



Full wwPDB EM Validation Report ⓘ

Mar 30, 2026 – 01:18 AM UTC

PDB ID : 7XO4 / pdb_00007xo4
EMDB ID : EMD-33336
Title : SARS-CoV-2 Omicron BA.1 Variant Spike Trimer with two mouse ACE2 Bound
Authors : Xu, Y.; Wu, C.; Liu, H.; Yin, W.; Xu, H.E.
Deposited on : 2022-04-30
Resolution : 3.24 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.dev132
Mogul : 2022.3.0, CSD as543be (2022)
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

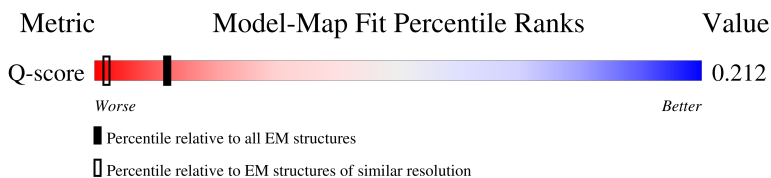
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.24 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	14594 (2.74 - 3.74)

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	1205	 9% 72% 13% 15%
1	B	1205	 9% 72% 13% 15%
1	C	1205	 73% 12% 15%
2	D	805	 39% 61% 13% 27%

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Mol	Chain	Length	Quality of chain
2	E	805	40% 59% 15% 27%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 33410 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
1	A	1024	Total	C	N	O	S	0	0
			7763	4968	1294	1467	34		
1	B	1024	Total	C	N	O	S	0	0
			7763	4968	1294	1467	34		
1	C	1022	Total	C	N	O	S	0	0
			7700	4958	1275	1432	35		

There are 132 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
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	142	ASP	GLY	variant	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	?	-	TYR	deletion	UNP P0DTC2
A	?	-	TYR	deletion	UNP P0DTC2
A	?	-	ASN	deletion	UNP P0DTC2
A	210A	ILE	LEU	variant	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

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Chain	Residue	Modelled	Actual	Comment	Reference
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	engineered mutation	UNP P0DTC2
A	683	SER	ARG	engineered mutation	UNP P0DTC2
A	685	SER	ARG	engineered mutation	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
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	142	ASP	GLY	variant	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	?	-	TYR	deletion	UNP P0DTC2
B	?	-	TYR	deletion	UNP P0DTC2
B	?	-	ASN	deletion	UNP P0DTC2
B	210A	ILE	LEU	variant	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

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Chain	Residue	Modelled	Actual	Comment	Reference
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
B	679	LYS	ASN	variant	UNP P0DTC2
B	681	HIS	PRO	variant	UNP P0DTC2
B	682	GLY	ARG	engineered mutation	UNP P0DTC2
B	683	SER	ARG	engineered mutation	UNP P0DTC2
B	685	SER	ARG	engineered mutation	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
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	142	ASP	GLY	variant	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	?	-	TYR	deletion	UNP P0DTC2
C	?	-	TYR	deletion	UNP P0DTC2
C	?	-	ASN	deletion	UNP P0DTC2
C	210A	ILE	LEU	variant	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
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

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Chain	Residue	Modelled	Actual	Comment	Reference
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	engineered mutation	UNP P0DTC2
C	683	SER	ARG	engineered mutation	UNP P0DTC2
C	685	SER	ARG	engineered mutation	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

- Molecule 2 is a protein called Angiotensin-converting enzyme 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	591	Total	C	N	O	S	0	0
			4818	3070	808	911	29		
2	E	591	Total	C	N	O	S	0	0
			4818	3070	808	911	29		

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C₈H₁₅NO₆).



Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	B	1	Total	C	N	O	0
			14	8	1	5	
3	B	1	Total	C	N	O	0
			14	8	1	5	

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Mol	Chain	Residues	Atoms				AltConf
3	B	1	Total	C	N	O	0
			14	8	1	5	
3	B	1	Total	C	N	O	0
			14	8	1	5	
3	B	1	Total	C	N	O	0
			14	8	1	5	
3	B	1	Total	C	N	O	0
			14	8	1	5	
3	B	1	Total	C	N	O	0
			14	8	1	5	
3	B	1	Total	C	N	O	0
			14	8	1	5	
3	B	1	Total	C	N	O	0
			14	8	1	5	
3	B	1	Total	C	N	O	0
			14	8	1	5	
3	C	1	Total	C	N	O	0
			14	8	1	5	
3	C	1	Total	C	N	O	0
			14	8	1	5	
3	C	1	Total	C	N	O	0
			14	8	1	5	
3	C	1	Total	C	N	O	0
			14	8	1	5	
3	C	1	Total	C	N	O	0
			14	8	1	5	
3	C	1	Total	C	N	O	0
			14	8	1	5	
3	C	1	Total	C	N	O	0
			14	8	1	5	
3	C	1	Total	C	N	O	0
			14	8	1	5	
3	C	1	Total	C	N	O	0
			14	8	1	5	

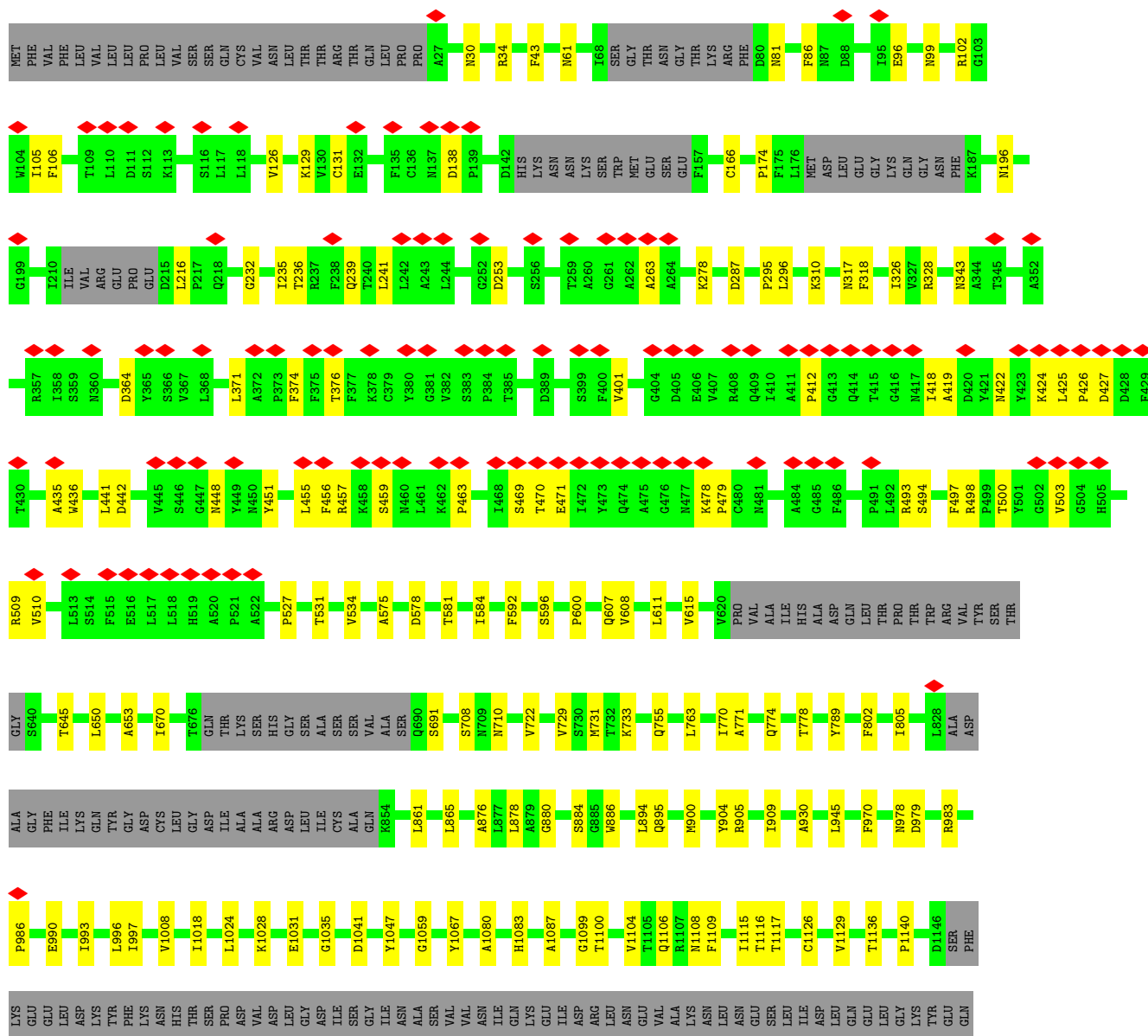
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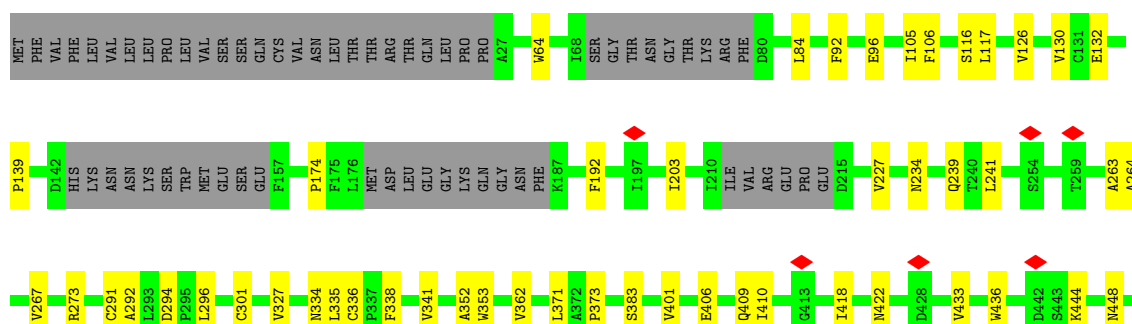
Mol	Chain	Residues	Atoms				AltConf
3	D	1	Total	C	N	O	0
			14	8	1	5	
3	D	1	Total	C	N	O	0
			14	8	1	5	
3	E	1	Total	C	N	O	0
			14	8	1	5	
3	E	1	Total	C	N	O	0
			14	8	1	5	

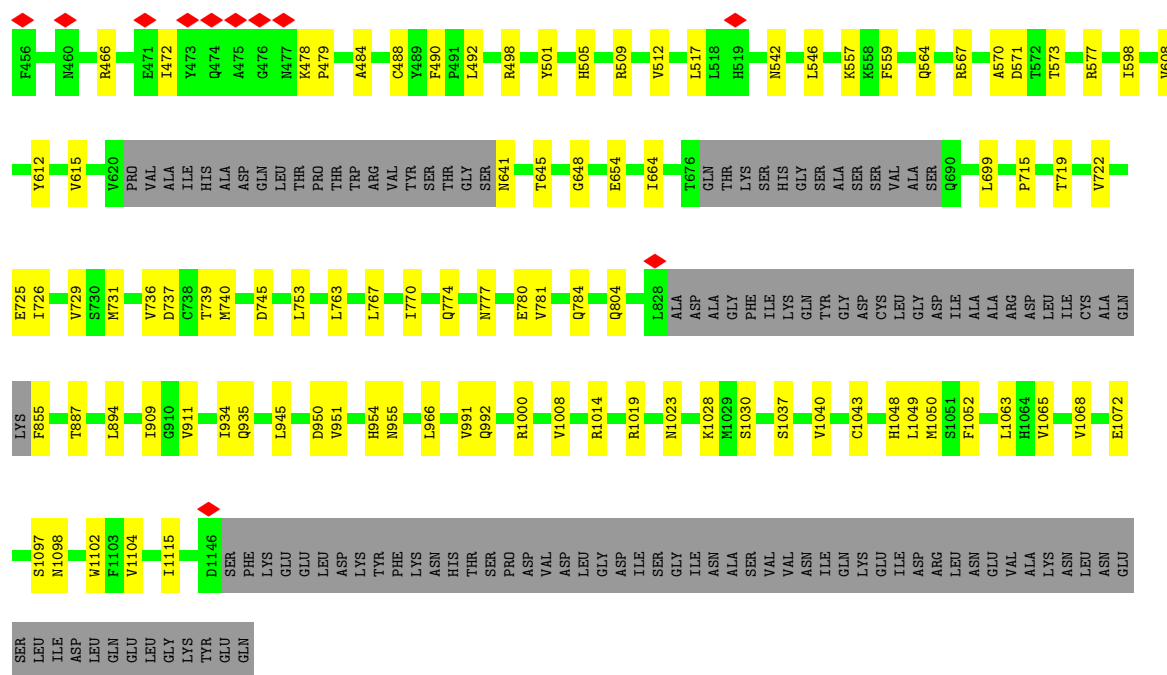
- Molecule 4 is ZINC ION (CCD ID: ZN) (formula: Zn).

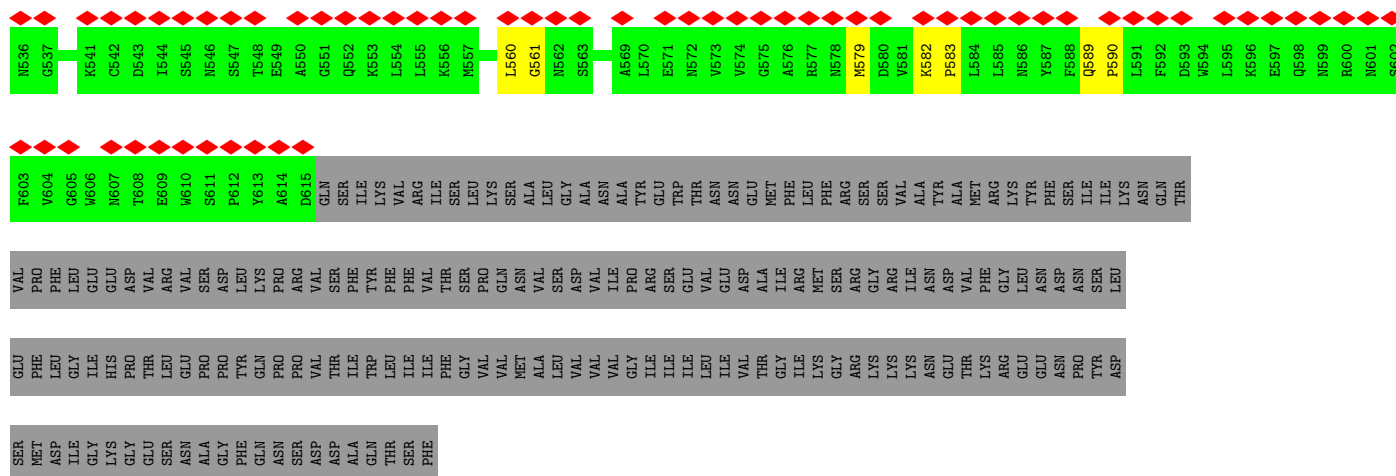
Mol	Chain	Residues	Atoms		AltConf
4	D	1	Total	Zn	0
			1	1	
4	E	1	Total	Zn	0
			1	1	



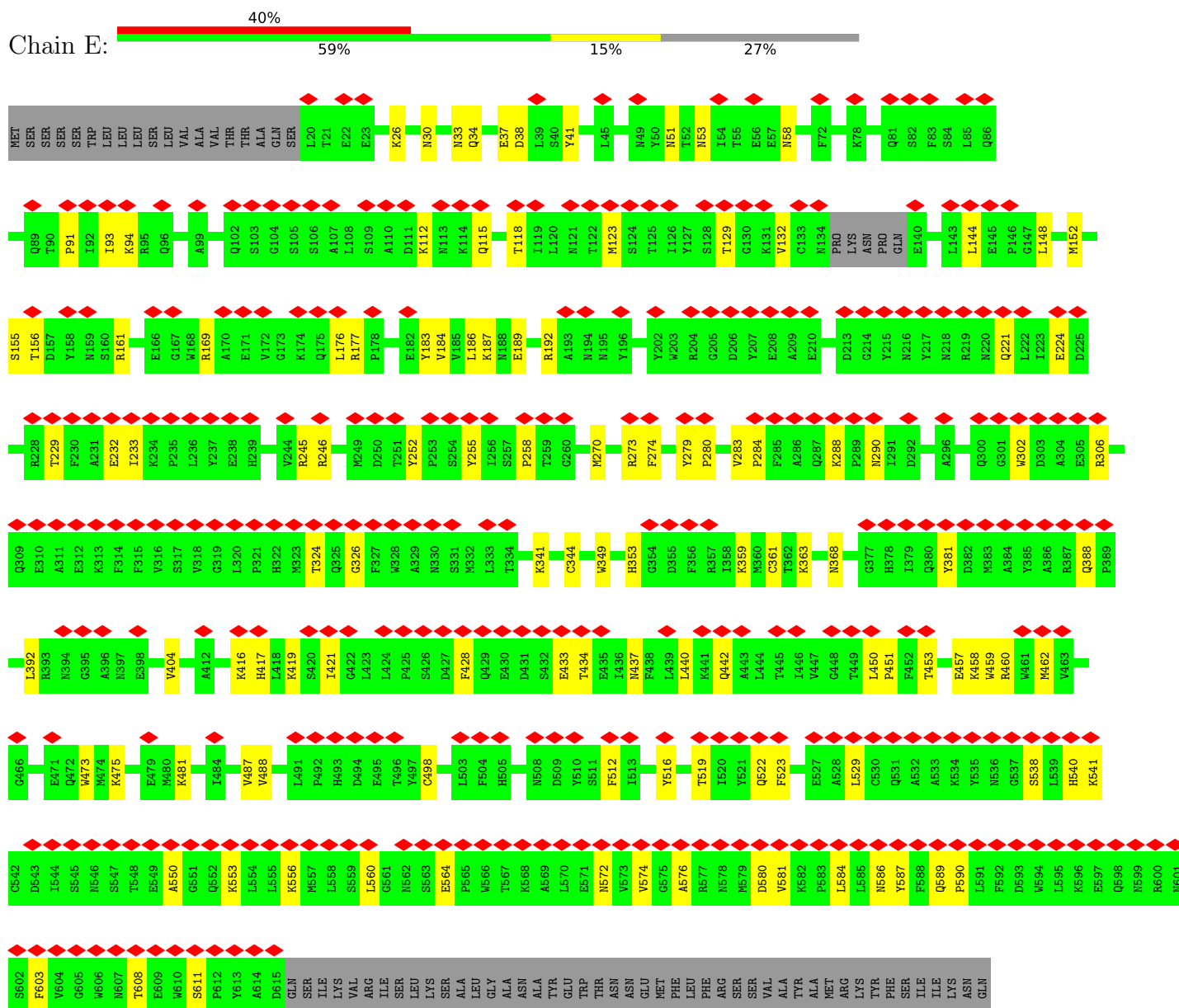
• Molecule 1: Spike glycoprotein







• Molecule 2: Angiotensin-converting enzyme 2



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

ASP
SER
MET
ASP
ILE
GLY
LYS
GLY
GLU
SER
ASN
ALA
GLY
PHE
GLN
ASN
SER
ASP
ASP
ALA
GLN
THR
SER
PHE

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	123465	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	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.932	Depositor
Minimum map value	-0.016	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.021	Depositor
Recommended contour level	0.005	Depositor
Map size ($\text{\AA}$)	395.52, 395.52, 395.52	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	0.824, 0.824, 0.824	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.10	0/7945	0.28	0/10846
1	B	0.09	0/7945	0.27	0/10846
1	C	0.09	0/7884	0.27	0/10767
2	D	0.11	0/4950	0.31	0/6718
2	E	0.13	0/4950	0.33	0/6718
All	All	0.10	0/33674	0.29	0/45895

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	7763	0	7341	124	0
1	B	7763	0	7343	113	0
1	C	7700	0	7273	96	0
2	D	4818	0	4587	72	0
2	E	4818	0	4585	85	0
3	A	168	0	156	2	0
3	B	168	0	156	2	0
3	C	154	0	143	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	D	28	0	26	0	0
3	E	28	0	26	0	0
4	D	1	0	0	0	0
4	E	1	0	0	0	0
All	All	33410	0	31636	464	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (464) 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:1094:VAL:CG1	1:B:904:TYR:OH	1.69	1.41
1:B:131:CYS:CB	1:B:166:CYS:SG	2.13	1.36
1:B:131:CYS:SG	1:B:166:CYS:SG	1.23	1.21
1:A:371:LEU:O	1:A:371:LEU:HD12	1.40	1.20
1:C:406:GLU:OE1	1:C:409:GLN:CD	1.92	1.12
1:A:1094:VAL:HG11	1:B:904:TYR:OH	0.95	1.10
1:A:763:LEU:CD2	1:A:1004:LEU:CD2	2.36	1.04
1:B:129:LYS:HG2	1:B:131:CYS:SG	1.97	1.02
1:C:406:GLU:OE1	1:C:409:GLN:NE2	1.95	0.99
1:C:645:THR:HG22	1:C:648:GLY:O	1.62	0.97
1:B:1116:THR:HG22	1:B:1117:THR:H	1.29	0.97
1:A:906:PHE:CE2	1:A:1049:LEU:HD21	2.01	0.96
1:A:906:PHE:CD2	1:A:1049:LEU:HD21	2.01	0.96
2:E:586:ASN:OD1	2:E:589:GLN:NE2	1.99	0.94
1:C:406:GLU:OE1	1:C:409:GLN:OE1	1.88	0.92
1:B:129:LYS:CG	1:B:131:CYS:SG	2.58	0.91
1:B:900:MET:O	1:B:904:TYR:CD2	2.26	0.89
1:C:433:VAL:HG23	1:C:512:VAL:HG12	1.56	0.88
1:A:763:LEU:HD21	1:A:1004:LEU:HG	1.56	0.88
1:B:900:MET:O	1:B:904:TYR:HD2	1.54	0.87
1:A:1094:VAL:HG11	1:B:904:TYR:CZ	2.10	0.86
1:A:468:ILE:HG22	1:A:468:ILE:O	1.76	0.85
1:B:1116:THR:HG22	1:B:1117:THR:N	1.93	0.83
1:A:763:LEU:CD2	1:A:1004:LEU:HD21	2.08	0.82
1:A:371:LEU:O	1:A:371:LEU:CD1	2.27	0.82
1:B:131:CYS:CB	1:B:166:CYS:HG	1.77	0.82
2:E:279:TYR:O	2:E:283:VAL:HG23	1.79	0.81
1:A:763:LEU:CD2	1:A:1004:LEU:HG	2.10	0.81
1:B:131:CYS:HB3	1:B:166:CYS:SG	2.20	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:360:MET:SD	2:D:375:GLU:HG3	2.20	0.81
1:B:131:CYS:SG	1:B:166:CYS:CB	2.70	0.80
2:E:129:THR:HG22	2:E:129:THR:O	1.81	0.80
1:C:950:ASP:OD1	1:C:954:HIS:NE2	2.15	0.80
1:A:763:LEU:HD23	1:A:1004:LEU:HD21	1.63	0.79
1:A:906:PHE:CE2	1:A:1049:LEU:CD2	2.66	0.77
2:D:156:THR:O	2:D:156:THR:HG22	1.83	0.76
2:E:608:THR:HG22	2:E:608:THR:O	1.86	0.75
1:A:367:VAL:HG12	1:A:367:VAL:O	1.85	0.75
1:A:763:LEU:CD2	1:A:1004:LEU:CG	2.65	0.75
1:B:1116:THR:CG2	1:B:1117:THR:H	1.99	0.74
1:B:470:THR:HG22	1:B:470:THR:O	1.88	0.74
1:C:371:LEU:HG	1:C:373:PRO:HD2	1.70	0.73
1:A:1094:VAL:HG13	1:B:904:TYR:OH	1.82	0.73
1:A:763:LEU:HD21	1:A:1004:LEU:CG	2.19	0.72
1:A:1094:VAL:CG1	1:B:904:TYR:CZ	2.68	0.72
1:C:777:ASN:HD21	1:C:1019:ARG:HD2	1.55	0.71
1:A:763:LEU:CD2	1:A:1004:LEU:HD23	2.19	0.71
2:E:279:TYR:O	2:E:283:VAL:CG2	2.38	0.70
1:A:763:LEU:HD23	1:A:1004:LEU:CD2	2.16	0.70
1:B:1106:GLN:HE21	1:B:1109:PHE:HB3	1.56	0.70
1:C:645:THR:CG2	1:C:648:GLY:O	2.40	0.68
2:D:20:LEU:CD1	2:D:22:GLU:H	2.07	0.68
1:A:1094:VAL:HG11	1:B:904:TYR:HH	0.87	0.68
1:B:326:ILE:HD11	1:B:534:VAL:HG12	1.77	0.67
1:C:234:ASN:HA	3:C:1303:NAG:H83	1.76	0.67
2:D:527:GLU:O	2:D:531:GLN:HG2	1.92	0.67
1:A:709:ASN:OD1	1:A:710:ASN:ND2	2.27	0.67
1:C:564:GLN:HA	1:C:577:ARG:HE	1.60	0.67
1:A:193:VAL:HB	1:A:204:TYR:HB2	1.77	0.67
1:C:106:PHE:HB2	1:C:117:LEU:HB3	1.76	0.67
2:E:51:ASN:HB3	2:E:359:LYS:HZ3	1.61	0.66
1:B:455:LEU:HD12	1:B:493:ARG:HH22	1.60	0.66
1:C:139:PRO:HG3	1:C:239:GLN:HE21	1.61	0.66
2:D:242:ALA:HB1	2:D:246:ARG:HH11	1.60	0.66
1:A:555:SER:HB3	1:A:586:ASP:HB2	1.78	0.65
2:D:20:LEU:HD12	2:D:22:GLU:H	1.60	0.65
2:D:95:ARG:HA	2:D:98:GLN:HE21	1.61	0.65
1:A:373:PRO:HG2	1:A:436:TRP:HB2	1.79	0.65
1:A:763:LEU:HD21	1:A:1004:LEU:CD2	2.25	0.65
2:E:26:LYS:HD3	2:E:93:ILE:HD12	1.80	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1039:ARG:NE	1:B:1031:GLU:OE2	2.26	0.64
1:B:607:GLN:HE22	1:B:691:SER:HA	1.62	0.64
1:C:472:ILE:HG21	1:C:488:CYS:SG	2.37	0.64
1:A:742:ILE:O	1:A:1000:ARG:NH2	2.31	0.64
1:C:291:CYS:CB	1:C:301:CYS:SG	2.86	0.63
2:E:458:LYS:HE3	2:E:462:MET:HE3	1.78	0.63
1:A:547:LYS:HD3	1:B:978:ASN:HD21	1.64	0.63
1:A:906:PHE:HE2	1:A:1049:LEU:CD2	2.09	0.63
1:B:424:LYS:NZ	1:B:425:LEU:O	2.32	0.63
1:A:969:LYS:HG3	1:B:755:GLN:HE21	1.64	0.62
1:C:725:GLU:OE2	1:C:1028:LYS:NZ	2.32	0.62
1:A:1074:ASN:OD1	1:B:895:GLN:NE2	2.31	0.62
1:A:126:VAL:HG23	1:A:174:PRO:HA	1.80	0.62
1:A:457:ARG:NH1	1:A:467:ASP:OD2	2.33	0.62
1:C:951:VAL:O	1:C:955:ASN:ND2	2.29	0.62
2:D:235:PRO:O	2:D:239:HIS:ND1	2.33	0.62
1:C:780:GLU:O	1:C:784:GLN:NE2	2.33	0.61
1:A:468:ILE:O	1:A:468:ILE:CG2	2.45	0.61
2:D:407:ILE:HG22	2:D:526:GLN:HB2	1.83	0.61
1:A:363:ALA:HB3	1:A:526:GLY:HA2	1.81	0.61
1:A:983:ARG:HD2	1:C:517:LEU:HD22	1.82	0.61
1:A:426:PRO:HG3	1:A:463:PRO:HB3	1.82	0.61
2:E:433:GLU:O	2:E:437:ASN:ND2	2.34	0.61
3:B:1307:NAG:H83	3:B:1307:NAG:H3	1.83	0.60
2:D:20:LEU:HD13	2:D:22:GLU:HB3	1.83	0.60
2:D:342:VAL:HG22	2:D:344:CYS:H	1.66	0.60
1:C:1019:ARG:NH2	1:C:1023:ASN:OD1	2.35	0.60
1:C:641:ASN:HD22	1:C:654:GLU:HA	1.67	0.60
2:E:284:PRO:HG3	2:E:440:LEU:HD13	1.84	0.60
1:A:763:LEU:HD22	1:A:1004:LEU:CD2	2.29	0.60
1:A:906:PHE:HD2	1:A:1049:LEU:HD21	1.60	0.60
1:B:456:PHE:HZ	2:E:30:ASN:HD22	1.49	0.59
1:B:498:ARG:NH1	2:E:38:ASP:OD1	2.35	0.59
1:C:763:LEU:HG	1:C:1008:VAL:HG21	1.83	0.59
2:D:302:TRP:HA	2:D:306:ARG:HD3	1.84	0.59
2:D:20:LEU:HD13	2:D:22:GLU:CB	2.32	0.59
1:A:1035:GLY:HA3	1:C:1040:VAL:HG21	1.85	0.59
1:B:575:ALA:HB1	1:B:584:ILE:HD11	1.85	0.59
2:D:98:GLN:NE2	2:D:210:GLU:OE1	2.36	0.59
2:E:290:ASN:ND2	2:E:437:ASN:OD1	2.36	0.59
1:A:780:GLU:O	1:A:784:GLN:NE2	2.36	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:726:ILE:HD13	1:C:945:LEU:HD13	1.85	0.58
2:D:174:LYS:HD3	2:D:177:ARG:HH12	1.69	0.58
2:D:206:ASP:O	2:D:397:ASN:ND2	2.37	0.58
2:D:560:LEU:HD12	2:D:561:GLY:O	2.04	0.58
1:B:129:LYS:HG3	1:B:131:CYS:SG	2.43	0.58
1:A:442:ASP:OD1	1:A:509:ARG:NH2	2.34	0.58
1:A:498:ARG:NH1	2:D:38:ASP:OD1	2.36	0.58
2:D:524:GLN:HG2	2:D:583:PRO:HG2	1.85	0.58
2:D:323:MET:HG3	2:D:383:MET:HE1	1.84	0.58
1:B:34:ARG:HD3	1:B:216:LEU:HD13	1.85	0.57
1:A:493:ARG:HH22	2:D:27:THR:HG23	1.69	0.57
1:B:105:ILE:HG12	1:B:241:LEU:HD11	1.86	0.57
2:E:416:LYS:NZ	2:E:541:LYS:O	2.37	0.57
2:E:581:VAL:HG12	2:E:581:VAL:O	2.03	0.57
1:A:34:ARG:NH2	1:A:221:SER:OG	2.37	0.57
1:B:1099:GLY:O	1:B:1100:THR:OG1	2.19	0.57
1:C:950:ASP:OD1	1:C:954:HIS:CD2	2.58	0.57
3:C:1307:NAG:H3	3:C:1307:NAG:H83	1.87	0.57
1:B:500:THR:OG1	2:E:41:TYR:OH	2.23	0.57
1:B:909:ILE:O	1:B:1108:ASN:ND2	2.37	0.57
1:A:641:ASN:HD22	1:A:654:GLU:HA	1.69	0.57
1:B:1104:VAL:HG23	1:B:1115:ILE:HG12	1.87	0.57
1:A:906:PHE:HE2	1:A:1049:LEU:HD21	1.60	0.57
2:E:152:MET:HE3	2:E:270:MET:HG2	1.86	0.56
1:B:592:PHE:HZ	1:C:855:PHE:HB2	1.70	0.56
2:E:349:TRP:HE1	2:E:359:LYS:HE2	1.69	0.56
1:B:1047:TYR:HB2	1:B:1067:TYR:HB3	1.86	0.56
1:A:763:LEU:HD23	1:A:1004:LEU:CG	2.34	0.56
1:B:131:CYS:CA	1:B:166:CYS:SG	2.92	0.56
2:E:155:SER:O	2:E:161:ARG:NH2	2.39	0.56
1:A:474:GLN:NE2	1:A:480:CYS:SG	2.79	0.56
1:B:596:SER:HB2	1:B:611:LEU:HB3	1.87	0.56
2:E:189:GLU:OE2	2:E:192:ARG:NH1	2.36	0.56
2:E:288:LYS:NZ	2:E:433:GLU:OE1	2.40	0.55
2:D:245:ARG:NE	2:D:260:GLY:O	2.36	0.55
1:B:317:ASN:ND2	1:C:737:ASP:OD1	2.40	0.55
2:D:143:LEU:HB2	2:D:146:PRO:HD2	1.88	0.55
1:C:1098:ASN:HB3	3:C:1307:NAG:H82	1.89	0.55
1:A:773:GLU:OE2	1:A:1019:ARG:NH2	2.34	0.55
2:D:77:SER:O	2:D:81:GLN:NE2	2.35	0.55
2:D:151:ILE:O	2:D:155:SER:OG	2.24	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1104:VAL:HG23	1:C:1115:ILE:HG12	1.89	0.54
1:B:126:VAL:HG13	1:B:174:PRO:HA	1.89	0.54
2:E:280:PRO:HA	2:E:283:VAL:CG2	2.37	0.54
1:A:35:GLY:HA3	1:A:56:LEU:HB3	1.90	0.54
1:C:418:ILE:HA	1:C:422:ASN:HD22	1.72	0.54
2:E:53:ASN:HA	2:E:341:LYS:HB2	1.89	0.54
1:B:328:ARG:NH2	1:B:578:ASP:OD2	2.41	0.54
1:C:96:GLU:HG2	1:C:263:ALA:HB1	1.90	0.54
2:D:388:GLN:HB3	2:D:392:LEU:HB2	1.89	0.54
2:D:524:GLN:HE22	2:D:579:MET:HA	1.72	0.54
1:A:350:VAL:HA	1:A:400:PHE:HB2	1.90	0.54
1:A:421:TYR:O	1:A:457:ARG:NH2	2.41	0.54
1:B:371:LEU:H	1:B:374:PHE:HE1	1.56	0.54
1:C:484:ALA:HB3	1:C:488:CYS:HB3	1.89	0.54
2:E:232:GLU:HB3	2:E:581:VAL:HG11	1.90	0.54
1:A:715:PRO:HD3	1:B:894:LEU:HD21	1.89	0.53
1:B:763:LEU:HG	1:B:1008:VAL:HG21	1.90	0.53
1:C:433:VAL:HG23	1:C:512:VAL:CG1	2.34	0.53
1:C:105:ILE:HB	1:C:239:GLN:HB3	1.90	0.53
1:B:295:PRO:HB2	1:B:608:VAL:HG11	1.89	0.53
2:D:204:ARG:HH11	2:D:223:ILE:HD11	1.73	0.53
2:E:232:GLU:CG	2:E:581:VAL:HG11	2.39	0.53
2:E:581:VAL:HA	2:E:584:LEU:HD23	1.90	0.53
1:C:719:THR:HG23	1:C:1068:VAL:HG23	1.90	0.53
2:E:112:LYS:HE3	2:E:186:LEU:HD22	1.89	0.53
2:E:129:THR:O	2:E:129:THR:CG2	2.53	0.53
1:B:419:ALA:HB1	1:B:424:LYS:HD3	1.90	0.53
1:C:117:LEU:HG	1:C:130:VAL:HG22	1.90	0.53
2:D:503:LEU:HG	2:D:505:HIS:H	1.74	0.53
2:E:37:GLU:O	2:E:353:HIS:NE2	2.36	0.53
1:B:401:VAL:HG22	1:B:509:ARG:HG2	1.90	0.52
2:D:389:PRO:HD2	2:D:392:LEU:HD12	1.91	0.52
2:E:280:PRO:HA	2:E:283:VAL:HG23	1.91	0.52
1:A:439:ASN:HD21	1:A:507:PRO:HD2	1.74	0.52
1:A:763:LEU:HD22	1:A:1004:LEU:HD23	1.90	0.52
2:D:300:GLN:OE1	2:D:306:ARG:NH1	2.42	0.52
1:C:203:ILE:HD12	1:C:227:VAL:HB	1.91	0.52
2:E:115:GLN:HA	2:E:118:THR:HG22	1.91	0.52
1:A:736:VAL:HG22	1:A:858:LEU:HG	1.91	0.52
1:A:964:LYS:HA	1:C:570:ALA:HB2	1.92	0.52
1:B:979:ASP:OD1	1:B:983:ARG:NE	2.41	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:184:VAL:HA	2:E:187:LYS:HD3	1.91	0.52
1:C:352:ALA:HA	1:C:466:ARG:HD2	1.91	0.52
1:B:650:LEU:HD21	1:B:653:ALA:HB3	1.91	0.52
1:C:950:ASP:OD1	1:C:954:HIS:CE1	2.62	0.52
2:E:388:GLN:CD	2:E:392:LEU:HB3	2.34	0.52
1:A:105:ILE:HG13	1:A:241:LEU:HD11	1.91	0.52
1:B:1041:ASP:HB3	1:C:1030:SER:HB3	1.92	0.52
1:A:81:ASN:O	1:A:239:GLN:NE2	2.43	0.51
1:B:426:PRO:HG3	1:B:463:PRO:HB3	1.91	0.51
2:E:481:LYS:HE3	2:E:487:VAL:HB	1.91	0.51
1:A:908:GLY:O	1:A:1038:LYS:NZ	2.41	0.51
2:D:394:ASN:OD1	2:D:401:HIS:NE2	2.37	0.51
2:E:156:THR:HA	2:E:161:ARG:HH22	1.76	0.51
1:A:568:ASP:N	1:A:572:THR:O	2.38	0.51
1:A:873:TYR:HE2	1:C:699:LEU:HD22	1.75	0.51
2:E:245:ARG:NH2	2:E:258:PRO:O	2.44	0.51
1:A:1047:TYR:HB2	1:A:1067:TYR:HB3	1.91	0.51
2:D:490:PRO:HG2	2:D:491:LEU:HD12	1.93	0.51
2:D:560:LEU:HD12	2:D:561:GLY:N	2.26	0.51
1:C:804:GLN:NE2	1:C:935:GLN:OE1	2.43	0.51
1:C:567:ARG:HD2	1:C:571:ASP:HA	1.93	0.50
2:E:560:LEU:HD13	2:E:564:GLU:HB2	1.93	0.50
1:C:401:VAL:HG22	1:C:509:ARG:HG2	1.93	0.50
2:D:416:LYS:HA	2:D:419:LYS:HE2	1.92	0.50
1:B:196:ASN:HD21	1:B:232:GLY:HA2	1.75	0.50
1:B:494:SER:O	2:E:34:GLN:NE2	2.40	0.50
1:A:273:ARG:NH1	1:A:290:ASP:OD2	2.45	0.50
1:B:993:ILE:O	1:B:997:ILE:HG12	2.11	0.50
1:A:553:THR:O	1:A:586:ASP:N	2.44	0.50
1:C:116:SER:H	1:C:132:GLU:HA	1.77	0.50
1:A:118:LEU:HD12	1:A:135:PHE:HE1	1.77	0.49
1:C:92:PHE:HB3	1:C:192:PHE:HB2	1.93	0.49
1:B:1116:THR:CG2	1:B:1117:THR:N	2.62	0.49
1:A:467:ASP:N	1:A:467:ASP:OD1	2.46	0.49
1:B:318:PHE:HZ	1:B:615:VAL:HG21	1.77	0.49
2:D:20:LEU:CD1	2:D:22:GLU:HB3	2.42	0.49
1:C:327:VAL:HA	1:C:542:ASN:HB3	1.94	0.49
1:C:739:THR:HG22	1:C:753:LEU:HD13	1.93	0.49
2:D:48:TRP:HZ3	2:D:359:LYS:HD3	1.77	0.49
1:A:906:PHE:CD2	1:A:1049:LEU:CD2	2.84	0.48
2:E:417:HIS:O	2:E:421:ILE:HG12	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:598:ILE:HG23	1:C:664:ILE:HG21	1.95	0.48
2:E:608:THR:O	2:E:608:THR:CG2	2.56	0.48
2:D:222:LEU:HD23	2:D:222:LEU:H	1.78	0.48
1:A:95:ILE:HG12	1:A:189:LEU:HG	1.93	0.48
1:B:86:PHE:N	1:B:236:THR:O	2.45	0.48
1:C:334:ASN:OD1	1:C:335:LEU:N	2.45	0.48
1:A:326:ILE:HD11	1:A:534:VAL:HG12	1.95	0.48
1:A:763:LEU:HD23	1:A:1004:LEU:HG	1.92	0.48
1:B:581:THR:HG22	1:B:581:THR:O	2.12	0.48
2:E:457:GLU:OE2	2:E:460:ARG:NH2	2.47	0.48
2:D:35:GLU:HG3	2:D:39:LEU:HD23	1.96	0.48
2:D:395:GLY:H	2:D:401:HIS:HE2	1.62	0.48
1:B:733:LYS:HE3	1:B:771:ALA:HB1	1.96	0.48
2:E:221:GLN:HA	2:E:224:GLU:OE1	2.14	0.48
1:C:715:PRO:HA	1:C:1072:GLU:HA	1.96	0.48
1:A:739:THR:O	1:A:744:GLY:N	2.47	0.47
1:C:291:CYS:SG	1:C:301:CYS:CB	3.02	0.47
1:C:436:TRP:HE1	1:C:509:ARG:HH11	1.62	0.47
2:E:442:GLN:NE2	2:E:587:TYR:OH	2.47	0.47
1:A:866:THR:H	1:A:869:MET:HE2	1.78	0.47
1:A:142:ASP:OD1	1:A:157:PHE:N	2.47	0.47
2:D:348:ALA:HB2	2:D:375:GLU:OE1	2.14	0.47
2:E:529:LEU:HD22	2:E:550:ALA:HB1	1.95	0.47
1:C:126:VAL:HG23	1:C:174:PRO:HA	1.95	0.47
2:D:192:ARG:NH2	2:D:197:ASN:O	2.46	0.47
1:A:644:GLN:NE2	3:A:1308:NAG:HN2	2.12	0.47
2:D:365:THR:CG2	2:D:367:ASP:OD1	2.63	0.47
2:E:252:TYR:HB3	2:E:255:TYR:HB2	1.96	0.47
1:B:451:TYR:OH	1:B:509:ARG:NH2	2.48	0.47
1:C:966:LEU:HA	1:C:1000:ARG:HH22	1.79	0.47
2:E:132:VAL:HG13	2:E:132:VAL:O	2.14	0.47
1:A:37:TYR:HB3	1:A:223:LEU:HB2	1.96	0.47
1:A:616:ASN:OD1	1:A:644:GLN:NE2	2.48	0.47
1:B:457:ARG:NH1	1:B:459:SER:O	2.48	0.47
1:C:1052:PHE:HB2	1:C:1063:LEU:HB2	1.97	0.47
1:B:448:ASN:HD22	1:B:497:PHE:HB2	1.79	0.47
1:C:291:CYS:HB2	1:C:301:CYS:SG	2.53	0.47
2:E:33:ASN:OD1	2:E:34:GLN:N	2.48	0.47
1:A:985:ASP:N	1:C:383:SER:OG	2.48	0.47
2:E:363:LYS:HB2	2:E:368:ASN:ND2	2.30	0.47
2:E:381:TYR:HB2	2:E:404:VAL:HG11	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:324:THR:HG22	2:E:326:GLY:H	1.80	0.46
2:E:434:THR:HA	2:E:437:ASN:HD21	1.80	0.46
2:D:350:ASP:OD1	2:D:350:ASP:N	2.45	0.46
2:E:53:ASN:ND2	2:E:58:ASN:OD1	2.48	0.46
1:C:410:ILE:HG21	1:C:433:VAL:HG21	1.97	0.46
1:A:418:ILE:HA	1:A:422:ASN:HD22	1.81	0.46
1:B:328:ARG:HG2	1:B:531:THR:HA	1.97	0.46
1:B:441:LEU:HD23	1:B:441:LEU:H	1.81	0.46
2:D:381:TYR:HB2	2:D:404:VAL:HG11	1.97	0.46
2:E:580:ASP:OD1	2:E:580:ASP:N	2.48	0.46
1:A:457:ARG:HH12	1:A:461:LEU:HD21	1.80	0.46
1:B:733:LYS:O	1:B:861:LEU:N	2.38	0.46
1:C:139:PRO:HB3	1:C:241:LEU:HD23	1.98	0.46
1:C:887:THR:HG21	1:C:894:LEU:HB2	1.97	0.46
1:B:412:PRO:HB3	1:B:427:ASP:HA	1.98	0.46
2:D:192:ARG:HH12	2:D:197:ASN:HA	1.81	0.46
2:D:361:CYS:O	2:D:368:ASN:ND2	2.48	0.46
1:B:729:VAL:HG22	1:B:1059:GLY:HA2	1.98	0.45
2:D:156:THR:O	2:D:156:THR:CG2	2.55	0.45
1:B:645:THR:HG23	1:B:670:ILE:HD12	1.97	0.45
1:C:546:LEU:HD21	1:C:573:THR:HG21	1.98	0.45
1:B:106:PHE:HB3	1:B:235:ILE:HD13	1.97	0.45
1:B:343:ASN:HD21	3:B:1312:NAG:H62	1.80	0.45
1:B:442:ASP:OD2	1:B:509:ARG:NH2	2.49	0.45
1:B:30:ASN:HA	1:B:61:ASN:HA	1.98	0.45
1:B:99:ASN:HB2	1:B:102:ARG:HH11	1.82	0.45
1:C:234:ASN:HB2	3:C:1303:NAG:O5	2.16	0.45
1:C:296:LEU:HD13	1:C:608:VAL:HG21	1.99	0.45
2:E:450:LEU:HB2	2:E:451:PRO:HD3	1.98	0.45
1:B:418:ILE:HG23	1:B:422:ASN:HB2	1.98	0.45
2:D:414:THR:HG22	2:D:416:LYS:H	1.82	0.45
1:A:53:ASP:OD1	1:A:54:LEU:N	2.44	0.45
2:E:169:ARG:HH22	2:E:270:MET:HB3	1.82	0.45
1:A:99:ASN:N	1:A:99:ASN:OD1	2.50	0.45
1:A:271:GLN:HE21	1:A:273:ARG:HH21	1.64	0.45
1:B:310:LYS:HG3	1:B:600:PRO:HA	1.99	0.45
1:C:334:ASN:O	1:C:362:VAL:N	2.50	0.45
2:E:519:THR:HA	2:E:522:GLN:HE21	1.82	0.45
1:A:448:ASN:HB3	1:A:497:PHE:HB2	1.99	0.44
1:B:880:GLY:O	1:B:884:SER:OG	2.29	0.44
1:C:472:ILE:CG2	1:C:488:CYS:SG	3.05	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:450:LEU:HB2	2:D:451:PRO:HD3	1.99	0.44
2:D:481:LYS:HD3	2:D:487:VAL:HB	1.99	0.44
1:A:139:PRO:HB2	1:A:241:LEU:HG	1.97	0.44
1:A:454:ARG:NH2	1:A:469:SER:O	2.50	0.44
1:B:469:SER:HB2	1:B:471:GLU:OE1	2.17	0.44
1:B:805:ILE:HD12	1:B:878:LEU:HD11	1.99	0.44
1:C:729:VAL:HG11	1:C:781:VAL:HG11	1.99	0.44
1:C:909:ILE:HG13	1:C:911:VAL:HG23	1.98	0.44
2:D:142:LEU:HG	2:D:147:GLY:HA3	1.98	0.44
2:E:419:LYS:HD3	2:E:428:PHE:HB3	1.98	0.44
1:A:34:ARG:HG3	1:A:216:LEU:HD13	2.00	0.44
1:B:478:LYS:HD2	1:B:479:PRO:HD2	1.99	0.44
1:C:736:VAL:HG12	1:C:767:LEU:HD11	2.00	0.44
1:C:740:MET:HG3	1:C:745:ASP:HB2	2.00	0.44
2:D:120:LEU:HA	2:D:123:MET:HG2	2.00	0.44
1:B:1116:THR:HG23	1:B:1140:PRO:HD3	1.99	0.44
2:D:132:VAL:HA	2:D:171:GLU:OE2	2.17	0.44
2:D:589:GLN:HB3	2:D:590:PRO:HD3	1.98	0.44
2:E:123:MET:HE3	2:E:176:LEU:HD11	2.00	0.44
2:E:556:LYS:NZ	2:E:572:ASN:O	2.51	0.44
2:D:365:THR:HG23	2:D:367:ASP:OD1	2.17	0.44
1:B:708:SER:OG	1:B:710:ASN:OD1	2.35	0.44
1:C:1043:CYS:HB2	1:C:1048:HIS:HB2	2.00	0.44
1:A:566:GLY:HA2	1:B:43:PHE:HB3	2.00	0.44
1:A:1037:SER:OG	1:A:1043:CYS:SG	2.75	0.44
1:B:770:ILE:O	1:B:774:GLN:HG2	2.17	0.44
1:A:318:PHE:HZ	1:A:615:VAL:HG11	1.83	0.44
1:B:503:VAL:HB	2:E:324:THR:HG23	2.00	0.44
1:B:1116:THR:CG2	1:B:1140:PRO:HD3	2.47	0.44
1:C:64:TRP:HE1	1:C:264:ALA:HB1	1.83	0.44
1:C:966:LEU:HA	1:C:1000:ARG:NH2	2.33	0.44
1:A:95:ILE:HD11	1:A:216:LEU:HD23	1.98	0.44
1:A:374:PHE:CE1	1:A:436:TRP:HB3	2.53	0.44
1:B:945:LEU:H	1:B:945:LEU:HD23	1.83	0.44
1:C:338:PHE:HA	1:C:341:VAL:HG12	2.00	0.43
1:B:364:ASP:HA	1:B:527:PRO:HG3	1.99	0.43
1:B:802:PHE:HD1	1:B:805:ILE:HD11	1.82	0.43
1:C:1097:SER:HB2	1:C:1102:TRP:CE3	2.54	0.43
2:E:288:LYS:HZ1	2:E:433:GLU:HB2	1.83	0.43
2:E:581:VAL:O	2:E:581:VAL:CG1	2.64	0.43
1:C:770:ILE:O	1:C:774:GLN:HG2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1037:SER:OG	1:C:1043:CYS:SG	2.74	0.43
2:D:527:GLU:O	2:D:531:GLN:CG	2.64	0.43
2:E:183:TYR:CE2	2:E:187:LYS:HD2	2.53	0.43
1:A:560:LEU:HB2	1:A:563:GLN:HG2	2.00	0.43
1:B:376:THR:HB	1:B:435:ALA:HB3	2.01	0.43
1:C:273:ARG:HE	1:C:292:ALA:HB3	1.84	0.43
1:C:722:VAL:HG22	1:C:1065:VAL:HG22	2.00	0.43
2:D:315:PHE:O	2:D:318:VAL:HG22	2.19	0.43
2:E:91:PRO:HA	2:E:94:LYS:HB2	2.00	0.43
2:E:144:LEU:O	2:E:148:LEU:HB2	2.18	0.43
1:B:778:THR:HG22	1:B:865:LEU:HD12	2.01	0.43
1:C:336:CYS:HB2	1:C:338:PHE:HD1	1.84	0.43
2:E:344:CYS:SG	2:E:361:CYS:CB	3.05	0.43
1:A:106:PHE:O	1:A:116:SER:OG	2.29	0.43
1:C:84:LEU:HD22	1:C:267:VAL:HG11	1.99	0.42
1:A:770:ILE:O	1:A:774:GLN:HG2	2.19	0.42
1:B:371:LEU:HD23	1:B:436:TRP:HB2	2.01	0.42
1:C:294:ASP:OD1	1:C:294:ASP:N	2.51	0.42
1:C:353:TRP:O	1:C:466:ARG:NH2	2.52	0.42
1:A:278:LYS:HB2	1:A:306:PHE:CZ	2.53	0.42
1:C:731:MET:HE1	1:C:1014:ARG:HB3	2.01	0.42
2:E:538:SER:HB2	2:E:540:HIS:CD2	2.54	0.42
1:A:909:ILE:HG13	1:A:911:VAL:HG23	2.00	0.42
1:C:501:TYR:HB3	1:C:505:HIS:HB2	2.01	0.42
1:B:296:LEU:HB2	1:B:608:VAL:HG22	2.02	0.42
1:C:645:THR:HG23	1:C:648:GLY:H	1.85	0.42
2:E:233:ILE:HD13	2:E:450:LEU:HD13	2.00	0.42
1:A:644:GLN:HE22	3:A:1308:NAG:HN2	1.67	0.42
1:B:1099:GLY:C	1:B:1100:THR:HG1	2.22	0.42
2:D:582:LYS:HB3	2:D:583:PRO:HD3	2.02	0.42
1:A:471:GLU:OE1	1:A:471:GLU:N	2.47	0.42
1:A:1104:VAL:HG23	1:A:1115:ILE:HG12	2.01	0.42
2:D:116:LEU:HD12	2:D:186:LEU:HB3	2.02	0.42
1:A:733:LYS:HD2	1:A:771:ALA:HB1	2.02	0.42
1:A:817:PHE:HB3	1:A:935:GLN:HE22	1.85	0.42
2:D:203:TRP:CZ3	2:D:460:ARG:HG2	2.55	0.42
1:A:91:TYR:N	1:A:268:GLY:O	2.44	0.42
1:A:986:PRO:O	1:A:990:GLU:HG2	2.19	0.42
1:B:96:GLU:HG2	1:B:263:ALA:HB1	2.01	0.42
2:E:177:ARG:HB2	2:E:498:CYS:HB2	2.02	0.42
2:E:363:LYS:HB2	2:E:368:ASN:HD22	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:365:THR:HG23	2:D:368:ASN:H	1.85	0.41
2:D:376:MET:HE2	2:D:376:MET:HA	2.02	0.41
1:A:294:ASP:OD1	1:A:294:ASP:N	2.52	0.41
2:E:232:GLU:CB	2:E:581:VAL:HG11	2.50	0.41
2:E:589:GLN:HB2	2:E:590:PRO:HD3	2.03	0.41
1:A:656:VAL:HG21	1:A:693:ILE:HD11	2.01	0.41
1:A:858:LEU:HD21	1:A:962:LEU:HD23	2.02	0.41
1:B:81:ASN:O	1:B:239:GLN:NE2	2.48	0.41
1:C:612:TYR:HB3	1:C:615:VAL:HB	2.02	0.41
2:E:453:THR:HG21	2:E:516:TYR:HB2	2.02	0.41
2:E:459:TRP:HE1	2:E:473:TRP:HE1	1.68	0.41
2:E:523:PHE:HD1	2:E:584:LEU:HD13	1.85	0.41
1:A:131:CYS:HB3	1:A:166:CYS:HB2	2.02	0.41
2:E:574:VAL:HG13	2:E:576:ALA:H	1.83	0.41
1:B:1087:ALA:HB2	1:B:1126:CYS:HA	2.02	0.41
1:B:886:TRP:HE1	1:B:905:ARG:CZ	2.33	0.41
2:D:261:CYS:SG	2:D:488:VAL:HB	2.61	0.41
2:E:457:GLU:OE2	2:E:512:PHE:HB3	2.21	0.41
1:A:500:THR:OG1	2:D:355:ASP:OD1	2.39	0.41
1:B:886:TRP:CD1	1:B:1035:GLY:HA2	2.55	0.41
1:C:478:LYS:HG2	1:C:479:PRO:HD2	2.02	0.41
2:D:203:TRP:HZ3	2:D:460:ARG:HG2	1.86	0.41
2:E:246:ARG:HH11	2:E:603:PHE:H	1.68	0.41
2:E:459:TRP:HE1	2:E:473:TRP:NE1	2.19	0.41
1:A:253:ASP:OD1	1:A:254:SER:N	2.54	0.41
1:A:763:LEU:HD21	1:A:1004:LEU:HD23	1.95	0.41
1:B:731:MET:HG3	1:B:1018:ILE:HG21	2.02	0.41
1:B:986:PRO:O	1:B:990:GLU:HG2	2.21	0.41
1:B:1024:LEU:HD21	1:B:1028:LYS:HE3	2.03	0.41
2:D:529:LEU:HD12	2:D:530:CYS:N	2.36	0.41
1:B:138:ASP:OD2	1:B:253:ASP:O	2.38	0.41
1:B:278:LYS:HB3	1:B:287:ASP:H	1.85	0.41
1:B:970:PHE:HD1	1:B:996:LEU:HA	1.86	0.41
1:B:1083:HIS:CD2	1:B:1136:THR:HA	2.56	0.41
1:C:444:LYS:HD2	1:C:448:ASN:H	1.85	0.41
1:C:1049:LEU:HD23	1:C:1050:MET:HG3	2.02	0.41
2:D:145:GLU:HB2	2:D:146:PRO:HD3	2.02	0.41
2:E:488:VAL:HG21	2:E:611:SER:HA	2.02	0.41
1:A:1088:HIS:HB3	1:A:1120:THR:HG21	2.03	0.41
2:E:229:THR:HA	2:E:581:VAL:HG21	2.03	0.41
2:E:273:ARG:HG3	2:E:274:PHE:CD2	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:302:TRP:CG	2:E:306:ARG:HH21	2.39	0.41
1:A:191:GLU:HG3	1:A:223:LEU:HD11	2.03	0.40
1:A:502:GLY:O	1:A:506:GLN:NE2	2.54	0.40
2:D:494:ASP:OD1	2:D:496:THR:OG1	2.26	0.40
2:E:553:LYS:HA	2:E:556:LYS:HE3	2.03	0.40
1:A:383:SER:OG	1:A:386:LYS:NZ	2.36	0.40
1:B:435:ALA:HB2	1:B:510:VAL:HG22	2.03	0.40
1:C:498:ARG:HD2	1:C:501:TYR:CZ	2.56	0.40
1:C:934:ILE:HD13	1:C:1063:LEU:HD22	2.03	0.40
1:A:729:VAL:HG22	1:A:1059:GLY:HA2	2.02	0.40
1:C:490:PHE:CE2	1:C:492:LEU:HB2	2.56	0.40
2:D:20:LEU:HD12	2:D:20:LEU:C	2.46	0.40
2:D:245:ARG:HG2	2:D:262:LEU:HD21	2.02	0.40
1:A:94:SER:N	1:A:190:ARG:O	2.54	0.40
1:A:314:GLN:HA	1:A:596:SER:HA	2.04	0.40
1:B:722:VAL:HG22	1:B:930:ALA:HB1	2.02	0.40
1:B:789:TYR:H	1:B:876:ALA:HB1	1.87	0.40
1:B:1080:ALA:HB3	1:B:1129:VAL:HG11	2.03	0.40
1:C:557:LYS:HE2	1:C:559:PHE:HE1	1.87	0.40
1:A:58:PHE:HB2	1:A:293:LEU:HD22	2.03	0.40
1:A:443:SER:HB3	1:A:499:PRO:HD3	2.03	0.40
1:A:973:ILE:HD11	1:A:984:LEU:HD11	2.03	0.40
1:C:991:VAL:HG13	1:C:992:GLN:N	2.36	0.40
2:D:455:MET:HE2	2:D:455:MET:HB3	1.93	0.40
2:E:475:LYS:HE3	2:E:475:LYS:HB3	1.92	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	1008/1205 (84%)	984 (98%)	24 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	1008/1205 (84%)	986 (98%)	22 (2%)	0	100	100
1	C	1006/1205 (84%)	984 (98%)	22 (2%)	0	100	100
2	D	587/805 (73%)	581 (99%)	6 (1%)	0	100	100
2	E	587/805 (73%)	575 (98%)	12 (2%)	0	100	100
All	All	4196/5225 (80%)	4110 (98%)	86 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	824/1053 (78%)	824 (100%)	0	100	100
1	B	824/1053 (78%)	824 (100%)	0	100	100
1	C	802/1053 (76%)	802 (100%)	0	100	100
2	D	515/707 (73%)	515 (100%)	0	100	100
2	E	515/707 (73%)	515 (100%)	0	100	100
All	All	3480/4573 (76%)	3480 (100%)	0	100	100

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

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (105) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	52	GLN
1	A	115	GLN
1	A	245	HIS
1	A	271	GLN
1	A	314	GLN
1	A	422	ASN
1	A	437	ASN
1	A	474	GLN

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Mol	Chain	Res	Type
1	A	481	ASN
1	A	536	ASN
1	A	544	ASN
1	A	613	GLN
1	A	644	GLN
1	A	703	ASN
1	A	774	GLN
1	A	872	GLN
1	A	901	GLN
1	A	907	ASN
1	A	920	GLN
1	A	926	GLN
1	A	955	ASN
1	A	965	GLN
1	A	1036	GLN
1	A	1048	HIS
1	A	1071	GLN
1	A	1083	HIS
1	A	1113	GLN
1	B	115	GLN
1	B	188	ASN
1	B	196	ASN
1	B	207	HIS
1	B	314	GLN
1	B	343	ASN
1	B	394	ASN
1	B	409	GLN
1	B	437	ASN
1	B	448	ASN
1	B	474	GLN
1	B	536	ASN
1	B	540	ASN
1	B	544	ASN
1	B	607	GLN
1	B	644	GLN
1	B	690	GLN
1	B	755	GLN
1	B	762	GLN
1	B	872	GLN
1	B	901	GLN
1	B	907	ASN
1	B	949	GLN

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Mol	Chain	Res	Type
1	B	978	ASN
1	B	1023	ASN
1	B	1083	HIS
1	B	1088	HIS
1	B	1135	ASN
1	C	30	ASN
1	C	239	GLN
1	C	314	GLN
1	C	317	ASN
1	C	703	ASN
1	C	710	ASN
1	C	777	ASN
1	C	779	GLN
1	C	804	GLN
1	C	895	GLN
1	C	913	GLN
1	C	920	GLN
1	C	935	GLN
1	C	965	GLN
1	C	1083	HIS
1	C	1088	HIS
1	C	1113	GLN
1	C	1135	ASN
2	D	30	ASN
2	D	42	GLN
2	D	89	GLN
2	D	98	GLN
2	D	101	GLN
2	D	115	GLN
2	D	159	ASN
2	D	241	HIS
2	D	277	ASN
2	D	397	ASN
2	D	417	HIS
2	D	437	ASN
2	D	524	GLN
2	E	24	ASN
2	E	51	ASN
2	E	98	GLN
2	E	101	GLN
2	E	102	GLN
2	E	121	ASN

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Mol	Chain	Res	Type
2	E	221	GLN
2	E	277	ASN
2	E	287	GLN
2	E	290	ASN
2	E	309	GLN
2	E	368	ASN
2	E	374	HIS
2	E	437	ASN
2	E	442	GLN
2	E	508	ASN
2	E	531	GLN
2	E	572	ASN
2	E	589	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 41 ligands modelled in this entry, 2 are monoatomic - leaving 39 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	NAG	C	1308	1	14,14,15	0.21	0	17,19,21	0.43	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAG	B	1306	1	14,14,15	0.23	0	17,19,21	0.45	0
3	NAG	A	1312	1	14,14,15	0.40	0	17,19,21	0.41	0
3	NAG	C	1303	1	14,14,15	0.38	0	17,19,21	0.45	0
3	NAG	B	1309	1	14,14,15	0.24	0	17,19,21	0.44	0
3	NAG	A	1302	1	14,14,15	0.23	0	17,19,21	0.45	0
3	NAG	E	903	2	14,14,15	0.23	0	17,19,21	0.43	0
3	NAG	C	1305	1	14,14,15	0.31	0	17,19,21	1.37	1 (5%)
3	NAG	A	1305	1	14,14,15	0.23	0	17,19,21	0.45	0
3	NAG	C	1306	1	14,14,15	0.24	0	17,19,21	0.45	0
3	NAG	A	1307	1	14,14,15	0.25	0	17,19,21	0.43	0
3	NAG	B	1305	1	14,14,15	0.24	0	17,19,21	0.44	0
3	NAG	D	902	2	14,14,15	0.26	0	17,19,21	0.47	0
3	NAG	C	1307	1	14,14,15	0.50	0	17,19,21	1.34	2 (11%)
3	NAG	A	1309	1	14,14,15	0.24	0	17,19,21	0.44	0
3	NAG	B	1301	1	14,14,15	0.24	0	17,19,21	0.44	0
3	NAG	B	1303	1	14,14,15	0.26	0	17,19,21	0.55	0
3	NAG	E	902	2	14,14,15	0.41	0	17,19,21	1.25	1 (5%)
3	NAG	B	1310	1	14,14,15	0.23	0	17,19,21	0.45	0
3	NAG	C	1304	1	14,14,15	0.22	0	17,19,21	0.44	0
3	NAG	A	1311	1	14,14,15	0.35	0	17,19,21	0.46	0
3	NAG	B	1307	1	14,14,15	0.52	0	17,19,21	1.34	2 (11%)
3	NAG	A	1303	1	14,14,15	0.25	0	17,19,21	0.44	0
3	NAG	C	1301	1	14,14,15	0.23	0	17,19,21	0.43	0
3	NAG	A	1301	1	14,14,15	0.23	0	17,19,21	0.46	0
3	NAG	A	1308	1	14,14,15	0.22	0	17,19,21	0.46	0
3	NAG	C	1302	1	14,14,15	0.25	0	17,19,21	0.44	0
3	NAG	B	1304	1	14,14,15	0.37	0	17,19,21	0.42	0
3	NAG	D	903	2	14,14,15	0.89	1 (7%)	17,19,21	1.27	1 (5%)
3	NAG	A	1306	1	14,14,15	0.35	0	17,19,21	0.40	0
3	NAG	C	1310	1	14,14,15	0.24	0	17,19,21	0.44	0
3	NAG	B	1311	1	14,14,15	0.23	0	17,19,21	0.43	0
3	NAG	A	1310	1	14,14,15	0.22	0	17,19,21	0.45	0
3	NAG	C	1311	1	14,14,15	0.23	0	17,19,21	0.46	0
3	NAG	B	1312	1	14,14,15	0.27	0	17,19,21	0.56	0
3	NAG	C	1309	1	14,14,15	0.33	0	17,19,21	0.41	0
3	NAG	B	1302	1	14,14,15	0.24	0	17,19,21	0.44	0
3	NAG	B	1308	1	14,14,15	0.23	0	17,19,21	0.46	0
3	NAG	A	1304	1	14,14,15	0.35	0	17,19,21	0.39	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.

'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	C	1308	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1306	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1312	1	-	4/6/23/26	0/1/1/1
3	NAG	C	1303	1	-	3/6/23/26	0/1/1/1
3	NAG	B	1309	1	-	0/6/23/26	0/1/1/1
3	NAG	A	1302	1	-	0/6/23/26	0/1/1/1
3	NAG	E	903	2	-	0/6/23/26	0/1/1/1
3	NAG	C	1305	1	-	0/6/23/26	0/1/1/1
3	NAG	A	1305	1	-	2/6/23/26	0/1/1/1
3	NAG	C	1306	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1307	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1305	1	-	2/6/23/26	0/1/1/1
3	NAG	D	902	2	-	2/6/23/26	0/1/1/1
3	NAG	C	1307	1	-	6/6/23/26	0/1/1/1
3	NAG	A	1309	1	-	1/6/23/26	0/1/1/1
3	NAG	B	1301	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1303	1	-	2/6/23/26	0/1/1/1
3	NAG	E	902	2	-	2/6/23/26	0/1/1/1
3	NAG	B	1310	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1304	1	-	0/6/23/26	0/1/1/1
3	NAG	A	1311	1	-	4/6/23/26	0/1/1/1
3	NAG	B	1307	1	-	6/6/23/26	0/1/1/1
3	NAG	A	1303	1	-	3/6/23/26	0/1/1/1
3	NAG	C	1301	1	-	0/6/23/26	0/1/1/1
3	NAG	A	1301	1	-	4/6/23/26	0/1/1/1
3	NAG	A	1308	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1302	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1304	1	-	4/6/23/26	0/1/1/1
3	NAG	D	903	2	-	4/6/23/26	0/1/1/1
3	NAG	A	1306	1	-	2/6/23/26	0/1/1/1
3	NAG	C	1310	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1311	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1310	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1311	1	-	1/6/23/26	0/1/1/1
3	NAG	B	1312	1	-	3/6/23/26	0/1/1/1
3	NAG	C	1309	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	B	1302	1	-	0/6/23/26	0/1/1/1
3	NAG	B	1308	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1304	1	-	4/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	903	NAG	O5-C1	3.18	1.49	1.43

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	1305	NAG	C1-O5-C5	4.99	118.88	112.19
3	D	903	NAG	C1-O5-C5	4.98	118.86	112.19
3	E	902	NAG	C1-O5-C5	4.74	118.54	112.19
3	B	1307	NAG	C2-N2-C7	4.57	129.02	122.90
3	C	1307	NAG	C2-N2-C7	4.48	128.91	122.90
3	C	1307	NAG	C1-C2-N2	2.15	113.81	110.43
3	B	1307	NAG	C1-C2-N2	2.07	113.69	110.43

There are no chirality outliers.

All (79) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1306	NAG	C4-C5-C6-O6
3	A	1306	NAG	O5-C5-C6-O6
3	A	1301	NAG	O5-C5-C6-O6
3	B	1311	NAG	C4-C5-C6-O6
3	A	1312	NAG	O5-C5-C6-O6
3	C	1308	NAG	O5-C5-C6-O6
3	C	1306	NAG	O5-C5-C6-O6
3	C	1307	NAG	O5-C5-C6-O6
3	B	1305	NAG	O5-C5-C6-O6
3	D	903	NAG	C4-C5-C6-O6
3	E	902	NAG	O5-C5-C6-O6
3	B	1311	NAG	O5-C5-C6-O6
3	C	1306	NAG	C4-C5-C6-O6
3	B	1304	NAG	C4-C5-C6-O6
3	A	1301	NAG	C4-C5-C6-O6
3	B	1305	NAG	C4-C5-C6-O6
3	D	903	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
3	C	1307	NAG	C4-C5-C6-O6
3	A	1305	NAG	O5-C5-C6-O6
3	A	1301	NAG	C8-C7-N2-C2
3	A	1301	NAG	O7-C7-N2-C2
3	A	1303	NAG	C8-C7-N2-C2
3	A	1303	NAG	O7-C7-N2-C2
3	A	1304	NAG	C8-C7-N2-C2
3	A	1304	NAG	O7-C7-N2-C2
3	A	1311	NAG	C8-C7-N2-C2
3	A	1311	NAG	O7-C7-N2-C2
3	A	1312	NAG	C8-C7-N2-C2
3	A	1312	NAG	O7-C7-N2-C2
3	B	1304	NAG	C8-C7-N2-C2
3	B	1304	NAG	O7-C7-N2-C2
3	B	1307	NAG	C8-C7-N2-C2
3	B	1307	NAG	O7-C7-N2-C2
3	B	1308	NAG	C8-C7-N2-C2
3	B	1308	NAG	O7-C7-N2-C2
3	C	1302	NAG	C8-C7-N2-C2
3	C	1302	NAG	O7-C7-N2-C2
3	C	1303	NAG	C8-C7-N2-C2
3	C	1303	NAG	O7-C7-N2-C2
3	C	1307	NAG	C8-C7-N2-C2
3	C	1307	NAG	O7-C7-N2-C2
3	D	903	NAG	C8-C7-N2-C2
3	D	903	NAG	O7-C7-N2-C2
3	B	1304	NAG	O5-C5-C6-O6
3	A	1304	NAG	C4-C5-C6-O6
3	A	1311	NAG	O5-C5-C6-O6
3	A	1312	NAG	C4-C5-C6-O6
3	A	1305	NAG	C4-C5-C6-O6
3	C	1308	NAG	C4-C5-C6-O6
3	A	1311	NAG	C4-C5-C6-O6
3	E	902	NAG	C4-C5-C6-O6
3	A	1304	NAG	O5-C5-C6-O6
3	C	1309	NAG	O5-C5-C6-O6
3	C	1309	NAG	C4-C5-C6-O6
3	B	1306	NAG	C4-C5-C6-O6
3	B	1312	NAG	O5-C5-C6-O6
3	B	1306	NAG	O5-C5-C6-O6
3	C	1303	NAG	O5-C5-C6-O6
3	A	1307	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
3	B	1307	NAG	C4-C5-C6-O6
3	B	1303	NAG	C1-C2-N2-C7
3	B	1312	NAG	C1-C2-N2-C7
3	B	1307	NAG	O5-C5-C6-O6
3	A	1307	NAG	O5-C5-C6-O6
3	D	902	NAG	C4-C5-C6-O6
3	A	1303	NAG	C4-C5-C6-O6
3	B	1303	NAG	C3-C2-N2-C7
3	B	1307	NAG	C3-C2-N2-C7
3	B	1312	NAG	C3-C2-N2-C7
3	C	1310	NAG	C4-C5-C6-O6
3	D	902	NAG	O5-C5-C6-O6
3	C	1310	NAG	O5-C5-C6-O6
3	B	1307	NAG	C1-C2-N2-C7
3	C	1307	NAG	C1-C2-N2-C7
3	C	1307	NAG	C3-C2-N2-C7
3	C	1311	NAG	C4-C5-C6-O6
3	B	1301	NAG	C4-C5-C6-O6
3	B	1301	NAG	O5-C5-C6-O6
3	A	1309	NAG	C4-C5-C6-O6

There are no ring outliers.

5 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	1303	NAG	2	0
3	C	1307	NAG	2	0
3	B	1307	NAG	1	0
3	A	1308	NAG	2	0
3	B	1312	NAG	1	0

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-33336. These allow visual inspection of the internal detail of the map and identification of artifacts.

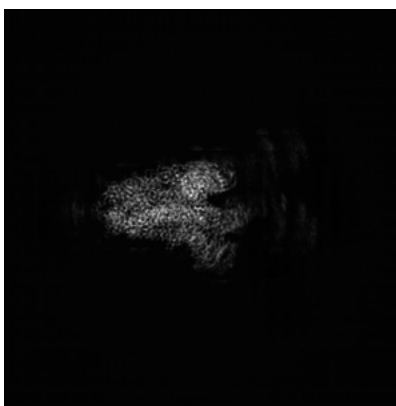
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

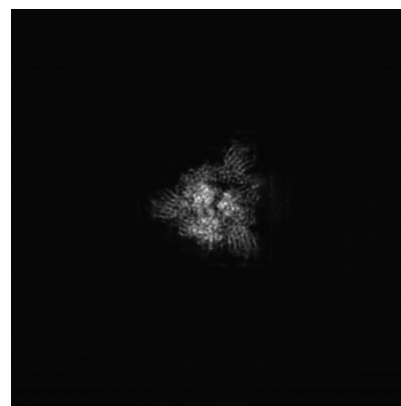
6.1.1 Primary map



X

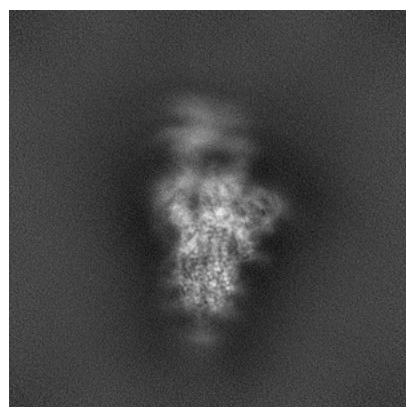


Y

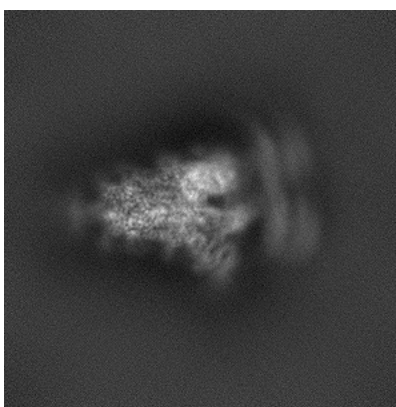


Z

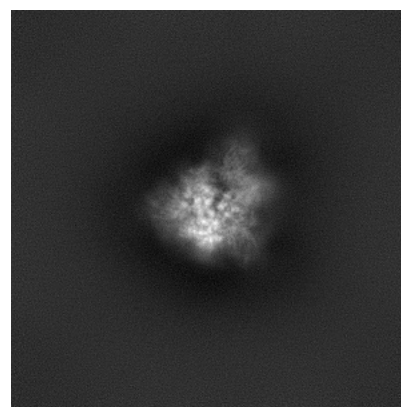
6.1.2 Raw map



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: 240



Y Index: 240

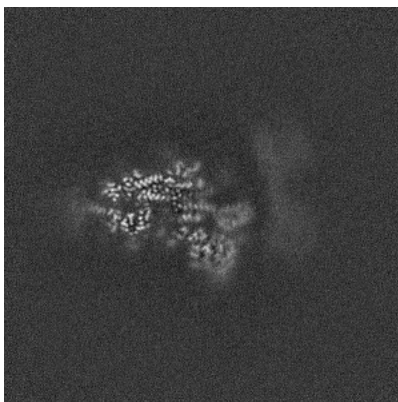


Z Index: 240

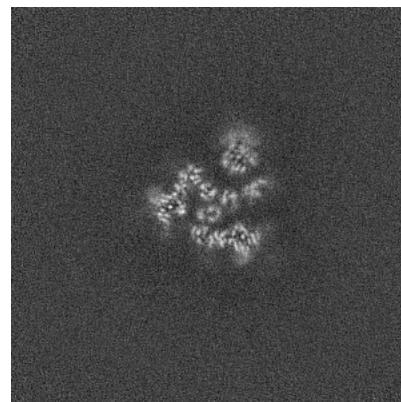
6.2.2 Raw map



X Index: 240



Y Index: 240



Z Index: 240

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: 234

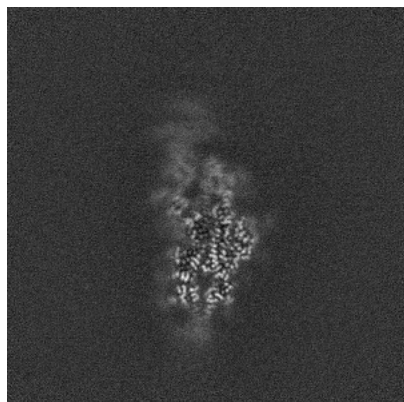


Y Index: 245

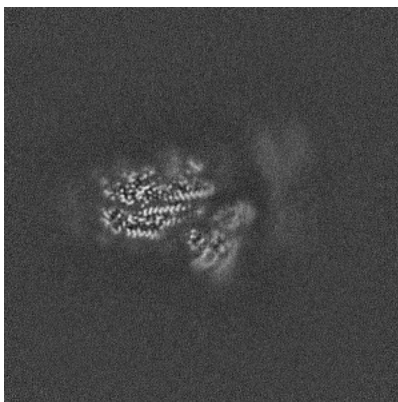


Z Index: 228

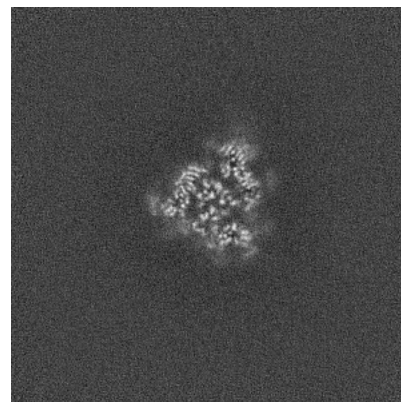
6.3.2 Raw map



X Index: 234



Y Index: 247

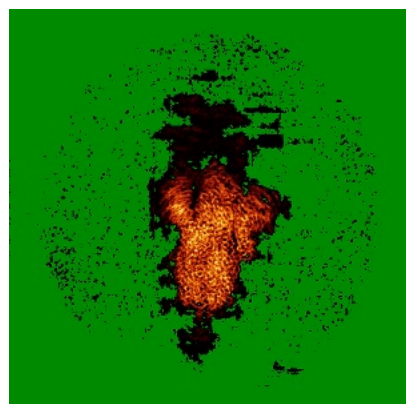


Z Index: 228

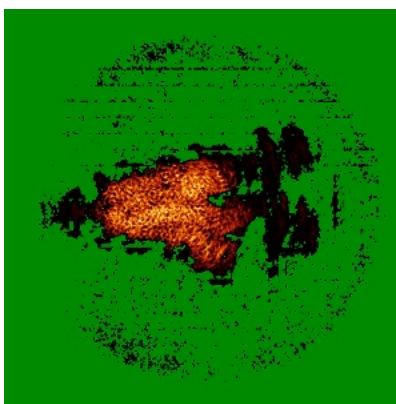
The images above show the largest variance slices of the map in three orthogonal directions.

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

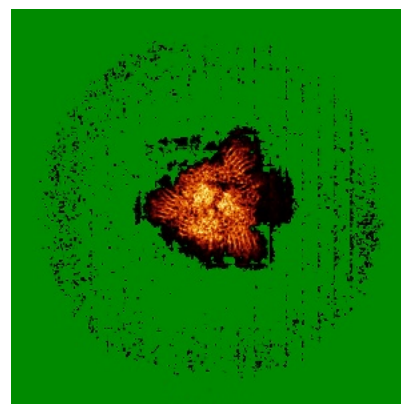
6.4.1 Primary map



X

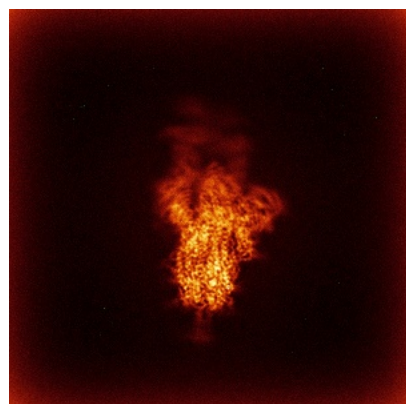


Y

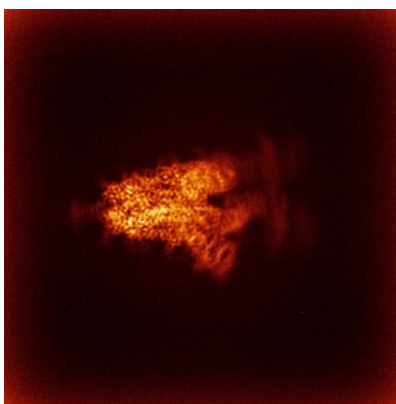


Z

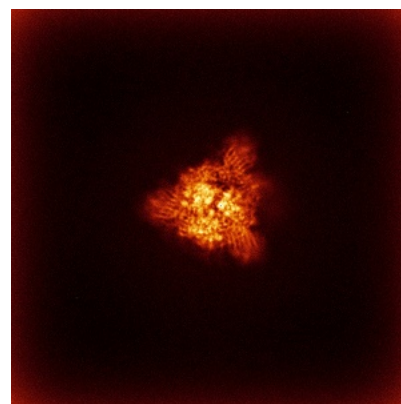
6.4.2 Raw map



X



Y

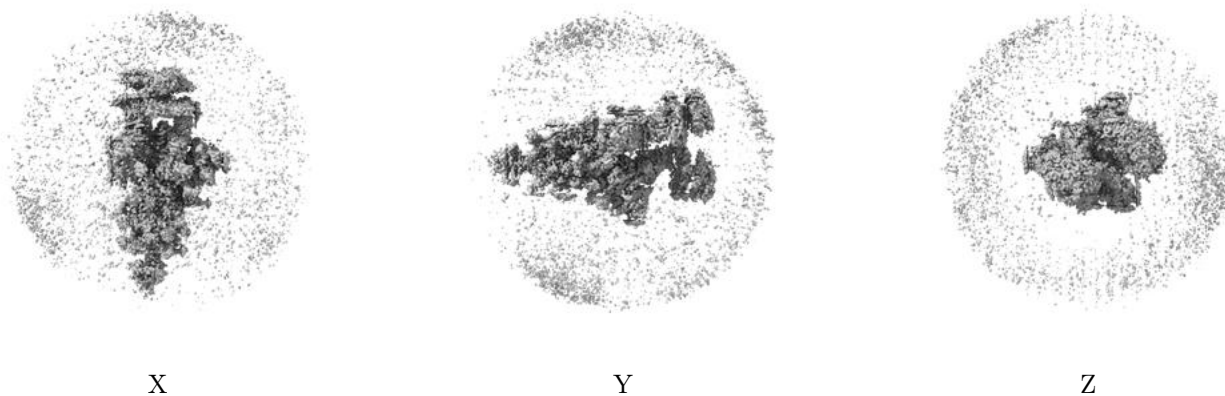


Z

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.

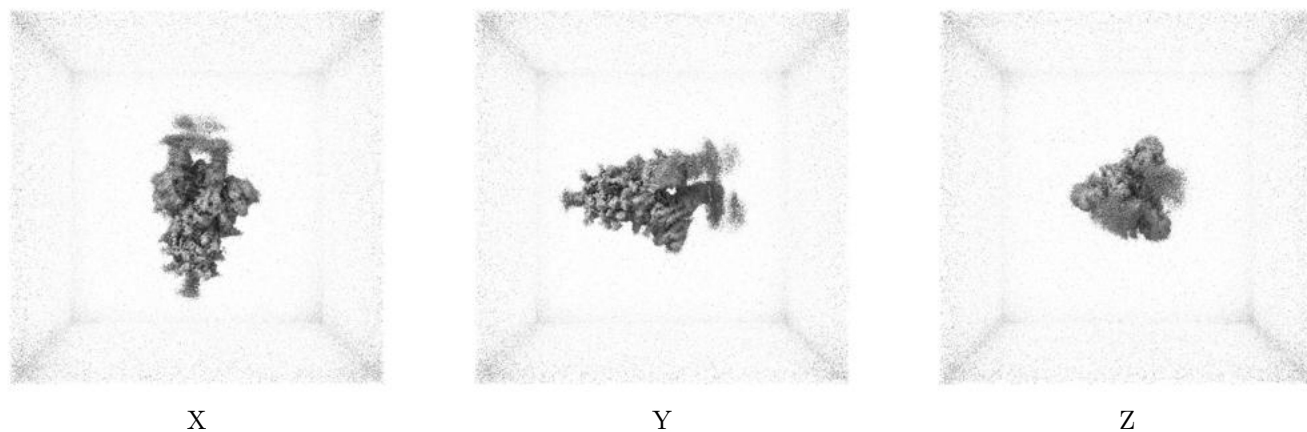
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.005. 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.

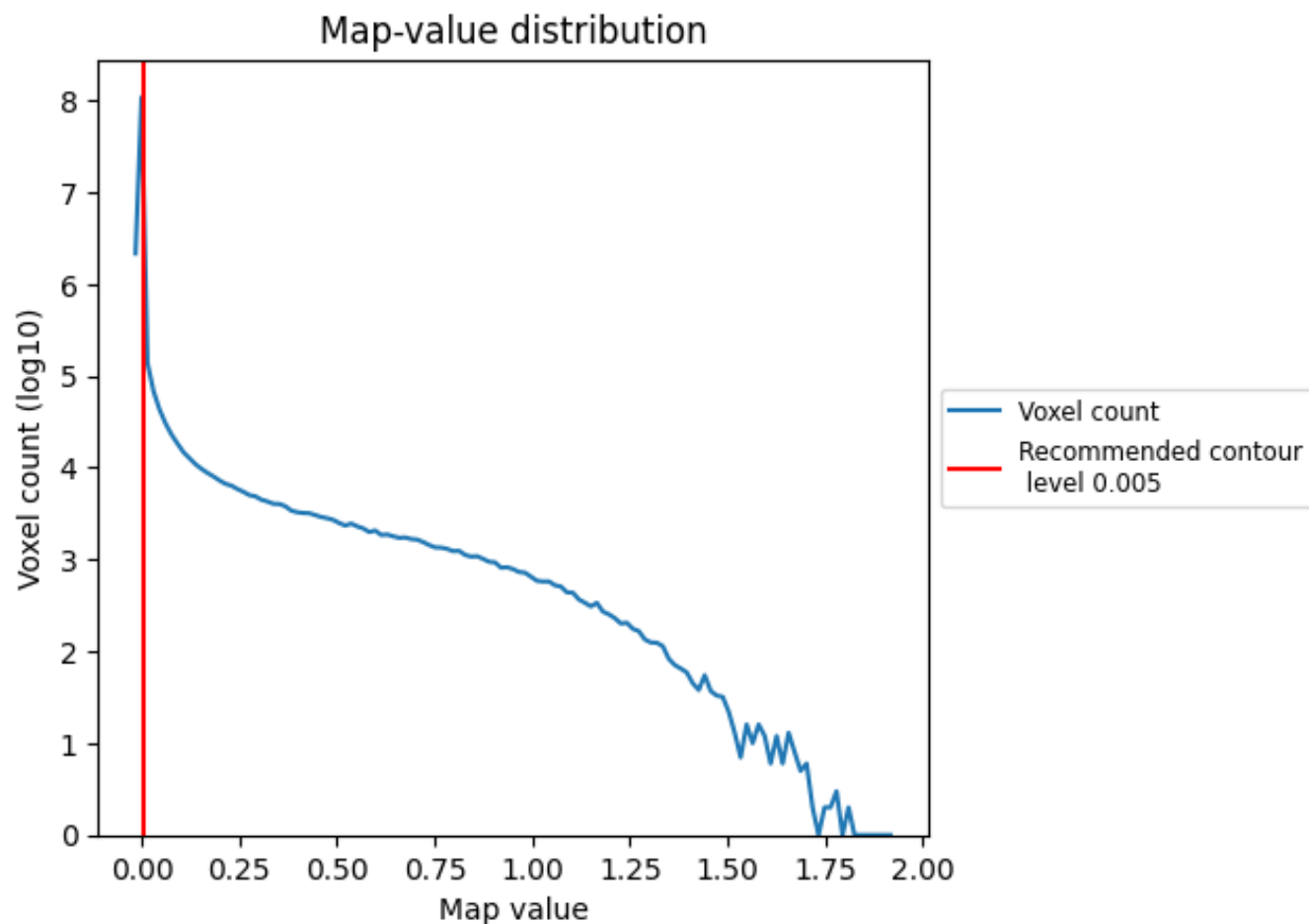
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

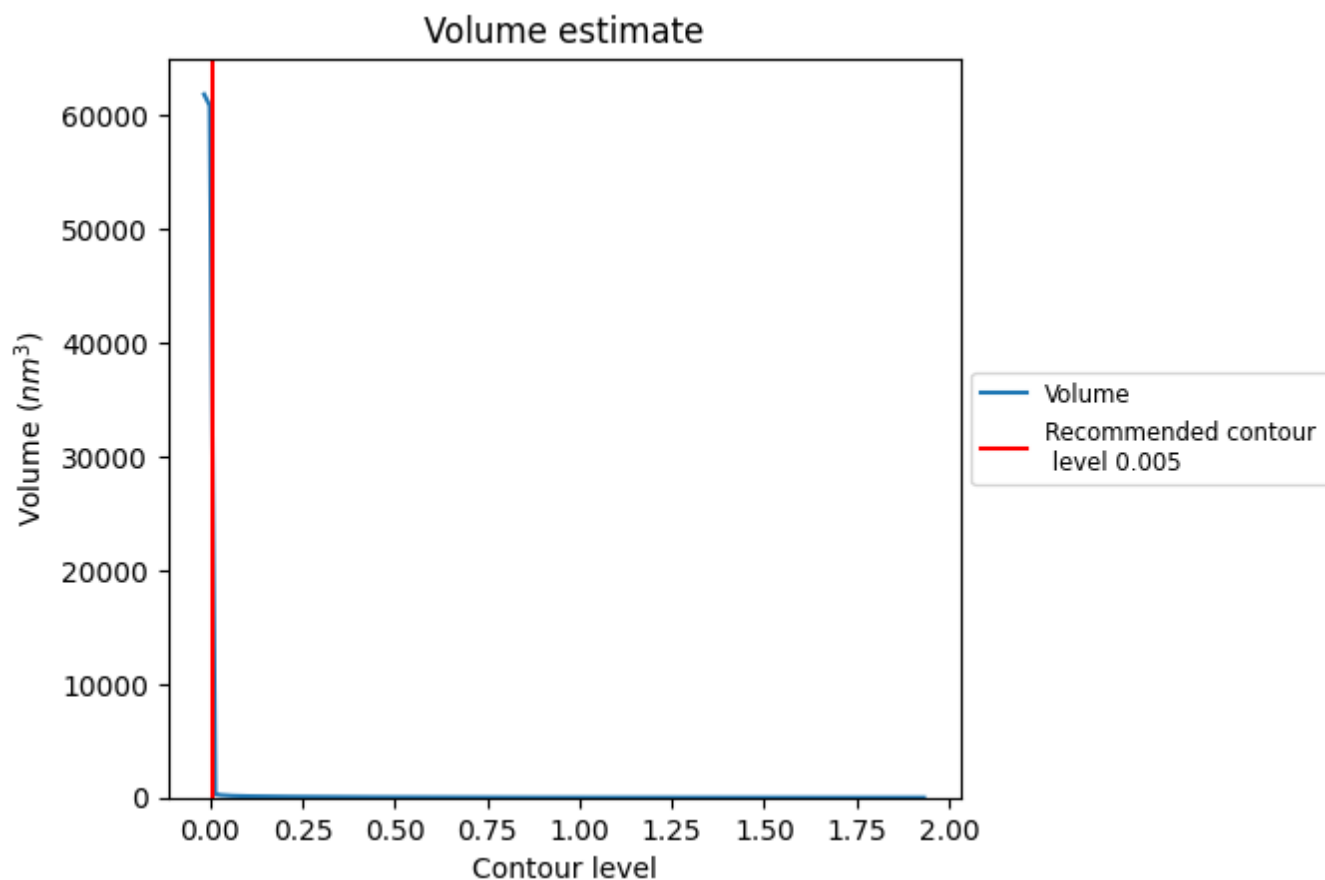
This section contains the results of statistical analysis of the map.

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.

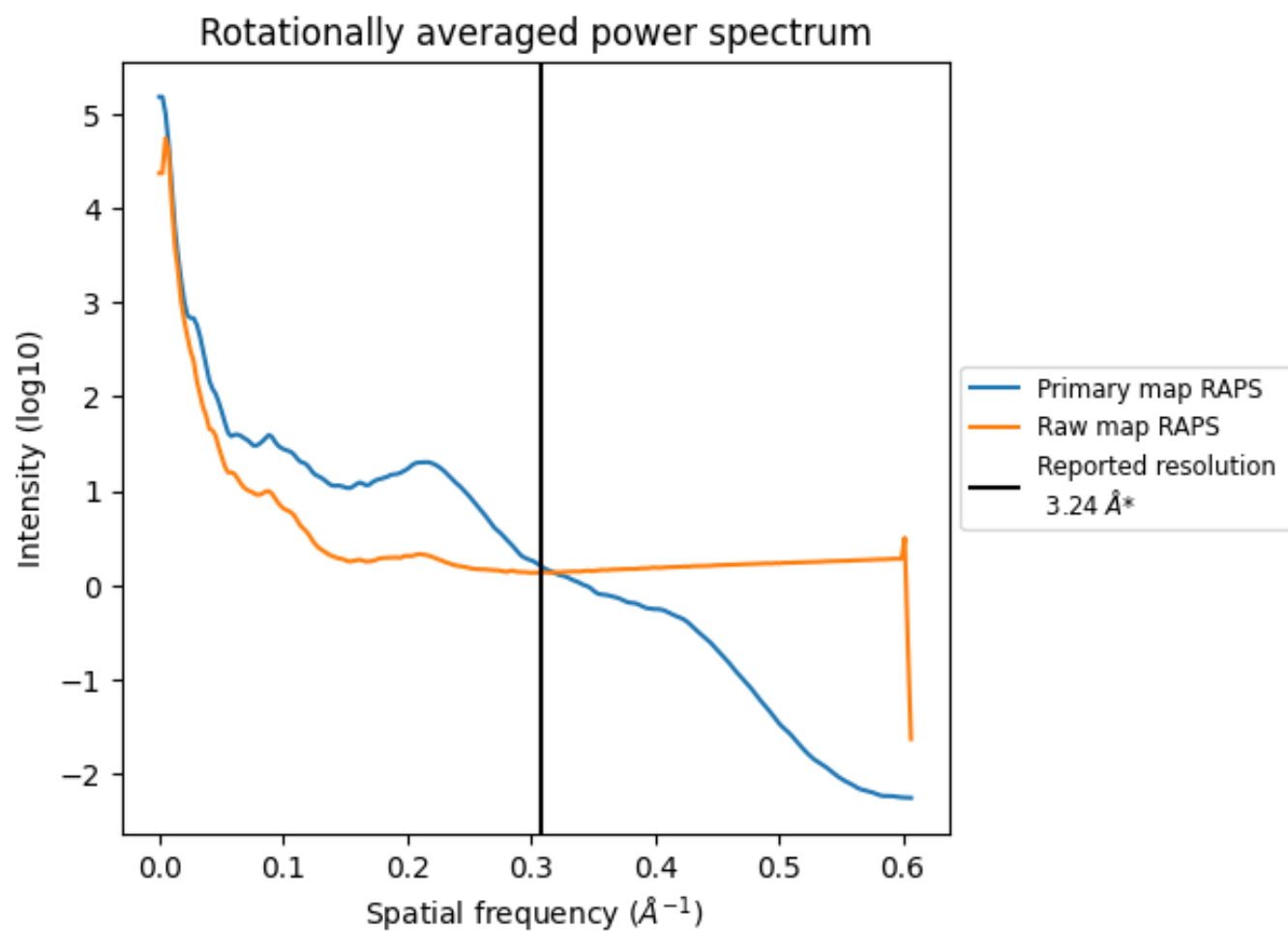
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 37739 nm^3 ; this corresponds to an approximate mass of 34090 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 ⓘ

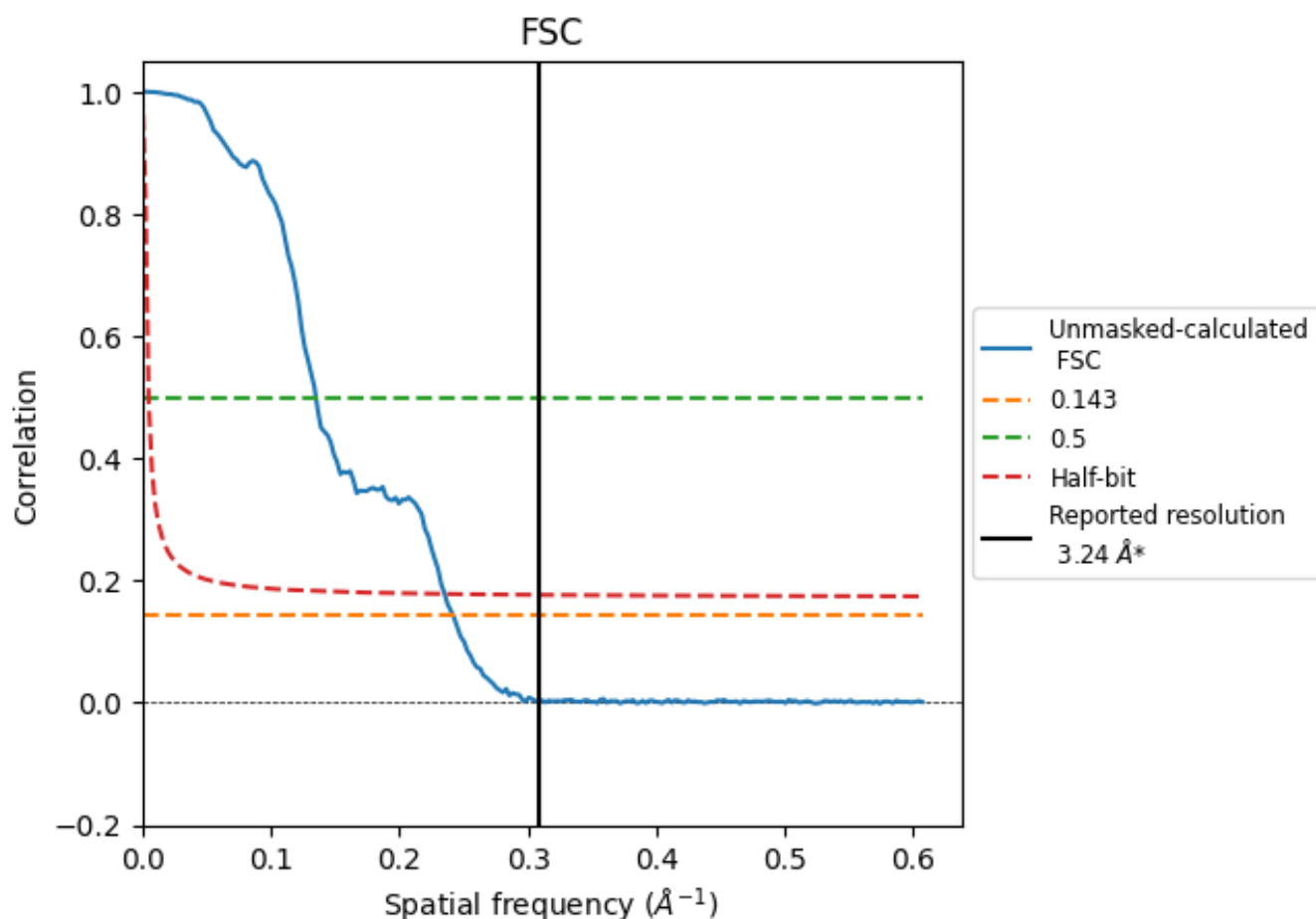


*Reported resolution corresponds to spatial frequency of $0.309 \text{ \AA}^{-1}$

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 0.309 Å⁻¹

8.2 Resolution estimates [i](#)

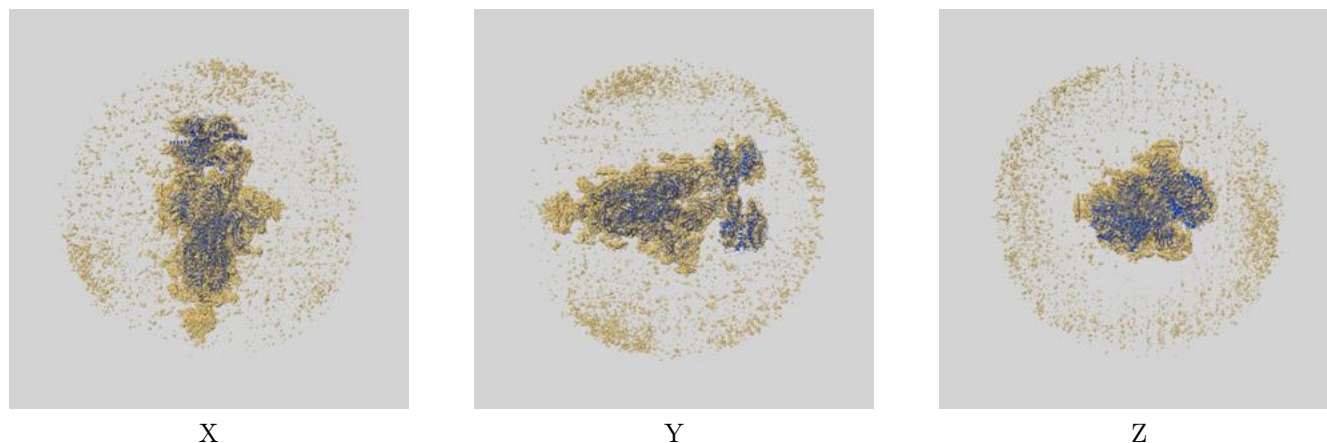
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.24	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.14	7.40	4.25

*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 4.14 differs from the reported value 3.24 by more than 10 %

9 Map-model fit [i](#)

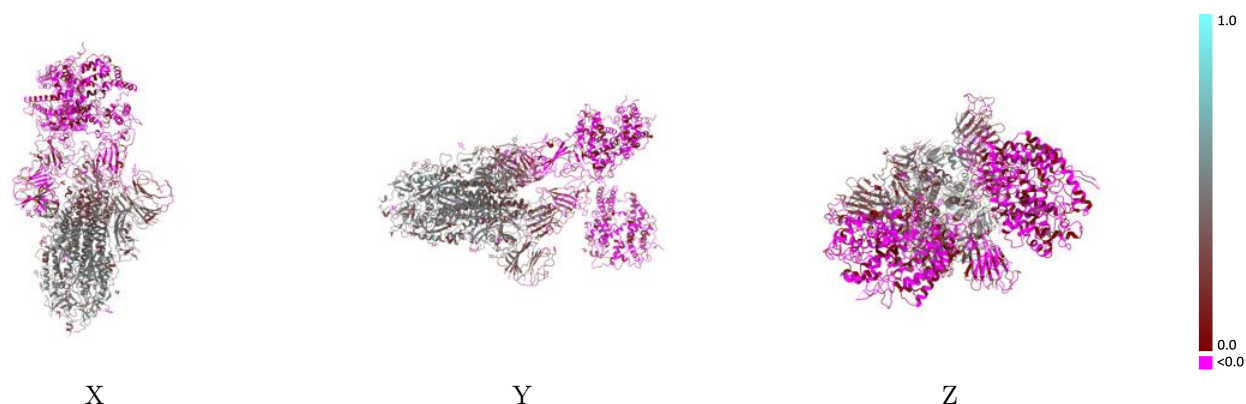
This section contains information regarding the fit between EMDB map EMD-33336 and PDB model 7XO4. Per-residue inclusion information can be found in section [3](#) on page [11](#).

9.1 Map-model overlay [i](#)



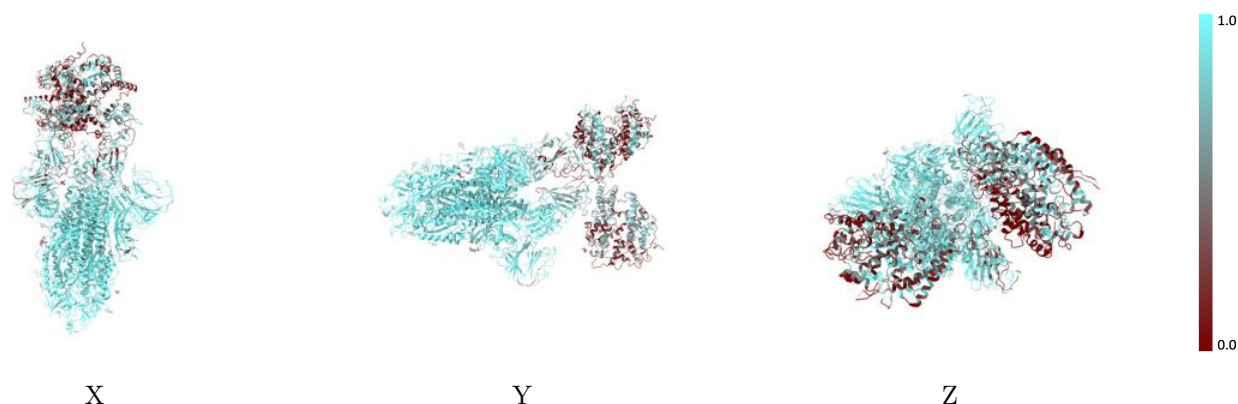
The images above show the 3D surface view of the map at the recommended contour level 0.005 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



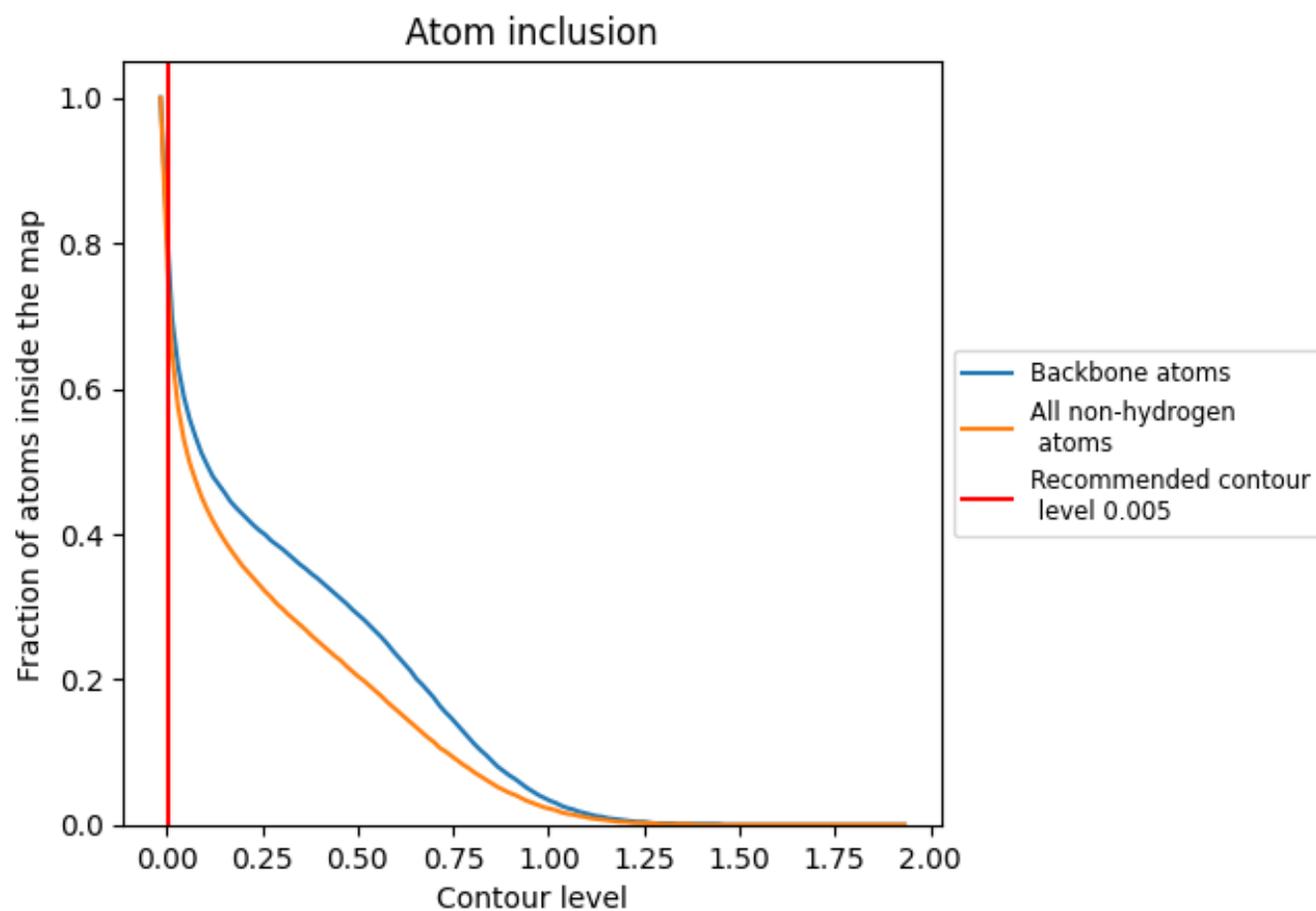
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.005).

9.4 Atom inclusion ⓘ



At the recommended contour level, 78% of all backbone atoms, 74% 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 (0.005) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7350	0.2120
A	0.8780	0.3220
B	0.8140	0.2570
C	0.9170	0.3440
D	0.4160	-0.0270
E	0.3960	-0.0120

