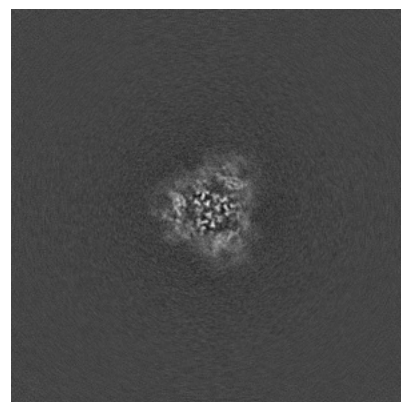
6.2.2 Raw map



X Index: 256



Y Index: 256

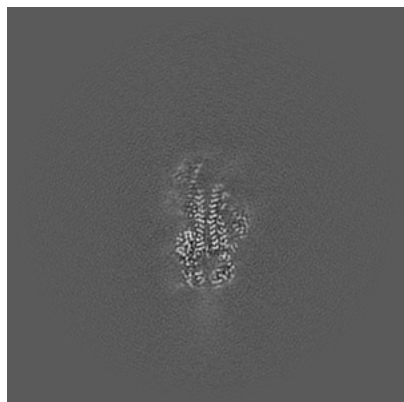


Z Index: 256

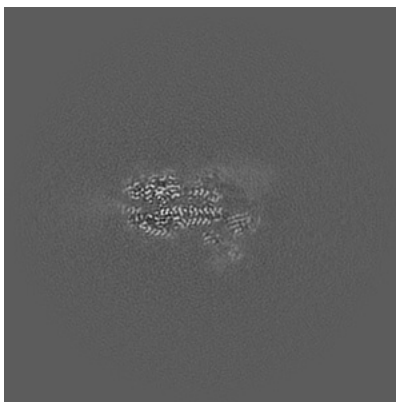
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

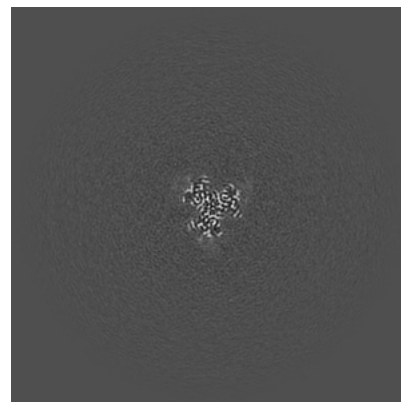
6.3.1 Primary map



X Index: 252

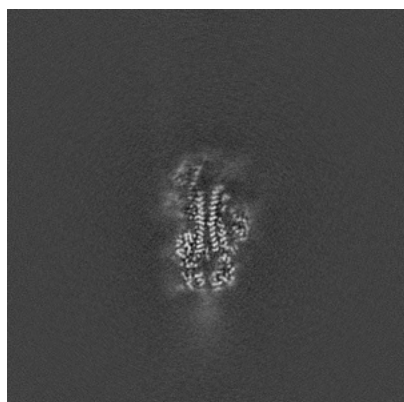


Y Index: 265

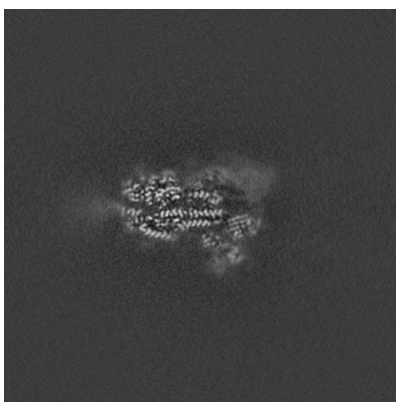


Z Index: 203

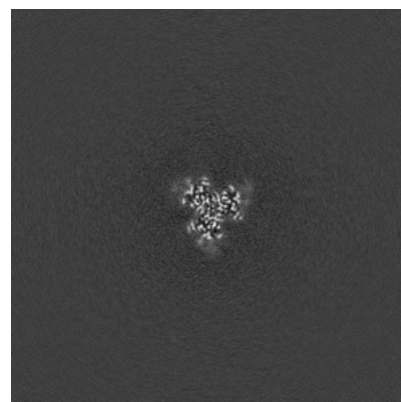
6.3.2 Raw map



X Index: 252



Y Index: 265

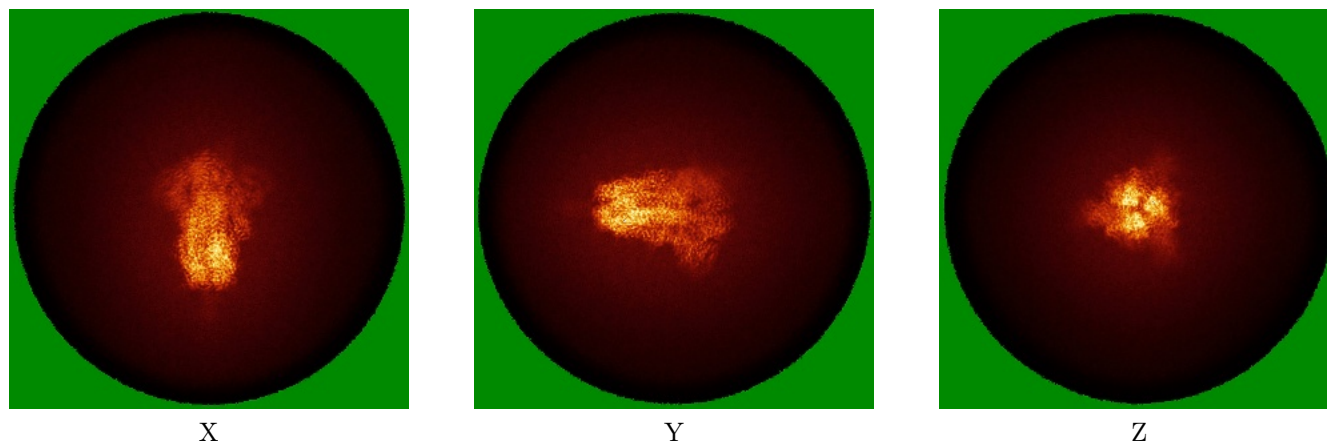


Z Index: 203

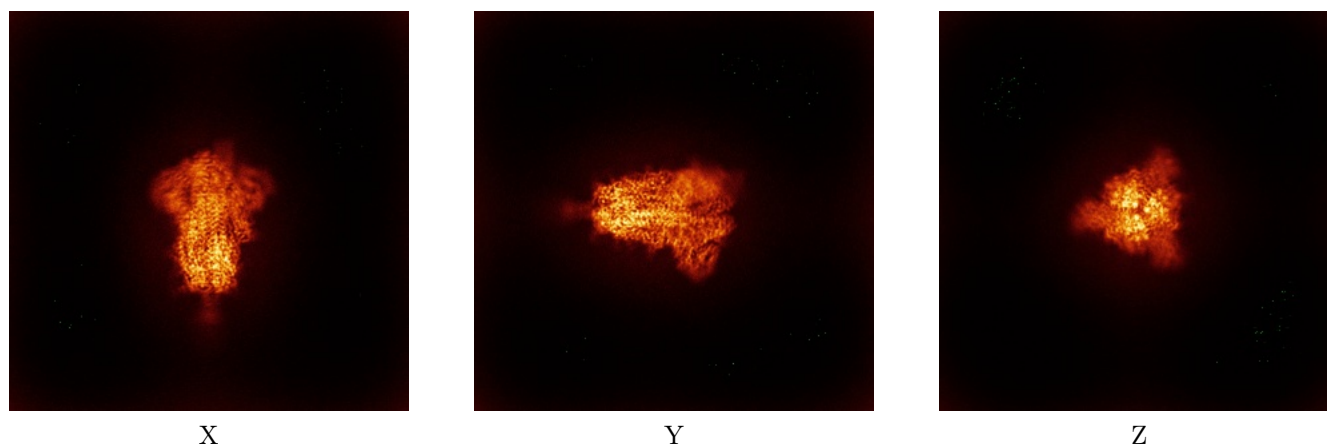
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



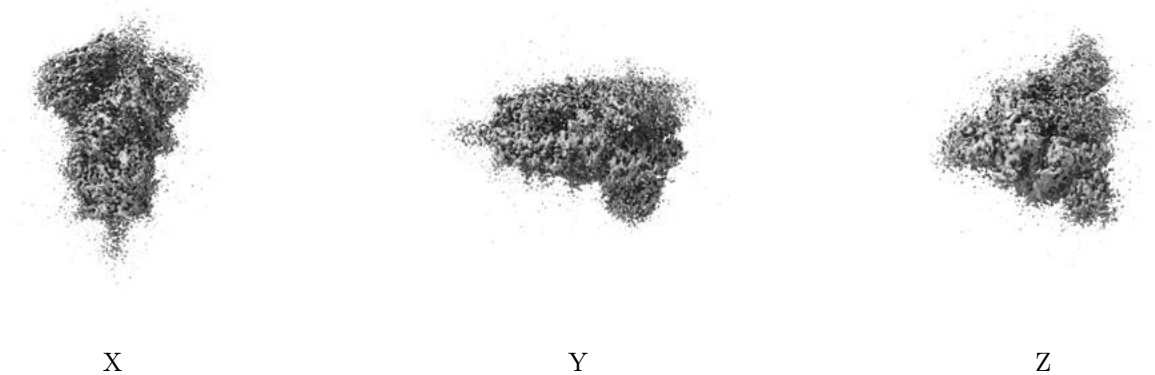
6.4.2 Raw map



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 0.45. 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.

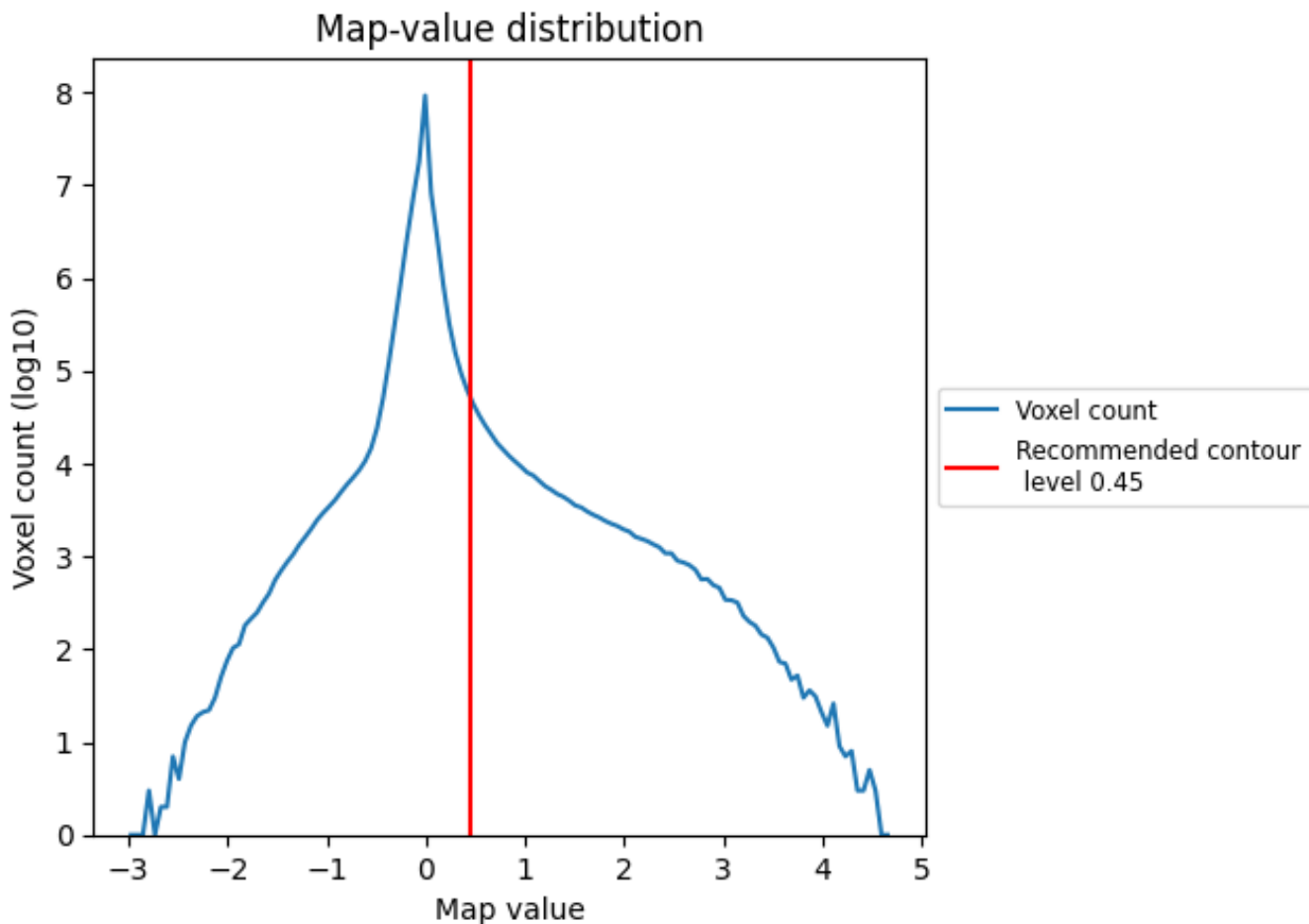
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

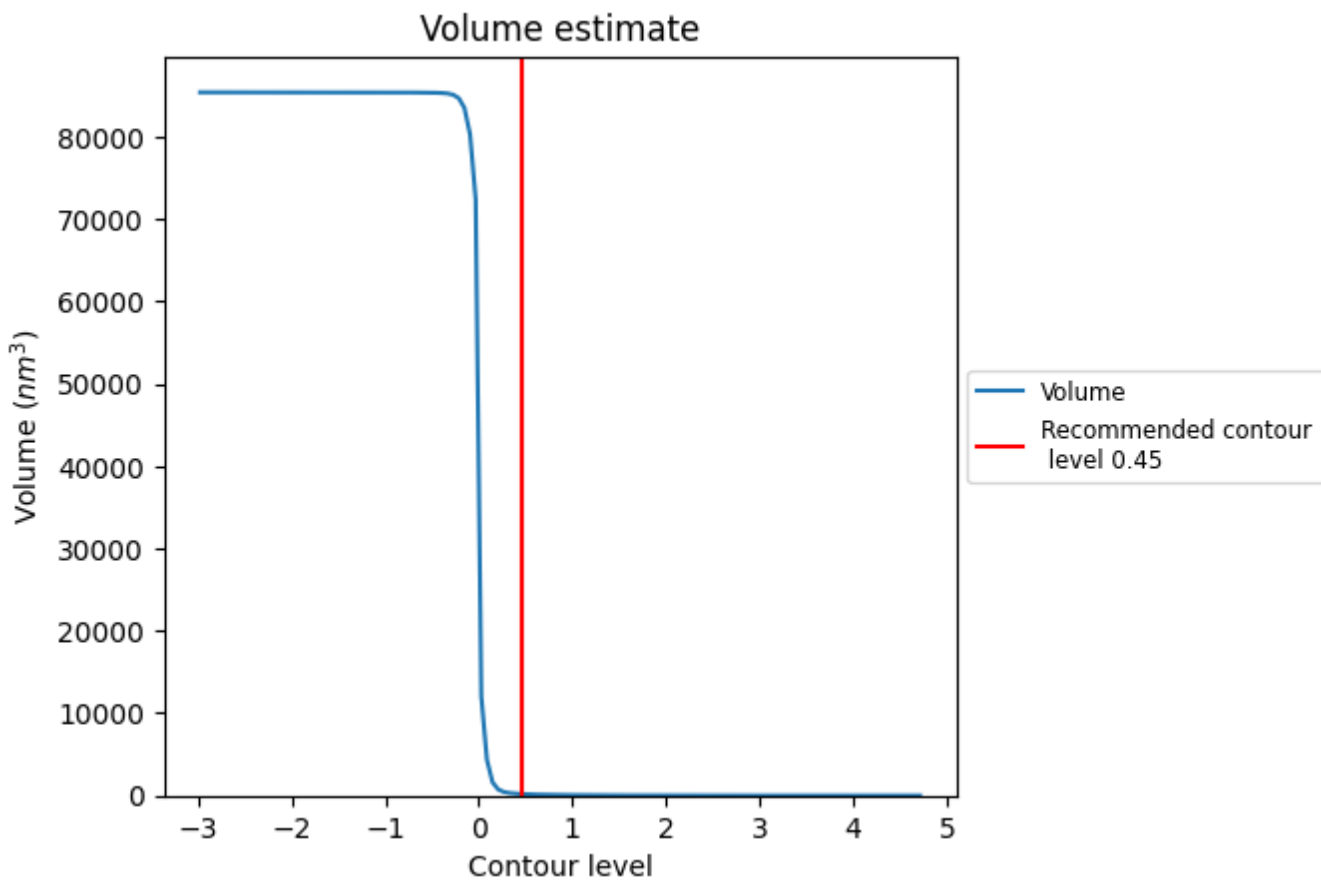
This section contains the results of statistical analysis of the map.

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.

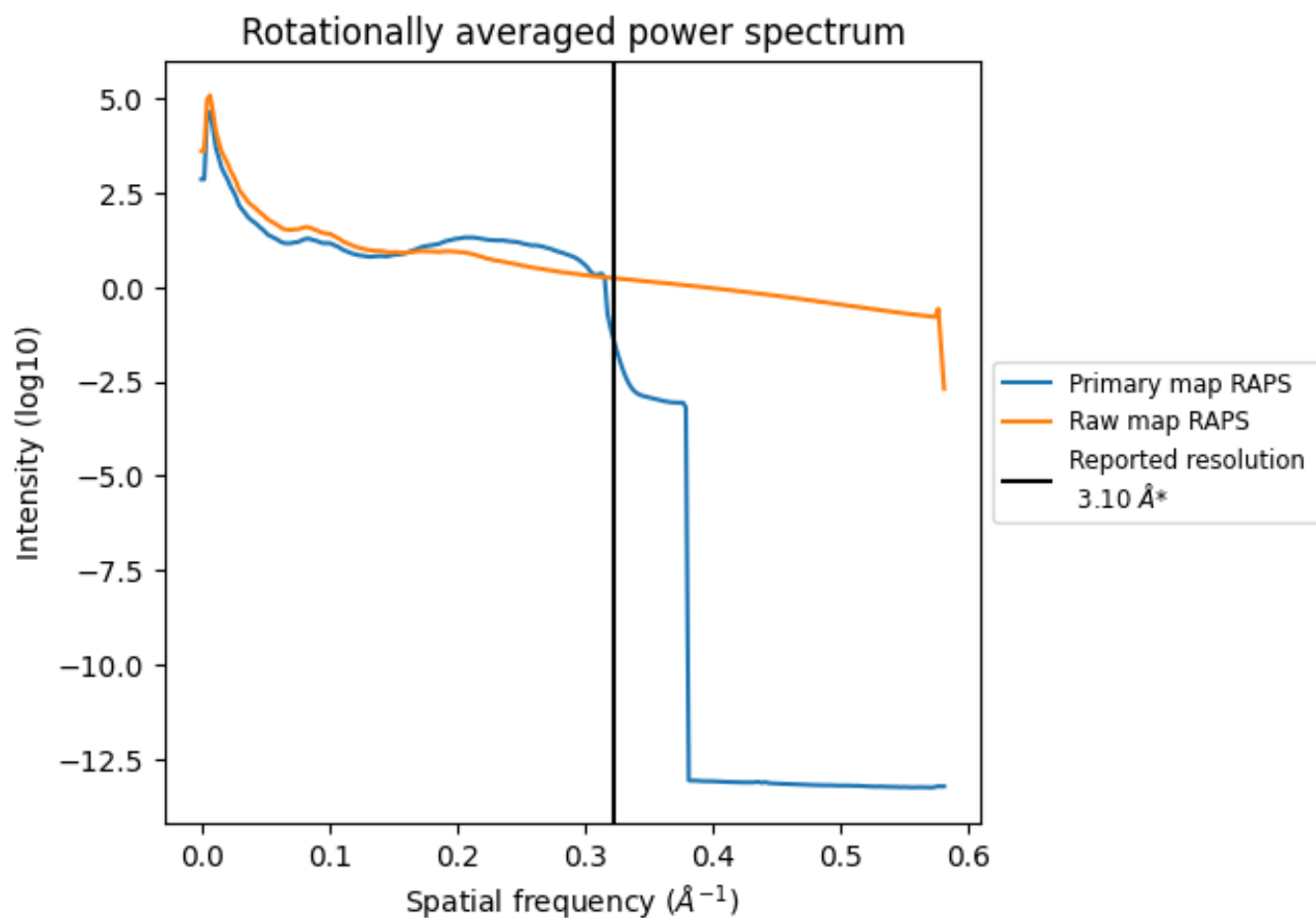
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 189 nm³; this corresponds to an approximate mass of 171 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 [i](#)

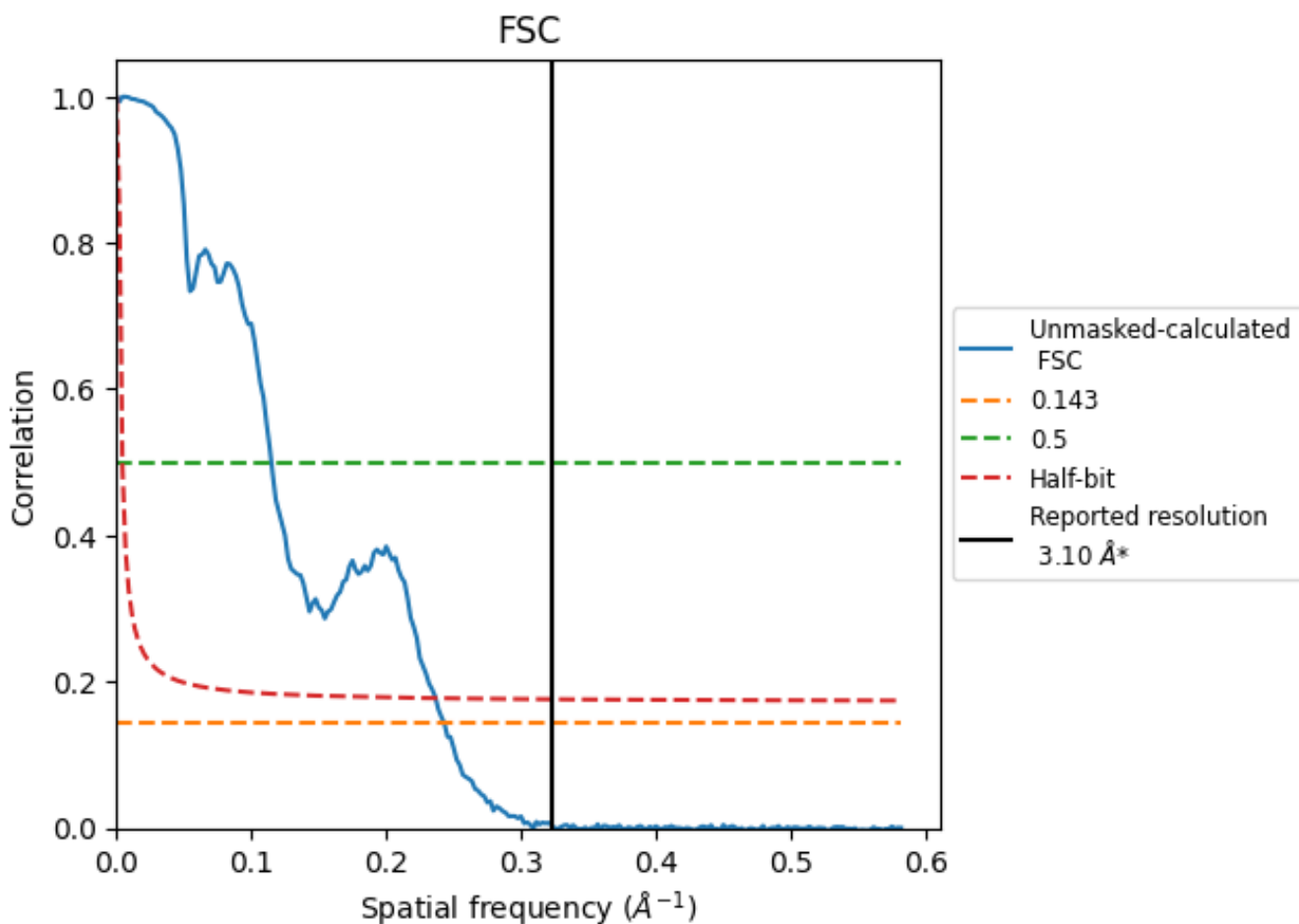


*Reported resolution corresponds to spatial frequency of 0.323 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.323 Å⁻¹

8.2 Resolution estimates [i](#)

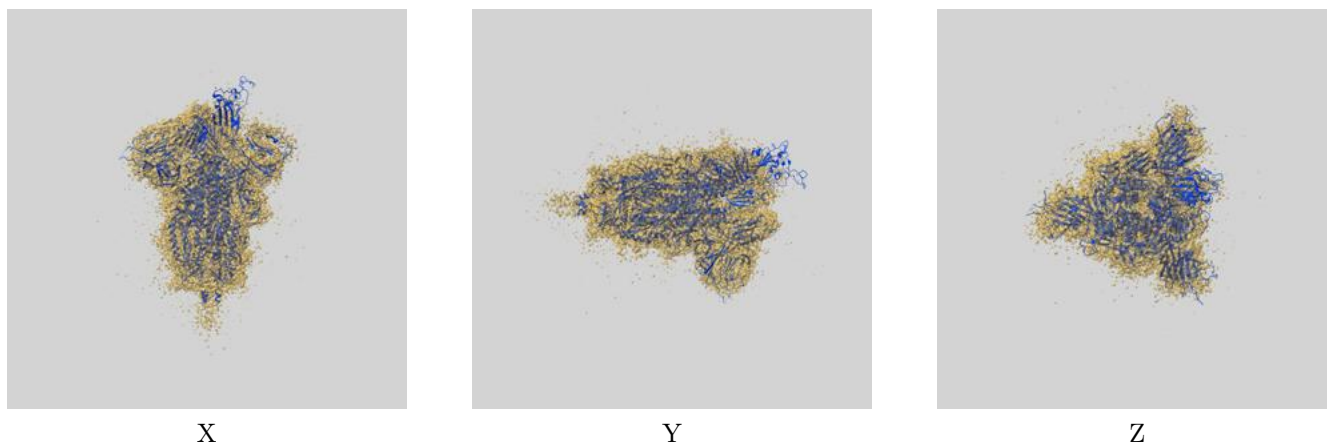
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.12	8.71	4.23

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

9 Map-model fit [i](#)

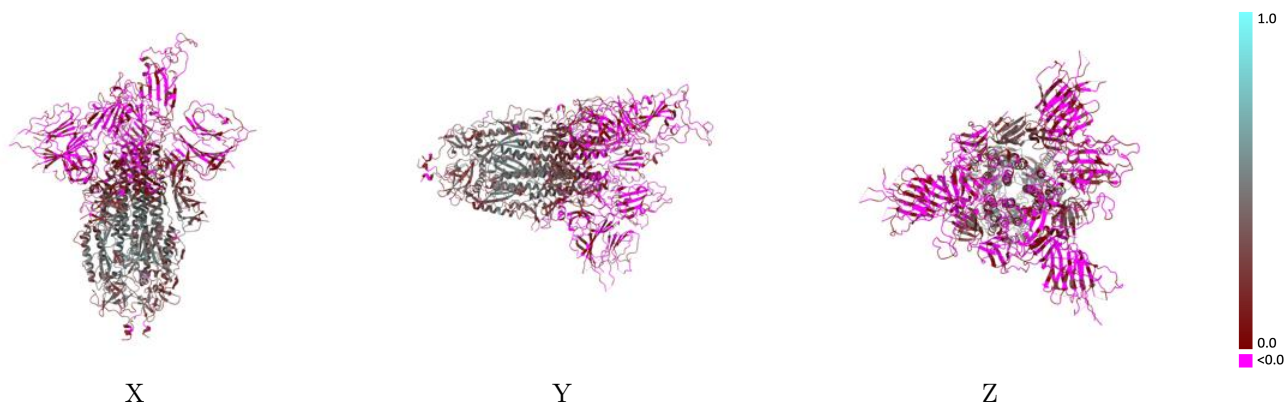
This section contains information regarding the fit between EMDB map EMD-34975 and PDB model 8HRJ. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay [i](#)



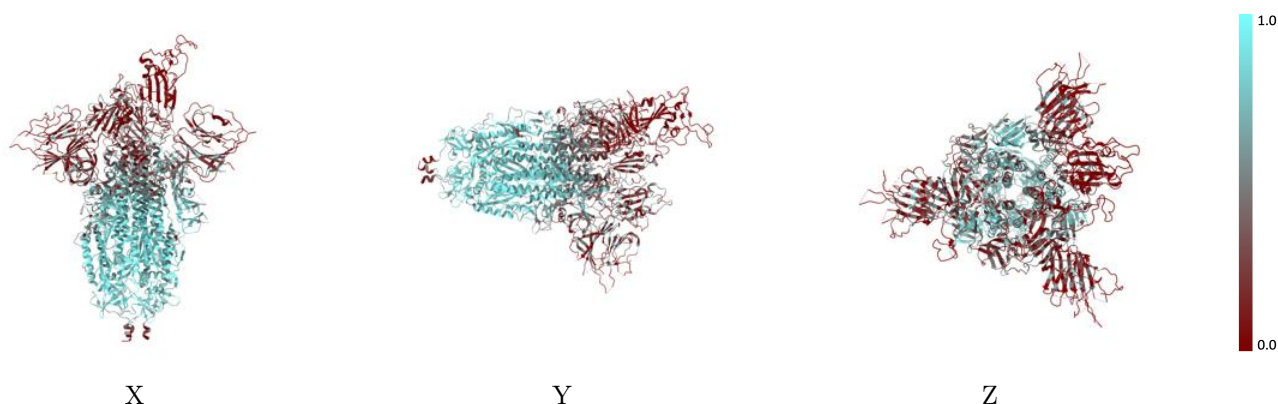
The images above show the 3D surface view of the map at the recommended contour level 0.45 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



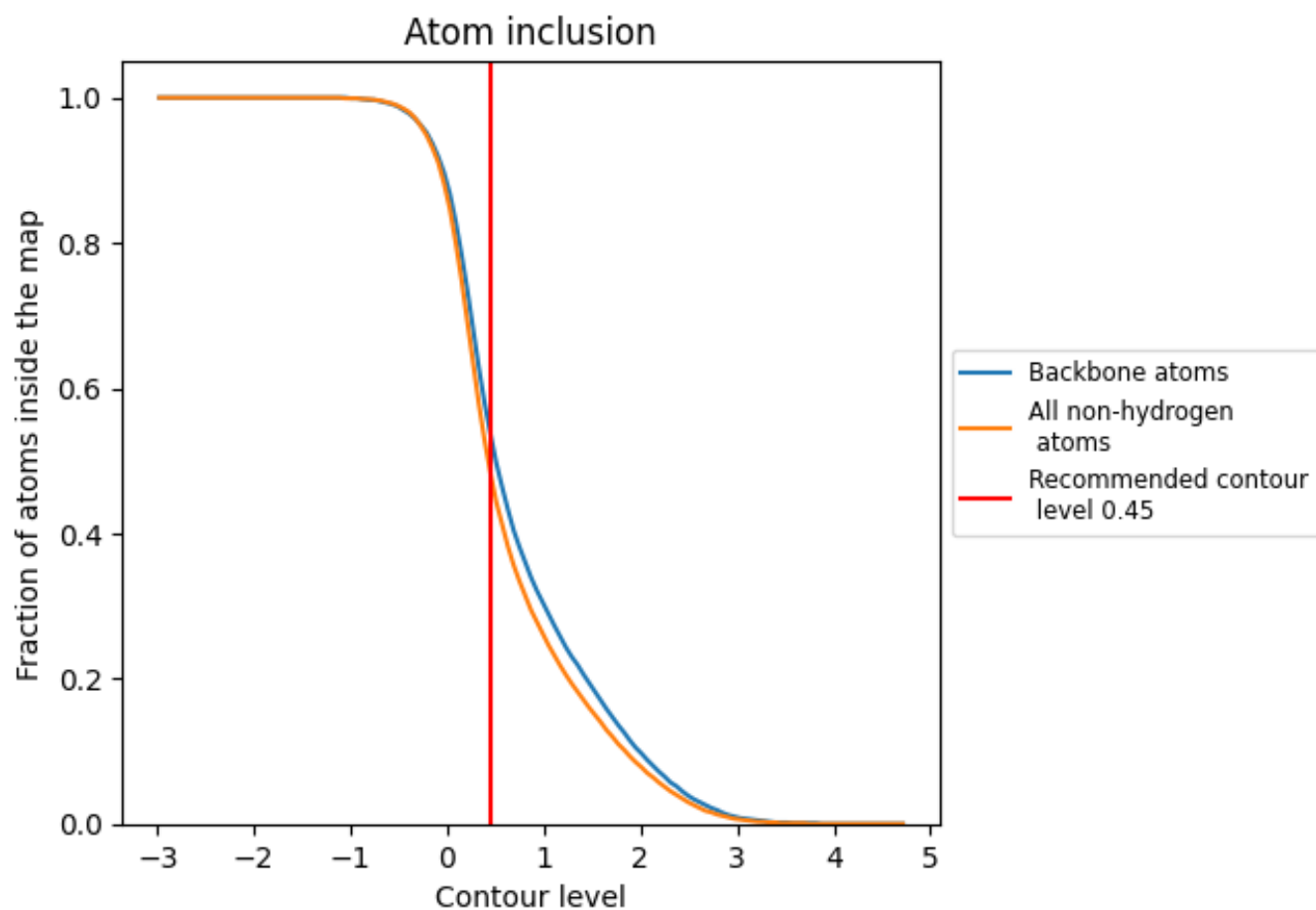
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.45).









9.4 Atom inclusion [i](#)



At the recommended contour level, 54% of all backbone atoms, 48% 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 (0.45) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4810	 0.1560
A	 0.4530	 0.1690
B	 0.5080	 0.1630
C	 0.4820	 0.1360

