Full wwPDB EM Validation Report ⓘ

Jun 17, 2024 – 12:23 AM JST

PDB ID	:	8YRP
EMDB ID	:	EMD-39547
Title	:	SARS-CoV-2 Delta Spike in complex with JM-1A
Authors	:	Nguyen, V.H.T.; Chen, X.
Deposited on	:	2024-03-21
Resolution	:	3.64 Å(reported)
Based on initial model	:	7V7V

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:

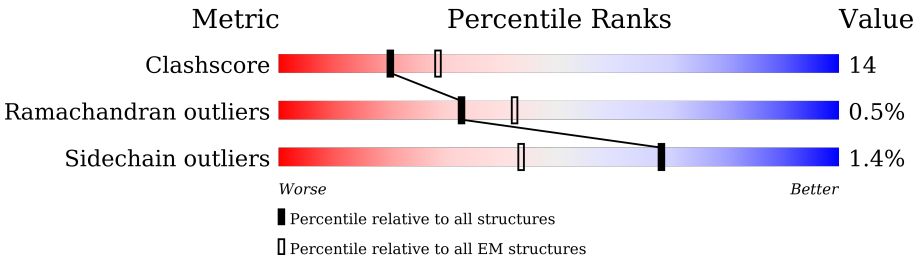
EMDB validation analysis	:	0.0.1.dev92
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.64 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 <=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	1259	5% 57% 23% · 20%
1	B	1259	5% 58% 21% · 19%
1	C	1259	8% 58% 21% · 19%
2	n	115	37% 100%
3	o	105	10% 96% ·

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 25462 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	1013	Total	C	N	O	S	0	0
			7906	5043	1324	1503	36		
1	B	1017	Total	C	N	O	S	0	0
			7955	5079	1334	1506	36		
1	C	1016	Total	C	N	O	S	0	0
			7934	5062	1328	1508	36		

There are 243 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	MET	-	expression tag	UNP P0DTC2
A	-4	LYS	-	expression tag	UNP P0DTC2
A	-3	VAL	-	expression tag	UNP P0DTC2
A	-2	LYS	-	expression tag	UNP P0DTC2
A	-1	LEU	-	expression tag	UNP P0DTC2
A	0	LEU	-	expression tag	UNP P0DTC2
A	1	VAL	-	expression tag	UNP P0DTC2
A	2	LEU	-	expression tag	UNP P0DTC2
A	3	LEU	-	expression tag	UNP P0DTC2
A	4	CYS	-	expression tag	UNP P0DTC2
A	5	THR	-	expression tag	UNP P0DTC2
A	6	PHE	-	expression tag	UNP P0DTC2
A	7	THR	-	expression tag	UNP P0DTC2
A	8	ALA	-	expression tag	UNP P0DTC2
A	9	THR	-	expression tag	UNP P0DTC2
A	10	TYR	-	expression tag	UNP P0DTC2
A	11	ALA	-	expression tag	UNP P0DTC2
A	12	GLY	-	expression tag	UNP P0DTC2
A	13	THR	-	expression tag	UNP P0DTC2
A	19	ARG	THR	variant	UNP P0DTC2
A	142	ASP	GLY	variant	UNP P0DTC2
A	?	-	GLU	deletion	UNP P0DTC2
A	?	-	PHE	deletion	UNP P0DTC2
A	156	GLY	ARG	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	450	ARG	LEU	variant	UNP P0DTC2
A	476	LYS	THR	variant	UNP P0DTC2
A	612	GLY	ASP	variant	UNP P0DTC2
A	679	ARG	PRO	variant	UNP P0DTC2
A	680	GLY	ARG	variant	UNP P0DTC2
A	681	SER	ARG	variant	UNP P0DTC2
A	683	GLY	ARG	variant	UNP P0DTC2
A	948	ASN	ASP	variant	UNP P0DTC2
A	984	PRO	LYS	variant	UNP P0DTC2
A	985	PRO	VAL	variant	UNP P0DTC2
A	1207	ASP	-	expression tag	UNP P0DTC2
A	1208	ILE	-	expression tag	UNP P0DTC2
A	1209	ARG	-	expression tag	UNP P0DTC2
A	1210	SER	-	expression tag	UNP P0DTC2
A	1211	LEU	-	expression tag	UNP P0DTC2
A	1212	VAL	-	expression tag	UNP P0DTC2
A	1213	PRO	-	expression tag	UNP P0DTC2
A	1214	ARG	-	expression tag	UNP P0DTC2
A	1215	GLY	-	expression tag	UNP P0DTC2
A	1216	SER	-	expression tag	UNP P0DTC2
A	1217	PRO	-	expression tag	UNP P0DTC2
A	1218	GLY	-	expression tag	UNP P0DTC2
A	1219	SER	-	expression tag	UNP P0DTC2
A	1220	GLY	-	expression tag	UNP P0DTC2
A	1221	TYR	-	expression tag	UNP P0DTC2
A	1222	ILE	-	expression tag	UNP P0DTC2
A	1223	PRO	-	expression tag	UNP P0DTC2
A	1224	GLU	-	expression tag	UNP P0DTC2
A	1225	ALA	-	expression tag	UNP P0DTC2
A	1226	PRO	-	expression tag	UNP P0DTC2
A	1227	ARG	-	expression tag	UNP P0DTC2
A	1228	ASP	-	expression tag	UNP P0DTC2
A	1229	GLY	-	expression tag	UNP P0DTC2
A	1230	GLN	-	expression tag	UNP P0DTC2
A	1231	ALA	-	expression tag	UNP P0DTC2
A	1232	TYR	-	expression tag	UNP P0DTC2
A	1233	VAL	-	expression tag	UNP P0DTC2
A	1234	ARG	-	expression tag	UNP P0DTC2
A	1235	LYS	-	expression tag	UNP P0DTC2
A	1236	ASP	-	expression tag	UNP P0DTC2
A	1237	GLY	-	expression tag	UNP P0DTC2
A	1238	GLU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1239	TRP	-	expression tag	UNP P0DTC2
A	1240	VAL	-	expression tag	UNP P0DTC2
A	1241	LEU	-	expression tag	UNP P0DTC2
A	1242	LEU	-	expression tag	UNP P0DTC2
A	1243	SER	-	expression tag	UNP P0DTC2
A	1244	THR	-	expression tag	UNP P0DTC2
A	1245	PHE	-	expression tag	UNP P0DTC2
A	1246	LEU	-	expression tag	UNP P0DTC2
A	1247	GLY	-	expression tag	UNP P0DTC2
A	1248	HIS	-	expression tag	UNP P0DTC2
A	1249	HIS	-	expression tag	UNP P0DTC2
A	1250	HIS	-	expression tag	UNP P0DTC2
A	1251	HIS	-	expression tag	UNP P0DTC2
A	1252	HIS	-	expression tag	UNP P0DTC2
A	1253	HIS	-	expression tag	UNP P0DTC2
B	-5	MET	-	expression tag	UNP P0DTC2
B	-4	LYS	-	expression tag	UNP P0DTC2
B	-3	VAL	-	expression tag	UNP P0DTC2
B	-2	LYS	-	expression tag	UNP P0DTC2
B	-1	LEU	-	expression tag	UNP P0DTC2
B	0	LEU	-	expression tag	UNP P0DTC2
B	1	VAL	-	expression tag	UNP P0DTC2
B	2	LEU	-	expression tag	UNP P0DTC2
B	3	LEU	-	expression tag	UNP P0DTC2
B	4	CYS	-	expression tag	UNP P0DTC2
B	5	THR	-	expression tag	UNP P0DTC2
B	6	PHE	-	expression tag	UNP P0DTC2
B	7	THR	-	expression tag	UNP P0DTC2
B	8	ALA	-	expression tag	UNP P0DTC2
B	9	THR	-	expression tag	UNP P0DTC2
B	10	TYR	-	expression tag	UNP P0DTC2
B	11	ALA	-	expression tag	UNP P0DTC2
B	12	GLY	-	expression tag	UNP P0DTC2
B	13	THR	-	expression tag	UNP P0DTC2
B	19	ARG	THR	variant	UNP P0DTC2
B	142	ASP	GLY	variant	UNP P0DTC2
B	?	-	GLU	deletion	UNP P0DTC2
B	?	-	PHE	deletion	UNP P0DTC2
B	156	GLY	ARG	variant	UNP P0DTC2
B	450	ARG	LEU	variant	UNP P0DTC2
B	476	LYS	THR	variant	UNP P0DTC2
B	612	GLY	ASP	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	679	ARG	PRO	variant	UNP P0DTC2
B	680	GLY	ARG	variant	UNP P0DTC2
B	681	SER	ARG	variant	UNP P0DTC2
B	683	GLY	ARG	variant	UNP P0DTC2
B	948	ASN	ASP	variant	UNP P0DTC2
B	984	PRO	LYS	variant	UNP P0DTC2
B	985	PRO	VAL	variant	UNP P0DTC2
B	1207	ASP	-	expression tag	UNP P0DTC2
B	1208	ILE	-	expression tag	UNP P0DTC2
B	1209	ARG	-	expression tag	UNP P0DTC2
B	1210	SER	-	expression tag	UNP P0DTC2
B	1211	LEU	-	expression tag	UNP P0DTC2
B	1212	VAL	-	expression tag	UNP P0DTC2
B	1213	PRO	-	expression tag	UNP P0DTC2
B	1214	ARG	-	expression tag	UNP P0DTC2
B	1215	GLY	-	expression tag	UNP P0DTC2
B	1216	SER	-	expression tag	UNP P0DTC2
B	1217	PRO	-	expression tag	UNP P0DTC2
B	1218	GLY	-	expression tag	UNP P0DTC2
B	1219	SER	-	expression tag	UNP P0DTC2
B	1220	GLY	-	expression tag	UNP P0DTC2
B	1221	TYR	-	expression tag	UNP P0DTC2
B	1222	ILE	-	expression tag	UNP P0DTC2
B	1223	PRO	-	expression tag	UNP P0DTC2
B	1224	GLU	-	expression tag	UNP P0DTC2
B	1225	ALA	-	expression tag	UNP P0DTC2
B	1226	PRO	-	expression tag	UNP P0DTC2
B	1227	ARG	-	expression tag	UNP P0DTC2
B	1228	ASP	-	expression tag	UNP P0DTC2
B	1229	GLY	-	expression tag	UNP P0DTC2
B	1230	GLN	-	expression tag	UNP P0DTC2
B	1231	ALA	-	expression tag	UNP P0DTC2
B	1232	TYR	-	expression tag	UNP P0DTC2
B	1233	VAL	-	expression tag	UNP P0DTC2
B	1234	ARG	-	expression tag	UNP P0DTC2
B	1235	LYS	-	expression tag	UNP P0DTC2
B	1236	ASP	-	expression tag	UNP P0DTC2
B	1237	GLY	-	expression tag	UNP P0DTC2
B	1238	GLU	-	expression tag	UNP P0DTC2
B	1239	TRP	-	expression tag	UNP P0DTC2
B	1240	VAL	-	expression tag	UNP P0DTC2
B	1241	LEU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1242	LEU	-	expression tag	UNP P0DTC2
B	1243	SER	-	expression tag	UNP P0DTC2
B	1244	THR	-	expression tag	UNP P0DTC2
B	1245	PHE	-	expression tag	UNP P0DTC2
B	1246	LEU	-	expression tag	UNP P0DTC2
B	1247	GLY	-	expression tag	UNP P0DTC2
B	1248	HIS	-	expression tag	UNP P0DTC2
B	1249	HIS	-	expression tag	UNP P0DTC2
B	1250	HIS	-	expression tag	UNP P0DTC2
B	1251	HIS	-	expression tag	UNP P0DTC2
B	1252	HIS	-	expression tag	UNP P0DTC2
B	1253	HIS	-	expression tag	UNP P0DTC2
C	-5	MET	-	expression tag	UNP P0DTC2
C	-4	LYS	-	expression tag	UNP P0DTC2
C	-3	VAL	-	expression tag	UNP P0DTC2
C	-2	LYS	-	expression tag	UNP P0DTC2
C	-1	LEU	-	expression tag	UNP P0DTC2
C	0	LEU	-	expression tag	UNP P0DTC2
C	1	VAL	-	expression tag	UNP P0DTC2
C	2	LEU	-	expression tag	UNP P0DTC2
C	3	LEU	-	expression tag	UNP P0DTC2
C	4	CYS	-	expression tag	UNP P0DTC2
C	5	THR	-	expression tag	UNP P0DTC2
C	6	PHE	-	expression tag	UNP P0DTC2
C	7	THR	-	expression tag	UNP P0DTC2
C	8	ALA	-	expression tag	UNP P0DTC2
C	9	THR	-	expression tag	UNP P0DTC2
C	10	TYR	-	expression tag	UNP P0DTC2
C	11	ALA	-	expression tag	UNP P0DTC2
C	12	GLY	-	expression tag	UNP P0DTC2
C	13	THR	-	expression tag	UNP P0DTC2
C	19	ARG	THR	variant	UNP P0DTC2
C	142	ASP	GLY	variant	UNP P0DTC2
C	?	-	GLU	deletion	UNP P0DTC2
C	?	-	PHE	deletion	UNP P0DTC2
C	156	GLY	ARG	variant	UNP P0DTC2
C	450	ARG	LEU	variant	UNP P0DTC2
C	476	LYS	THR	variant	UNP P0DTC2
C	612	GLY	ASP	variant	UNP P0DTC2
C	679	ARG	PRO	variant	UNP P0DTC2
C	680	GLY	ARG	variant	UNP P0DTC2
C	681	SER	ARG	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	683	GLY	ARG	variant	UNP P0DTC2
C	948	ASN	ASP	variant	UNP P0DTC2
C	984	PRO	LYS	variant	UNP P0DTC2
C	985	PRO	VAL	variant	UNP P0DTC2
C	1207	ASP	-	expression tag	UNP P0DTC2
C	1208	ILE	-	expression tag	UNP P0DTC2
C	1209	ARG	-	expression tag	UNP P0DTC2
C	1210	SER	-	expression tag	UNP P0DTC2
C	1211	LEU	-	expression tag	UNP P0DTC2
C	1212	VAL	-	expression tag	UNP P0DTC2
C	1213	PRO	-	expression tag	UNP P0DTC2
C	1214	ARG	-	expression tag	UNP P0DTC2
C	1215	GLY	-	expression tag	UNP P0DTC2
C	1216	SER	-	expression tag	UNP P0DTC2
C	1217	PRO	-	expression tag	UNP P0DTC2
C	1218	GLY	-	expression tag	UNP P0DTC2
C	1219	SER	-	expression tag	UNP P0DTC2
C	1220	GLY	-	expression tag	UNP P0DTC2
C	1221	TYR	-	expression tag	UNP P0DTC2
C	1222	ILE	-	expression tag	UNP P0DTC2
C	1223	PRO	-	expression tag	UNP P0DTC2
C	1224	GLU	-	expression tag	UNP P0DTC2
C	1225	ALA	-	expression tag	UNP P0DTC2
C	1226	PRO	-	expression tag	UNP P0DTC2
C	1227	ARG	-	expression tag	UNP P0DTC2
C	1228	ASP	-	expression tag	UNP P0DTC2
C	1229	GLY	-	expression tag	UNP P0DTC2
C	1230	GLN	-	expression tag	UNP P0DTC2
C	1231	ALA	-	expression tag	UNP P0DTC2
C	1232	TYR	-	expression tag	UNP P0DTC2
C	1233	VAL	-	expression tag	UNP P0DTC2
C	1234	ARG	-	expression tag	UNP P0DTC2
C	1235	LYS	-	expression tag	UNP P0DTC2
C	1236	ASP	-	expression tag	UNP P0DTC2
C	1237	GLY	-	expression tag	UNP P0DTC2
C	1238	GLU	-	expression tag	UNP P0DTC2
C	1239	TRP	-	expression tag	UNP P0DTC2
C	1240	VAL	-	expression tag	UNP P0DTC2
C	1241	LEU	-	expression tag	UNP P0DTC2
C	1242	LEU	-	expression tag	UNP P0DTC2
C	1243	SER	-	expression tag	UNP P0DTC2
C	1244	THR	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1245	PHE	-	expression tag	UNP P0DTC2
C	1246	LEU	-	expression tag	UNP P0DTC2
C	1247	GLY	-	expression tag	UNP P0DTC2
C	1248	HIS	-	expression tag	UNP P0DTC2
C	1249	HIS	-	expression tag	UNP P0DTC2
C	1250	HIS	-	expression tag	UNP P0DTC2
C	1251	HIS	-	expression tag	UNP P0DTC2
C	1252	HIS	-	expression tag	UNP P0DTC2
C	1253	HIS	-	expression tag	UNP P0DTC2

- Molecule 2 is a protein called JM-1A Heavy Chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	n	115	Total	C	N	O	S	0	0
			873	551	152	166	4		

- Molecule 3 is a protein called JM-1A Light Chain.

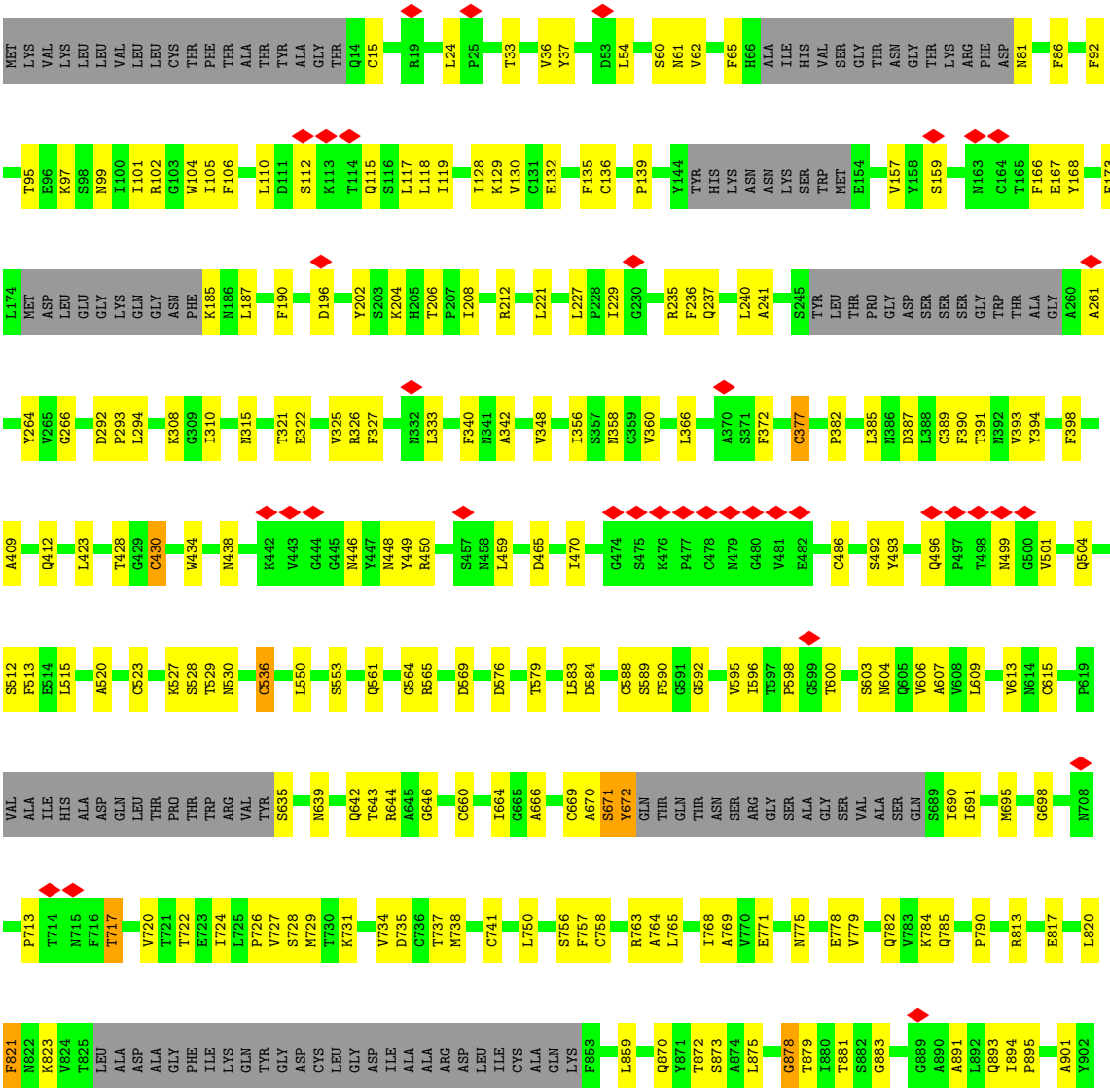
Mol	Chain	Residues	Atoms					AltConf	Trace
3	o	105	Total	C	N	O	S	0	0
			794	503	129	160	2		

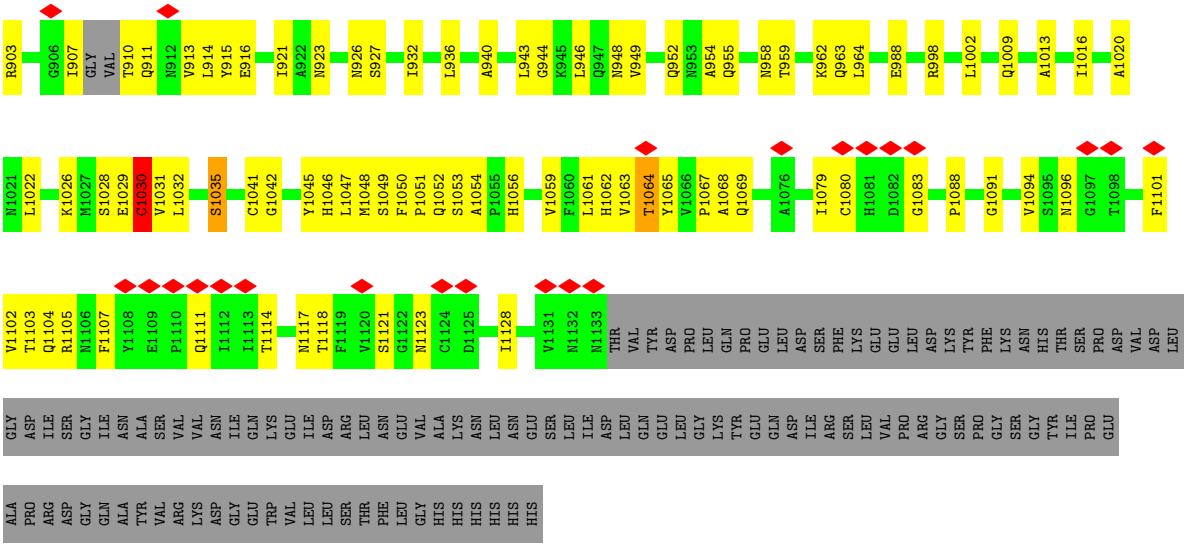
3 Residue-property plots (i)

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

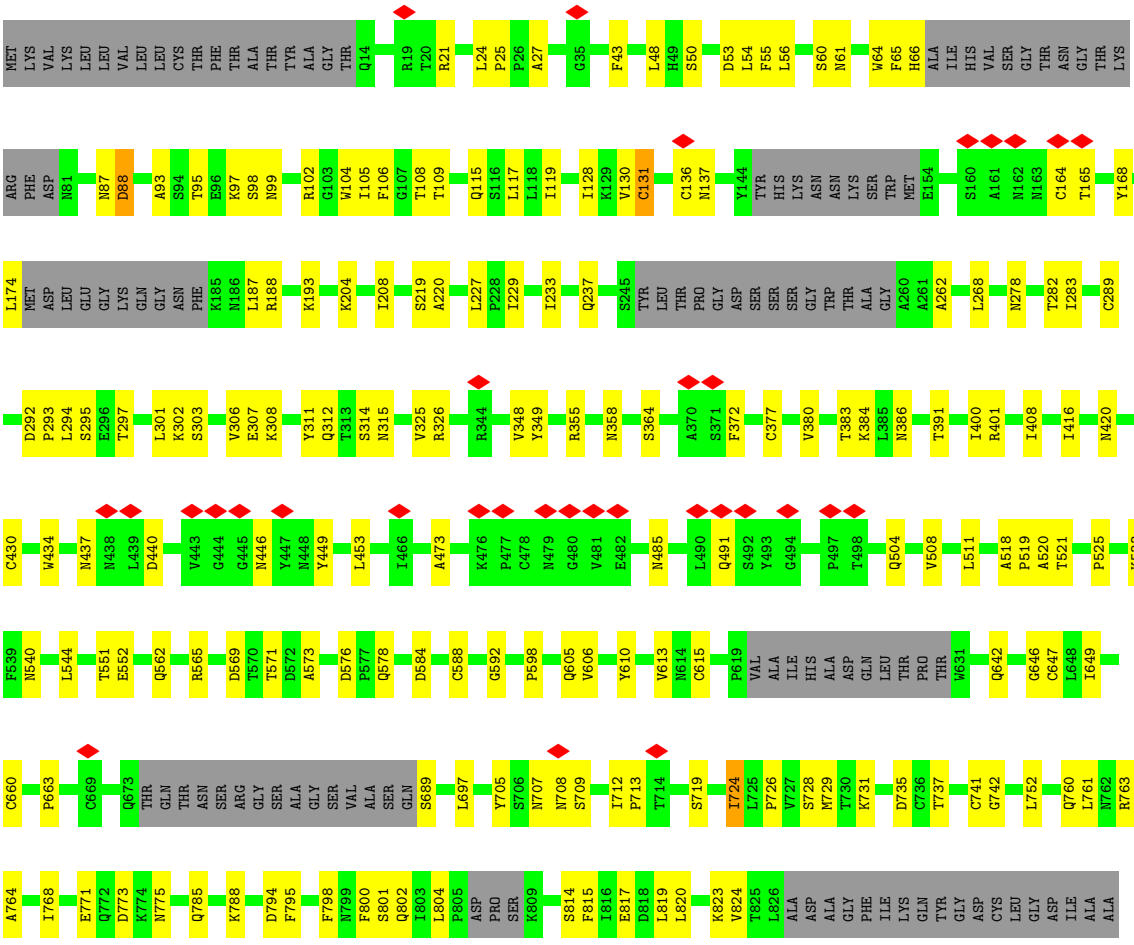
Chain A: 

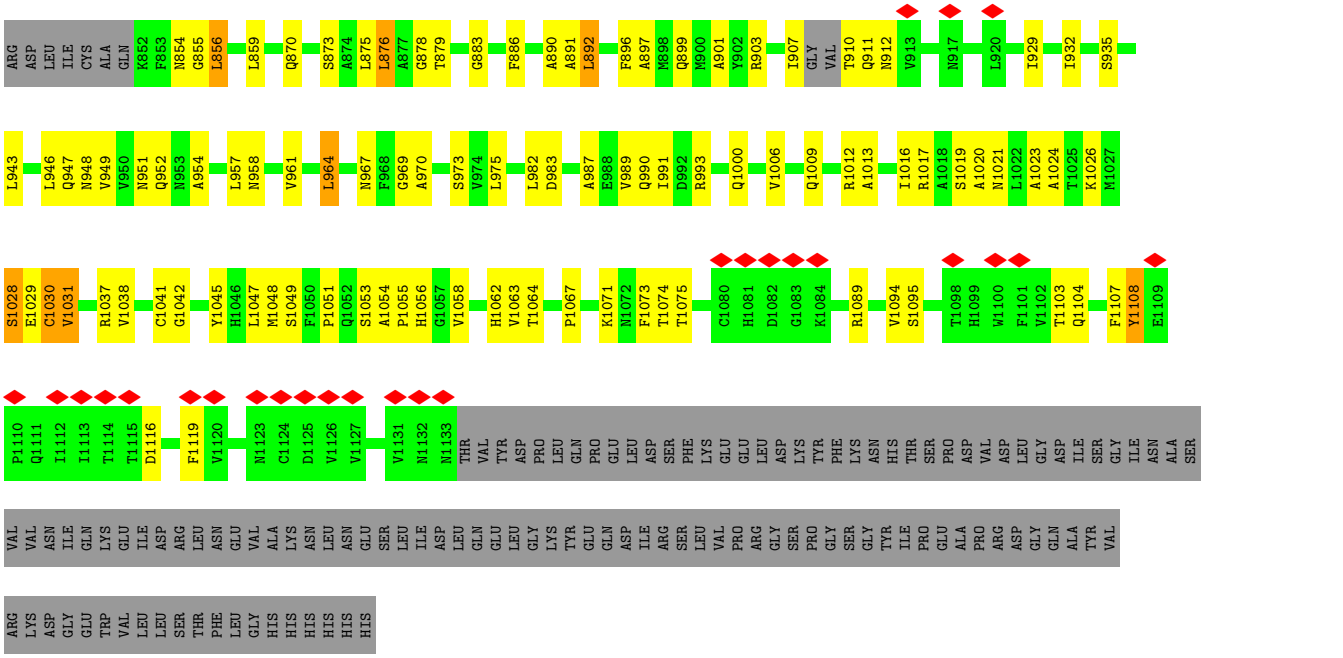




- Molecule 1: Spike glycoprotein

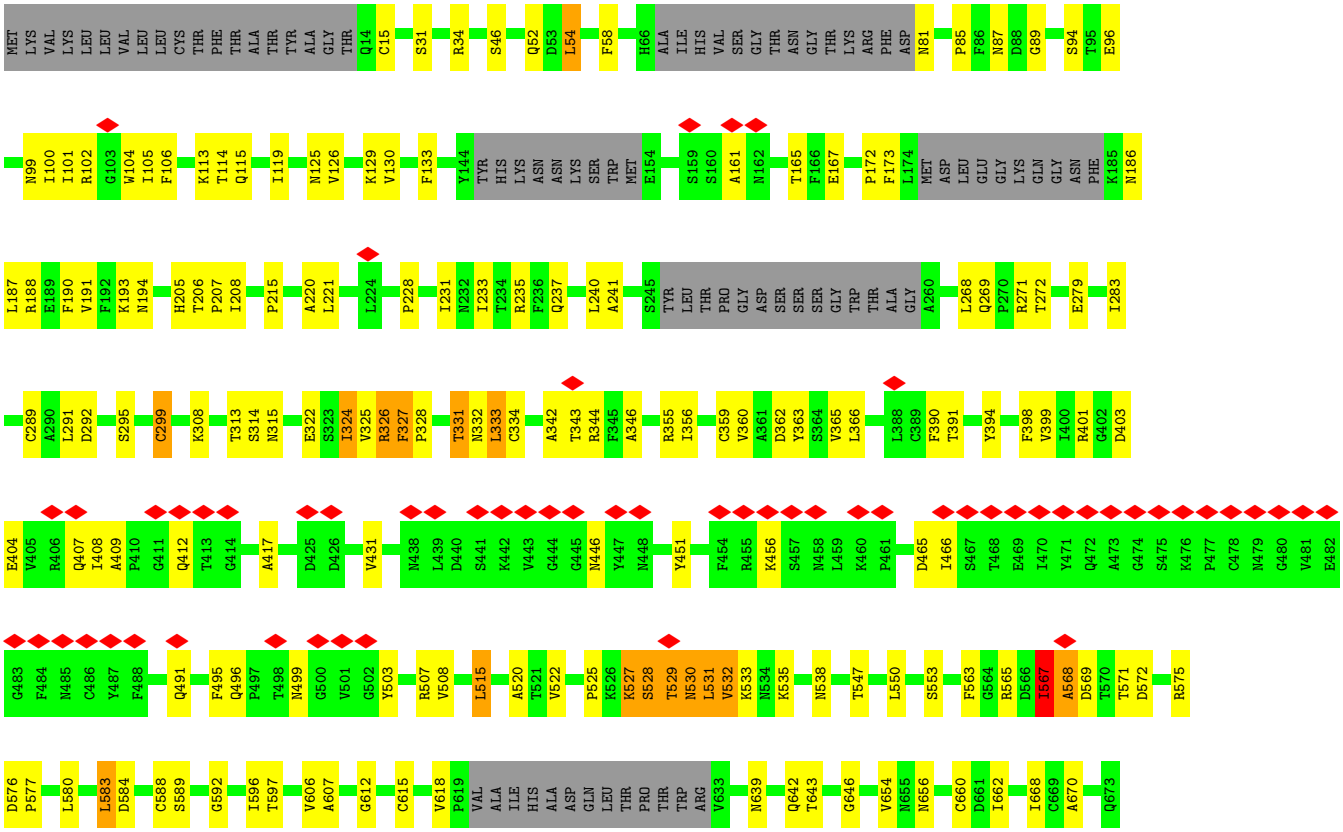
Chain B:

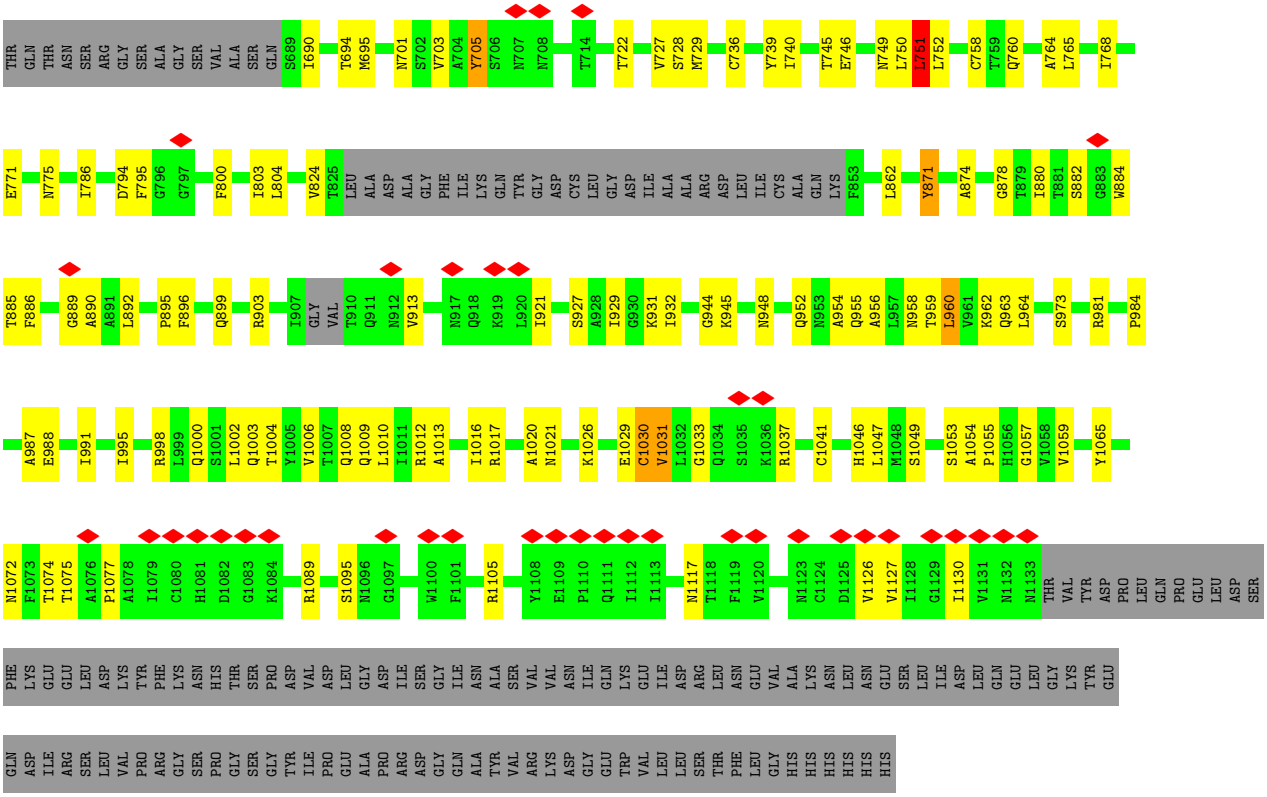




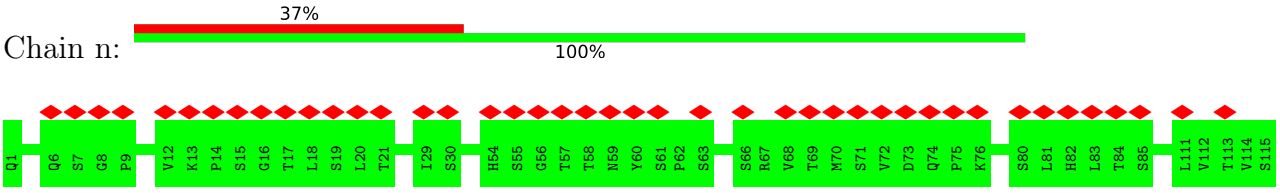
• Molecule 1: Spike glycoprotein

Chain C:

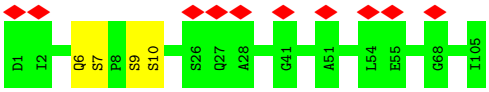




• Molecule 2: JM-1A Heavy Chain



• Molecule 3: JM-1A Light Chain



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	71877	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50.793	Depositor
Minimum defocus (nm)	1400	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.445	Depositor
Minimum map value	-0.601	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.036	Depositor
Recommended contour level	0.115	Depositor
Map size (Å)	318.72, 318.72, 318.72	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83, 0.83, 0.83	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	0.46	0/8083	0.77	11/10995 (0.1%)
1	B	0.50	1/8133 (0.0%)	0.75	6/11060 (0.1%)
1	C	0.48	0/8112	0.77	10/11035 (0.1%)
2	n	0.33	0/896	0.69	0/1221
3	o	0.38	0/813	0.65	0/1106
All	All	0.47	1/26037 (0.0%)	0.76	27/35417 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	660	CYS	CB-SG	-5.06	1.73	1.81

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	821	PHE	CB-CG-CD1	9.46	127.42	120.80
1	C	466	ILE	CG1-CB-CG2	-8.03	93.74	111.40
1	A	1080	CYS	CA-CB-SG	7.43	127.37	114.00
1	A	821	PHE	CB-CG-CD2	-7.17	115.78	120.80
1	B	964	LEU	CA-CB-CG	6.99	131.38	115.30
1	A	1032	LEU	CA-CB-CG	6.95	131.28	115.30
1	C	751	LEU	CB-CG-CD1	6.83	122.61	111.00
1	A	196	ASP	CB-CG-OD1	6.50	124.15	118.30
1	A	536	CYS	CA-CB-SG	6.49	125.67	114.00
1	B	876	LEU	CA-CB-CG	-6.32	100.77	115.30
1	A	878	GLY	N-CA-C	6.26	128.74	113.10
1	B	289	CYS	CA-CB-SG	6.21	125.17	114.00
1	A	1041	CYS	CA-CB-SG	6.11	125.00	114.00
1	C	299	CYS	CA-CB-SG	6.10	124.98	114.00
1	C	359	CYS	CA-CB-SG	5.88	124.59	114.00
1	C	1065	TYR	CA-CB-CG	5.69	124.20	113.40
1	B	856	LEU	CA-CB-CG	5.64	128.28	115.30
1	C	618	VAL	C-N-CD	5.61	140.18	128.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1061	LEU	CA-CB-CG	5.54	128.04	115.30
1	C	289	CYS	CA-CB-SG	5.50	123.89	114.00
1	C	515	LEU	CA-CB-CG	5.43	127.78	115.30
1	A	1079	ILE	N-CA-C	-5.37	96.50	111.00
1	A	430	CYS	CB-CA-C	-5.37	99.67	110.40
1	C	960	LEU	CA-CB-CG	5.32	127.53	115.30
1	B	892	LEU	CA-CB-CG	5.16	127.17	115.30
1	B	1108	TYR	CA-CB-CG	5.05	123.00	113.40
1	C	54	LEU	CB-CG-CD2	-5.02	102.47	111.00

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	7906	0	7731	219	0
1	B	7955	0	7785	207	0
1	C	7934	0	7755	211	0
2	n	873	0	849	0	0
3	o	794	0	771	0	0
All	All	25462	0	24891	609	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 14.

All (609) 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:1035:SER:HB2	1:A:1046:HIS:N	1.40	1.36
1:B:1026:LYS:O	1:B:1030:CYS:HB3	1.21	1.30
1:B:1026:LYS:O	1:B:1030:CYS:CB	1.91	1.18
1:B:1037:ARG:HA	1:C:1029:GLU:HG3	1.23	1.15
1:A:671:SER:CB	1:A:691:ILE:HG13	1.65	1.15
1:A:1035:SER:CB	1:A:1046:HIS:H	1.60	1.14

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:671:SER:HB3	1:A:691:ILE:CG1	1.79	1.13
1:B:1030:CYS:SG	1:B:1049:SER:HB3	1.97	1.04
1:C:532:VAL:HG21	1:C:535:LYS:HE2	1.44	1.00
1:C:531:LEU:HD12	1:C:531:LEU:H	1.22	1.00
1:B:1037:ARG:HA	1:C:1029:GLU:CG	1.92	1.00
1:A:671:SER:HB3	1:A:691:ILE:HG13	1.00	0.99
1:A:671:SER:N	1:A:691:ILE:O	1.97	0.97
1:A:1035:SER:HB3	1:A:1045:TYR:HA	1.45	0.95
1:C:532:VAL:CG2	1:C:535:LYS:HE2	1.95	0.95
1:C:328:PRO:HG3	1:C:527:LYS:HD3	1.49	0.93
1:B:1037:ARG:CA	1:C:1029:GLU:HG3	2.02	0.89
1:A:598:PRO:HG3	1:A:672:TYR:CE1	2.15	0.82
1:B:1030:CYS:SG	1:B:1030:CYS:O	2.44	0.76
1:A:1035:SER:CB	1:A:1045:TYR:HA	2.15	0.76
1:A:1045:TYR:O	1:A:1064:THR:HB	1.84	0.76
1:A:1047:LEU:CD1	1:A:1064:THR:OG1	2.35	0.75
1:A:1047:LEU:HD13	1:A:1064:THR:CB	2.16	0.75
1:C:324:ILE:CG2	1:C:528:SER:O	2.36	0.73
1:C:1026:LYS:O	1:C:1030:CYS:HB2	1.87	0.73
1:B:1029:GLU:C	1:B:1031:VAL:H	1.91	0.73
1:A:1035:SER:CB	1:A:1046:HIS:N	2.34	0.73
1:B:724:ILE:HD12	1:B:724:ILE:H	1.53	0.73
1:C:567:ILE:O	1:C:568:ALA:CB	2.38	0.72
1:B:1029:GLU:O	1:B:1031:VAL:N	2.23	0.71
1:A:315:ASN:HA	1:A:592:GLY:HA2	1.72	0.71
1:C:800:PHE:HD2	1:C:803:ILE:CG1	2.04	0.71
1:C:328:PRO:HG3	1:C:527:LYS:CD	2.21	0.71
1:C:884:TRP:HB2	1:C:1033:GLY:HA2	1.73	0.70
1:C:532:VAL:HG11	1:C:535:LYS:CE	2.22	0.70
1:A:1045:TYR:O	1:A:1064:THR:CG2	2.40	0.70
1:B:724:ILE:HG12	1:B:943:LEU:HD23	1.74	0.70
1:B:1026:LYS:O	1:B:1030:CYS:HB2	1.90	0.69
1:C:553:SER:HB3	1:C:584:ASP:HB2	1.75	0.69
1:A:1047:LEU:HD13	1:A:1064:THR:OG1	1.93	0.69
1:C:324:ILE:CD1	1:C:531:LEU:HG	2.23	0.69
1:B:349:TYR:HB3	1:B:420:ASN:HD22	1.58	0.68
1:C:531:LEU:HD12	1:C:531:LEU:N	2.05	0.67
1:B:707:ASN:HA	1:C:895:PRO:HB3	1.75	0.67
1:B:824:VAL:HG21	1:B:1055:PRO:HG2	1.76	0.67
1:A:1053:SER:OG	1:A:1054:ALA:N	2.27	0.67
1:B:724:ILE:HD12	1:B:724:ILE:N	2.10	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:328:PRO:CG	1:C:527:LYS:HD3	2.24	0.67
1:A:553:SER:HB3	1:A:584:ASP:HB2	1.76	0.66
1:C:1089:ARG:O	1:C:1105:ARG:NH2	2.28	0.66
1:B:1030:CYS:SG	1:B:1049:SER:CB	2.79	0.66
1:A:372:PHE:HA	1:A:434:TRP:HB3	1.78	0.66
1:B:726:PRO:HB3	1:B:949:VAL:HG11	1.78	0.66
1:A:916:GLU:HG3	1:C:1126:VAL:HG21	1.77	0.65
1:C:324:ILE:HD11	1:C:531:LEU:HG	1.78	0.64
1:A:1045:TYR:O	1:A:1064:THR:CB	2.45	0.64
1:B:1089:ARG:NH2	1:B:1116:ASP:O	2.30	0.64
1:A:713:PRO:HG2	1:A:1067:PRO:HB2	1.80	0.64
1:B:50:SER:HG	1:B:302:LYS:HZ3	1.45	0.64
1:C:1053:SER:OG	1:C:1054:ALA:N	2.31	0.64
1:A:1045:TYR:O	1:A:1064:THR:HG21	1.98	0.63
1:B:391:THR:HB	1:B:520:ALA:HA	1.81	0.63
1:C:890:ALA:HB3	1:C:892:LEU:HD23	1.81	0.63
1:C:1029:GLU:O	1:C:1030:CYS:SG	2.57	0.63
1:A:903:ARG:NH1	1:A:1048:MET:SD	2.72	0.62
1:A:891:ALA:HB3	1:C:703:VAL:HG21	1.82	0.62
1:B:989:VAL:HG23	1:B:990:GLN:HE21	1.64	0.62
1:B:1024:ALA:O	1:B:1028:SER:OG	2.12	0.61
1:A:717:THR:OG1	1:A:1068:ALA:HB3	2.00	0.61
1:A:907:ILE:HG21	1:A:1047:LEU:HD11	1.83	0.61
1:B:301:LEU:HD12	1:B:306:VAL:HG12	1.82	0.61
1:C:391:THR:HA	1:C:520:ALA:HA	1.82	0.61
1:C:596:ILE:HB	1:C:607:ALA:HB3	1.81	0.61
1:C:800:PHE:CD2	1:C:803:ILE:CG1	2.84	0.61
1:B:724:ILE:HG23	1:B:1058:VAL:O	1.99	0.61
1:B:817:GLU:HA	1:B:820:LEU:HB2	1.82	0.61
1:A:642:GLN:NE2	1:A:643:THR:O	2.33	0.61
1:C:884:TRP:HB3	1:C:903:ARG:HH22	1.63	0.61
1:A:348:VAL:HA	1:A:398:PHE:HB2	1.83	0.60
1:A:671:SER:CB	1:A:691:ILE:O	2.50	0.60
1:A:1051:PRO:HD3	1:A:1062:HIS:CE1	2.36	0.60
1:C:607:ALA:HB2	1:C:690:ILE:HG21	1.84	0.60
1:C:800:PHE:CD2	1:C:803:ILE:HD11	2.37	0.60
1:B:975:LEU:HD23	1:B:991:ILE:HD11	1.82	0.60
1:C:269:GLN:HB3	1:C:271:ARG:HH21	1.67	0.60
1:A:589:SER:HB2	1:A:613:VAL:HG22	1.84	0.60
1:A:671:SER:CA	1:A:691:ILE:O	2.49	0.60
1:C:532:VAL:CG1	1:C:535:LYS:CE	2.80	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:99:ASN:OD1	1:C:102:ARG:NH2	2.35	0.59
1:C:643:THR:OG1	1:C:646:GLY:N	2.35	0.59
1:B:106:PHE:HB2	1:B:117:LEU:HB2	1.84	0.59
1:B:93:ALA:HB1	1:B:187:LEU:HD11	1.84	0.59
1:C:1016:ILE:O	1:C:1020:ALA:N	2.34	0.59
1:C:106:PHE:HB3	1:C:233:ILE:HD13	1.85	0.59
1:B:961:VAL:HA	1:B:964:LEU:HD23	1.83	0.59
1:B:314:SER:OG	1:B:315:ASN:N	2.35	0.59
1:C:642:GLN:NE2	1:C:643:THR:O	2.36	0.59
1:A:377:CYS:HB2	1:A:382:PRO:HG3	1.85	0.59
1:C:104:TRP:HB2	1:C:119:ILE:HD12	1.84	0.59
1:C:771:GLU:O	1:C:775:ASN:N	2.35	0.59
1:A:459:LEU:HD11	1:A:465:ASP:HB2	1.85	0.58
1:B:544:LEU:HD11	1:B:571:THR:HG21	1.86	0.58
1:C:567:ILE:O	1:C:568:ALA:HB2	2.04	0.58
1:C:81:ASN:OD1	1:C:237:GLN:NE2	2.37	0.58
1:C:194:ASN:ND2	1:C:231:ILE:O	2.29	0.58
1:C:532:VAL:HG22	1:C:532:VAL:O	2.04	0.58
1:C:565:ARG:NH2	1:C:569:ASP:OD1	2.37	0.58
1:C:885:THR:O	1:C:889:GLY:N	2.32	0.58
1:A:954:ALA:O	1:A:958:ASN:N	2.35	0.58
1:B:724:ILE:CG2	1:B:946:LEU:HD11	2.34	0.58
1:B:761:LEU:HD22	1:B:1006:VAL:HG11	1.85	0.58
1:C:342:ALA:O	1:C:507:ARG:NH1	2.35	0.58
1:A:1083:GLY:O	1:A:1123:ASN:ND2	2.37	0.58
1:C:565:ARG:NE	1:C:569:ASP:OD1	2.36	0.58
1:C:660:CYS:HB2	1:C:695:MET:HG2	1.85	0.58
1:B:105:ILE:HB	1:B:237:GLN:HB3	1.85	0.57
1:B:947:GLN:O	1:B:951:ASN:ND2	2.36	0.57
1:A:340:PHE:HE2	1:A:366:LEU:HD22	1.69	0.57
1:A:671:SER:CB	1:A:691:ILE:CG1	2.54	0.57
1:B:1029:GLU:C	1:B:1031:VAL:N	2.58	0.57
1:C:105:ILE:HB	1:C:237:GLN:HB3	1.86	0.57
1:C:1031:VAL:HG13	1:C:1049:SER:H	1.69	0.57
1:A:136:CYS:SG	1:A:159:SER:OG	2.63	0.57
1:B:440:ASP:O	1:B:446:ASN:ND2	2.36	0.57
1:A:496:GLN:O	1:A:499:ASN:ND2	2.37	0.57
1:A:576:ASP:OD2	1:A:579:THR:OG1	2.20	0.57
1:A:672:TYR:CE1	1:A:690:ILE:HG13	2.40	0.57
1:A:102:ARG:HE	1:A:241:ALA:HB3	1.70	0.57
1:C:588:CYS:SG	1:C:589:SER:N	2.76	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:668:ILE:HG22	1:C:694:THR:HG22	1.87	0.57
1:B:54:LEU:HD11	1:B:88:ASP:HB3	1.86	0.57
1:A:394:TYR:HB2	1:A:512:SER:HB2	1.85	0.57
1:C:589:SER:OG	1:C:612:GLY:O	2.18	0.57
1:A:565:ARG:HD3	1:A:569:ASP:HA	1.87	0.57
1:A:911:GLN:HA	1:A:914:LEU:HD23	1.86	0.57
1:B:99:ASN:O	1:B:102:ARG:NE	2.37	0.57
1:B:964:LEU:O	1:B:973:SER:OG	2.22	0.57
1:A:112:SER:HA	1:A:132:GLU:HB3	1.87	0.56
1:B:54:LEU:HG	1:B:268:LEU:HB3	1.86	0.56
1:C:344:ARG:HH21	1:C:346:ALA:HA	1.70	0.56
1:C:745:THR:O	1:C:749:ASN:ND2	2.38	0.56
1:A:717:THR:CB	1:A:1068:ALA:HB3	2.34	0.56
1:C:54:LEU:HB3	1:C:193:LYS:HE3	1.87	0.56
1:A:615:CYS:N	1:A:642:GLN:OE1	2.39	0.56
1:B:1053:SER:OG	1:B:1054:ALA:N	2.39	0.56
1:C:765:LEU:HD23	1:C:768:ILE:HD12	1.86	0.56
1:A:409:ALA:HB3	1:A:412:GLN:HG3	1.88	0.56
1:B:804:LEU:HD23	1:B:876:LEU:HD13	1.87	0.56
1:B:533:LYS:NZ	1:B:552:GLU:OE2	2.37	0.56
1:B:1075:THR:HA	1:B:1094:VAL:HA	1.87	0.56
1:C:532:VAL:HG11	1:C:535:LYS:NZ	2.21	0.56
1:A:1029:GLU:HG3	1:A:1030:CYS:H	1.70	0.56
1:B:983:ASP:N	1:B:983:ASP:OD1	2.34	0.56
1:C:362:ASP:HA	1:C:525:PRO:HG3	1.88	0.56
1:C:533:LYS:HG2	1:C:583:LEU:HD21	1.88	0.56
1:A:1051:PRO:HD3	1:A:1062:HIS:HE1	1.71	0.56
1:C:800:PHE:HD2	1:C:803:ILE:HG12	1.71	0.56
1:A:603:SER:OG	1:A:604:ASN:N	2.38	0.56
1:B:115:GLN:NE2	1:B:165:THR:OG1	2.40	0.55
1:A:294:LEU:HD21	1:A:600:THR:HG23	1.86	0.55
1:B:873:SER:HA	1:B:876:LEU:HD12	1.87	0.55
1:B:1016:ILE:O	1:B:1020:ALA:N	2.39	0.55
1:A:944:GLY:O	1:A:948:ASN:N	2.37	0.55
1:C:409:ALA:HB3	1:C:412:GLN:HG3	1.87	0.55
1:C:913:VAL:HG22	1:C:921:ILE:HD11	1.88	0.55
1:B:104:TRP:HB2	1:B:119:ILE:HB	1.89	0.55
1:B:801:SER:OG	1:B:802:GLN:NE2	2.39	0.55
1:C:760:GLN:O	1:C:764:ALA:N	2.38	0.55
1:A:609:LEU:HD22	1:A:664:ILE:HG12	1.89	0.55
1:A:1047:LEU:HD13	1:A:1064:THR:HA	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:728:SER:OG	1:A:729:MET:N	2.38	0.55
1:A:1047:LEU:CD1	1:A:1064:THR:CB	2.83	0.55
1:B:771:GLU:O	1:B:775:ASN:N	2.37	0.55
1:C:794:ASP:OD1	1:C:794:ASP:N	2.38	0.55
1:A:1065:TYR:OH	1:A:1107:PHE:CE1	2.52	0.55
1:C:34:ARG:HH21	1:C:215:PRO:HG2	1.71	0.55
1:B:60:SER:OG	1:B:61:ASN:N	2.40	0.54
1:C:324:ILE:HD12	1:C:324:ILE:H	1.72	0.54
1:B:642:GLN:NE2	1:B:646:GLY:O	2.40	0.54
1:B:814:SER:OG	1:B:815:PHE:N	2.40	0.54
1:C:959:THR:HA	1:C:962:LYS:HB2	1.89	0.54
1:B:719:SER:O	1:B:1064:THR:OG1	2.23	0.54
1:B:1012:ARG:O	1:B:1016:ILE:N	2.37	0.54
1:C:446:ASN:HD22	1:C:495:PHE:HD2	1.56	0.54
1:A:959:THR:O	1:A:963:GLN:N	2.36	0.54
1:A:1042:GLY:HA3	1:A:1062:HIS:H	1.71	0.54
1:C:331:THR:H	1:C:577:PRO:HG3	1.72	0.54
1:A:1049:SER:HB2	1:A:1062:HIS:HA	1.89	0.54
1:B:856:LEU:HD12	1:B:957:LEU:HD22	1.90	0.54
1:B:879:THR:HG21	1:B:1048:MET:HB2	1.90	0.54
1:A:672:TYR:CD1	1:A:690:ILE:HG13	2.43	0.54
1:A:1103:THR:OG1	1:A:1104:GLN:N	2.40	0.54
1:C:878:GLY:O	1:C:882:SER:OG	2.26	0.54
1:A:671:SER:O	1:A:691:ILE:N	2.38	0.54
1:A:450:ARG:HG2	1:A:492:SER:HA	1.89	0.53
1:B:453:LEU:HD12	1:B:491:GLN:HG2	1.89	0.53
1:B:724:ILE:HG21	1:B:946:LEU:HD11	1.90	0.53
1:C:186:ASN:HA	1:C:207:PRO:HA	1.89	0.53
1:A:660:CYS:HB2	1:A:695:MET:HG3	1.90	0.53
1:C:1009:GLN:O	1:C:1013:ALA:N	2.37	0.53
1:A:423:LEU:HD21	1:A:510:VAL:HG11	1.89	0.53
1:B:1028:SER:O	1:B:1031:VAL:HG12	2.08	0.53
1:C:903:ARG:HD2	1:C:1047:LEU:HB3	1.89	0.53
1:B:292:ASP:OD1	1:B:292:ASP:N	2.36	0.53
1:C:532:VAL:CG1	1:C:535:LYS:HE3	2.38	0.53
1:A:1045:TYR:N	1:A:1064:THR:HG21	2.23	0.53
1:B:312:GLN:NE2	1:B:314:SER:O	2.41	0.53
1:B:737:THR:O	1:B:742:GLY:N	2.42	0.53
1:C:955:GLN:HA	1:C:958:ASN:HB2	1.90	0.53
1:A:1114:THR:OG1	1:A:1117:ASN:ND2	2.41	0.53
1:A:1045:TYR:CE1	1:A:1064:THR:OG1	2.57	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:380:VAL:HG12	1:C:981:ARG:HG2	1.89	0.53
1:C:1026:LYS:HD3	1:C:1041:CYS:HB3	1.91	0.53
1:A:735:ASP:OD2	1:C:315:ASN:ND2	2.42	0.53
1:A:778:GLU:O	1:A:782:GLN:NE2	2.28	0.53
1:A:932:ILE:O	1:A:936:LEU:N	2.39	0.53
1:A:946:LEU:HA	1:A:949:VAL:HG12	1.90	0.53
1:A:1091:GLY:HA2	1:A:1105:ARG:N	2.23	0.53
1:B:519:PRO:HG3	1:B:562:GLN:HB3	1.91	0.53
1:B:95:THR:OG1	1:B:97:LYS:NZ	2.42	0.53
1:B:573:ALA:HA	1:B:584:ASP:HA	1.91	0.53
1:B:372:PHE:HA	1:B:434:TRP:HB3	1.90	0.52
1:A:1035:SER:HB2	1:A:1046:HIS:H	0.65	0.52
1:C:964:LEU:O	1:C:973:SER:OG	2.26	0.52
1:B:538:ASN:OD1	1:B:538:ASN:N	2.41	0.52
1:B:878:GLY:O	1:B:883:GLY:N	2.42	0.52
1:C:390:PHE:HD1	1:C:515:LEU:HD13	1.75	0.52
1:B:910:THR:OG1	1:B:911:GLN:N	2.42	0.52
1:A:598:PRO:HG3	1:A:672:TYR:CZ	2.44	0.52
1:B:1089:ARG:HH11	1:B:1119:PHE:HB2	1.73	0.52
1:C:728:SER:OG	1:C:729:MET:N	2.41	0.52
1:A:129:LYS:NZ	1:A:167:GLU:OE2	2.41	0.52
1:C:952:GLN:O	1:C:956:ALA:N	2.42	0.52
1:B:136:CYS:SG	1:B:137:ASN:N	2.82	0.52
1:A:428:THR:OG1	1:A:513:PHE:O	2.27	0.52
1:B:605:GLN:OE1	1:B:689:SER:N	2.42	0.52
1:B:713:PRO:HB2	1:B:1107:PHE:HE1	1.74	0.52
1:A:698:GLY:HA3	1:B:785:GLN:HA	1.92	0.52
1:A:903:ARG:HB3	1:A:1047:LEU:HD23	1.90	0.52
1:B:307:GLU:O	1:B:311:TYR:OH	2.20	0.52
1:A:901:ALA:HB2	1:A:914:LEU:HG	1.92	0.52
1:B:325:VAL:HG23	1:B:540:ASN:HB3	1.91	0.52
1:B:430:CYS:HB3	1:B:511:LEU:HD13	1.92	0.52
1:A:717:THR:HG23	1:A:1069:GLN:HB2	1.93	0.51
1:A:596:ILE:HG21	1:A:670:ALA:CB	2.40	0.51
1:A:820:LEU:HD13	1:A:943:LEU:HD22	1.92	0.51
1:B:25:PRO:HD2	1:B:66:HIS:HB3	1.92	0.51
1:C:407:GLN:HB3	1:C:417:ALA:HB2	1.92	0.51
1:C:567:ILE:O	1:C:567:ILE:HG23	2.10	0.51
1:B:1048:MET:HG2	1:B:1063:VAL:HG21	1.91	0.51
1:A:101:ILE:HA	1:A:240:LEU:HG	1.92	0.51
1:A:105:ILE:N	1:A:237:GLN:O	2.40	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:204:LYS:NZ	1:A:206:THR:OG1	2.40	0.51
1:B:1074:THR:OG1	1:B:1095:SER:OG	2.26	0.51
1:A:664:ILE:HB	1:A:669:CYS:HA	1.92	0.51
1:B:377:CYS:HB3	1:B:380:VAL:HG23	1.92	0.51
1:C:313:THR:OG1	1:C:314:SER:N	2.43	0.51
1:C:324:ILE:HG23	1:C:528:SER:O	2.08	0.51
1:C:576:ASP:N	1:C:576:ASP:OD1	2.42	0.51
1:A:333:LEU:HD23	1:A:360:VAL:HG13	1.93	0.51
1:B:879:THR:OG1	1:B:903:ARG:NH2	2.40	0.51
1:A:763:ARG:NH1	1:C:955:GLN:OE1	2.40	0.51
1:B:50:SER:OG	1:B:302:LYS:NZ	2.31	0.51
1:B:355:ARG:HH11	1:C:228:PRO:HG2	1.76	0.51
1:C:399:VAL:HG22	1:C:507:ARG:HG2	1.93	0.51
1:C:563:PHE:HB2	1:C:571:THR:HA	1.93	0.51
1:C:1089:ARG:HH11	1:C:1117:ASN:HA	1.76	0.51
1:A:292:ASP:OD1	1:A:292:ASP:N	2.44	0.51
1:C:324:ILE:HD12	1:C:324:ILE:N	2.25	0.51
1:B:377:CYS:HA	1:B:430:CYS:HA	1.93	0.51
1:C:130:VAL:O	1:C:165:THR:OG1	2.27	0.51
1:C:532:VAL:HG22	1:C:535:LYS:HE2	1.86	0.51
1:C:1006:VAL:O	1:C:1010:LEU:N	2.40	0.51
1:A:1035:SER:HB2	1:A:1045:TYR:C	2.23	0.50
1:B:128:ILE:HB	1:B:168:TYR:HB3	1.93	0.50
1:A:37:TYR:HB3	1:A:221:LEU:HD23	1.92	0.50
1:A:129:LYS:HG2	1:A:167:GLU:HG3	1.93	0.50
1:B:907:ILE:HG23	1:B:1045:TYR:HD2	1.76	0.50
1:C:786:ILE:HG23	1:C:874:ALA:HB2	1.92	0.50
1:A:764:ALA:O	1:A:768:ILE:N	2.41	0.50
1:B:890:ALA:HB3	1:B:892:LEU:HD23	1.92	0.50
1:C:800:PHE:HB2	1:C:803:ILE:HG12	1.93	0.50
1:A:501:VAL:HA	1:A:504:GLN:HE21	1.76	0.50
1:A:955:GLN:OE1	1:B:763:ARG:NH2	2.43	0.50
1:B:764:ALA:O	1:B:768:ILE:N	2.42	0.50
1:B:969:GLY:HA3	1:B:993:ARG:HH21	1.77	0.50
1:B:973:SER:OG	1:B:973:SER:O	2.30	0.50
1:C:654:VAL:HG23	1:C:656:ASN:H	1.77	0.50
1:C:722:THR:HG23	1:C:1059:VAL:HG13	1.93	0.50
1:A:722:THR:HG23	1:A:1059:VAL:HG13	1.94	0.50
1:B:27:ALA:HB3	1:B:64:TRP:HB3	1.94	0.50
1:C:800:PHE:CD2	1:C:803:ILE:HG12	2.47	0.50
1:A:327:PHE:HB2	1:A:528:SER:HB2	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:596:ILE:HG21	1:C:670:ALA:HB3	1.92	0.50
1:C:984:PRO:HA	1:C:987:ALA:HB3	1.94	0.50
1:A:212:ARG:O	1:A:264:TYR:OH	2.28	0.50
1:C:597:THR:HB	1:C:606:VAL:HG12	1.94	0.50
1:A:879:THR:O	1:A:879:THR:OG1	2.28	0.50
1:A:1088:PRO:HA	1:A:1118:THR:HG22	1.92	0.50
1:C:1017:ARG:O	1:C:1021:ASN:ND2	2.44	0.50
1:A:576:ASP:OD1	1:A:576:ASP:N	2.40	0.49
1:B:294:LEU:O	1:B:297:THR:OG1	2.29	0.49
1:B:326:ARG:NH2	1:B:578:GLN:OE1	2.45	0.49
1:C:85:PRO:HA	1:C:235:ARG:HA	1.94	0.49
1:C:615:CYS:N	1:C:642:GLN:OE1	2.44	0.49
1:C:728:SER:OG	1:C:729:MET:O	2.29	0.49
1:A:115:GLN:NE2	1:A:132:GLU:OE2	2.45	0.49
1:A:1035:SER:CB	1:A:1045:TYR:CA	2.87	0.49
1:A:382:PRO:HA	1:A:385:LEU:HD13	1.93	0.49
1:A:1063:VAL:O	1:A:1064:THR:HB	2.11	0.49
1:B:948:ASN:O	1:B:952:GLN:N	2.41	0.49
1:B:1013:ALA:HA	1:B:1016:ILE:HB	1.93	0.49
1:A:726:PRO:HB3	1:A:949:VAL:HG11	1.94	0.49
1:B:358:ASN:H	1:B:521:THR:HB	1.76	0.49
1:B:731:LYS:HE2	1:B:859:LEU:HB2	1.95	0.49
1:A:771:GLU:O	1:A:775:ASN:N	2.40	0.49
1:B:728:SER:OG	1:B:729:MET:N	2.45	0.49
1:C:52:GLN:HB3	1:C:272:THR:HG22	1.94	0.49
1:C:764:ALA:O	1:C:768:ILE:N	2.38	0.49
1:C:1127:VAL:HB	1:C:1130:ILE:HB	1.95	0.49
1:A:15:CYS:SG	1:A:159:SER:OG	2.67	0.49
1:A:62:VAL:HG22	1:A:266:GLY:HA3	1.95	0.49
1:A:128:ILE:HB	1:A:168:TYR:HB3	1.93	0.49
1:A:387:ASP:OD1	1:A:527:LYS:NZ	2.45	0.49
1:C:401:ARG:NH2	1:C:403:ASP:OD2	2.45	0.49
1:C:944:GLY:O	1:C:948:ASN:N	2.45	0.49
1:A:227:LEU:HB3	1:A:229:ILE:HG12	1.95	0.49
1:A:671:SER:HB3	1:A:691:ILE:CD1	2.40	0.49
1:B:48:LEU:HD22	1:B:303:SER:HA	1.94	0.49
1:B:760:GLN:O	1:B:764:ALA:N	2.42	0.49
1:C:954:ALA:O	1:C:958:ASN:N	2.45	0.49
1:A:717:THR:CG2	1:A:1069:GLN:HB2	2.43	0.49
1:B:800:PHE:CE1	1:B:876:LEU:HD22	2.48	0.49
1:B:929:ILE:HA	1:B:932:ILE:HG22	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:315:ASN:HA	1:C:592:GLY:HA2	1.95	0.49
1:B:108:THR:HG22	1:B:233:ILE:HA	1.95	0.49
1:C:538:ASN:HA	1:C:547:THR:HA	1.95	0.48
1:A:589:SER:CB	1:A:613:VAL:HG22	2.43	0.48
1:B:1000:GLN:HE21	1:C:1003:GLN:HE22	1.58	0.48
1:C:527:LYS:HB3	1:C:527:LYS:HZ2	1.78	0.48
1:A:104:TRP:HB2	1:A:119:ILE:HB	1.95	0.48
1:A:734:VAL:HG11	1:A:1002:LEU:HD21	1.95	0.48
1:C:739:TYR:OH	1:C:960:LEU:O	2.30	0.48
1:A:37:TYR:OH	1:A:54:LEU:O	2.30	0.48
1:B:115:GLN:HB3	1:B:130:VAL:HG12	1.96	0.48
1:A:92:PHE:HB2	1:A:190:PHE:HB2	1.95	0.48
1:A:727:VAL:HG21	1:A:779:VAL:HG11	1.94	0.48
1:C:431:VAL:HG13	1:C:508:VAL:HG13	1.95	0.48
1:B:901:ALA:HB1	1:B:911:GLN:HG2	1.94	0.48
1:C:531:LEU:H	1:C:531:LEU:CD1	2.02	0.48
1:C:1030:CYS:C	1:C:1031:VAL:CG2	2.81	0.48
1:B:391:THR:HG21	1:B:518:ALA:HB3	1.95	0.48
1:A:60:SER:OG	1:A:61:ASN:N	2.44	0.48
1:C:113:LYS:HG3	1:C:114:THR:HG23	1.95	0.48
1:A:727:VAL:N	1:A:1056:HIS:O	2.47	0.47
1:B:204:LYS:NZ	1:B:219:SER:OG	2.37	0.47
1:B:227:LEU:HB3	1:B:229:ILE:HG12	1.95	0.47
1:B:408:ILE:HG21	1:B:508:VAL:HG11	1.95	0.47
1:C:187:LEU:HG	1:C:208:ILE:HB	1.96	0.47
1:A:915:TYR:OH	1:C:1077:PRO:O	2.31	0.47
1:B:108:THR:OG1	1:B:109:THR:N	2.47	0.47
1:B:383:THR:HG23	1:B:384:LYS:HG2	1.96	0.47
1:B:1017:ARG:CZ	1:B:1021:ASN:HD21	2.28	0.47
1:C:927:SER:O	1:C:931:LYS:N	2.41	0.47
1:C:991:ILE:O	1:C:995:ILE:N	2.44	0.47
1:C:456:LYS:HD2	1:C:456:LYS:HA	1.72	0.47
1:A:99:ASN:HB3	1:A:173:PHE:HZ	1.79	0.47
1:A:106:PHE:HB2	1:A:117:LEU:HB3	1.95	0.47
1:A:130:VAL:HB	1:A:166:PHE:HB3	1.97	0.47
1:C:929:ILE:HA	1:C:932:ILE:HG22	1.95	0.47
1:A:326:ARG:NH1	1:A:529:THR:O	2.48	0.47
1:A:913:VAL:HG22	1:A:921:ILE:HD11	1.96	0.47
1:A:948:ASN:O	1:A:952:GLN:N	2.40	0.47
1:B:1009:GLN:O	1:B:1013:ALA:N	2.45	0.47
1:B:1055:PRO:O	1:B:1056:HIS:ND1	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:639:ASN:N	1:A:639:ASN:OD1	2.48	0.47
1:A:1103:THR:OG1	1:A:1107:PHE:O	2.31	0.47
1:B:278:ASN:OD1	1:B:282:THR:N	2.43	0.47
1:B:709:SER:HA	1:B:1074:THR:HA	1.96	0.47
1:B:1006:VAL:HA	1:B:1009:GLN:HB2	1.95	0.47
1:C:46:SER:OG	1:C:279:GLU:OE1	2.33	0.47
1:A:1047:LEU:HD13	1:A:1064:THR:CA	2.44	0.47
1:B:663:PRO:HB3	1:C:862:LEU:HD22	1.97	0.47
1:A:446:ASN:ND2	1:A:448:ASN:OD1	2.48	0.47
1:B:875:LEU:HD22	1:B:1051:PRO:HD3	1.97	0.47
1:B:1019:SER:O	1:B:1023:ALA:N	2.44	0.47
1:A:1031:VAL:HG23	1:A:1046:HIS:NE2	2.30	0.47
1:A:470:ILE:HD11	1:A:486:CYS:HB3	1.96	0.46
1:C:173:PHE:O	1:C:205:HIS:NE2	2.48	0.46
1:A:110:LEU:HD23	1:A:235:ARG:HE	1.80	0.46
1:A:870:GLN:O	1:A:873:SER:OG	2.31	0.46
1:C:896:PHE:HA	1:C:899:GLN:HB3	1.97	0.46
1:B:824:VAL:HA	1:B:947:GLN:HE22	1.80	0.46
1:B:1013:ALA:O	1:B:1017:ARG:N	2.44	0.46
1:B:1041:CYS:HA	1:B:1062:HIS:HD1	1.81	0.46
1:A:202:TYR:HB2	1:A:221:LEU:HD21	1.98	0.46
1:A:910:THR:OG1	1:A:911:GLN:N	2.49	0.46
1:C:746:GLU:HG2	1:C:984:PRO:HB3	1.97	0.46
1:A:95:THR:O	1:A:185:LYS:N	2.49	0.46
1:B:227:LEU:HD23	1:B:227:LEU:HA	1.76	0.46
1:B:576:ASP:OD1	1:B:576:ASP:N	2.48	0.46
1:C:532:VAL:HG11	1:C:535:LYS:HE3	1.98	0.46
1:A:36:VAL:O	1:A:221:LEU:N	2.47	0.46
1:B:1074:THR:HG1	1:B:1095:SER:HG	1.55	0.46
1:C:129:LYS:HG2	1:C:167:GLU:HG3	1.98	0.46
1:A:81:ASN:HD21	1:A:261:ALA:HB3	1.81	0.46
1:A:536:CYS:SG	1:A:588:CYS:HB2	2.56	0.46
1:C:220:ALA:HB2	1:C:283:ILE:HB	1.96	0.46
1:C:752:LEU:HD23	1:C:752:LEU:HA	1.78	0.46
1:B:565:ARG:HD3	1:B:569:ASP:HA	1.97	0.46
1:C:343:THR:O	1:C:507:ARG:NH2	2.40	0.46
1:A:118:LEU:HD13	1:A:135:PHE:HE2	1.80	0.46
1:C:94:SER:OG	1:C:96:GLU:OE2	2.34	0.46
1:A:959:THR:HA	1:A:962:LYS:HB3	1.98	0.46
1:B:104:TRP:HB3	1:B:106:PHE:HE1	1.81	0.46
1:C:355:ARG:HG3	1:C:394:TYR:HE1	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:724:ILE:HG12	1:A:943:LEU:HG	1.98	0.45
1:A:895:PRO:HD3	1:C:1075:THR:HG21	1.98	0.45
1:A:1065:TYR:OH	1:A:1107:PHE:CD1	2.58	0.45
1:A:97:LYS:HD3	1:A:185:LYS:HB2	1.99	0.45
1:A:784:LYS:HG3	1:A:785:GLN:HG3	1.98	0.45
1:B:308:LYS:HG3	1:B:598:PRO:HA	1.97	0.45
1:C:365:VAL:HG13	1:C:366:LEU:HD22	1.98	0.45
1:C:496:GLN:H	1:C:499:ASN:HD22	1.64	0.45
1:C:701:ASN:OD1	1:C:701:ASN:N	2.49	0.45
1:C:795:PHE:HE2	1:C:800:PHE:CZ	2.34	0.45
1:C:903:ARG:HH11	1:C:1047:LEU:HD22	1.81	0.45
1:B:53:ASP:HB3	1:B:55:PHE:CE2	2.50	0.45
1:B:697:LEU:HD22	1:C:871:TYR:CZ	2.51	0.45
1:C:800:PHE:HD2	1:C:803:ILE:HG13	1.80	0.45
1:A:737:THR:O	1:A:741:CYS:HB2	2.16	0.45
1:B:315:ASN:HA	1:B:592:GLY:HA2	1.98	0.45
1:B:795:PHE:HB2	1:B:798:PHE:HB2	1.99	0.45
1:B:1064:THR:OG1	1:B:1064:THR:O	2.34	0.45
1:C:126:VAL:HB	1:C:172:PRO:HA	1.99	0.45
1:A:590:PHE:HZ	1:B:855:GLY:HA2	1.81	0.45
1:C:308:LYS:HG3	1:C:662:ILE:HD11	1.99	0.45
1:C:401:ARG:HB2	1:C:404:GLU:HG3	1.99	0.45
1:C:1037:ARG:O	1:C:1046:HIS:ND1	2.47	0.45
1:A:389:CYS:HB3	1:A:523:CYS:HB3	1.45	0.45
1:B:854:ASN:H	1:B:856:LEU:HD23	1.82	0.45
1:C:727:VAL:HG13	1:C:1057:GLY:HA2	1.98	0.45
1:A:356:ILE:HB	1:A:393:VAL:HB	1.99	0.45
1:A:642:GLN:NE2	1:A:646:GLY:O	2.50	0.45
1:A:1009:GLN:O	1:A:1013:ALA:N	2.46	0.45
1:B:565:ARG:NH1	1:B:569:ASP:OD1	2.45	0.45
1:C:465:ASP:OD1	1:C:465:ASP:N	2.41	0.45
1:C:1009:GLN:HA	1:C:1012:ARG:HB2	1.98	0.45
1:A:964:LEU:O	1:A:998:ARG:NH2	2.50	0.44
1:A:1016:ILE:O	1:A:1020:ALA:N	2.48	0.44
1:A:1128:ILE:HG21	1:B:897:ALA:HB1	1.99	0.44
1:B:910:THR:HG23	1:B:912:ASN:H	1.81	0.44
1:B:954:ALA:O	1:B:958:ASN:N	2.38	0.44
1:B:1067:PRO:O	1:C:890:ALA:N	2.50	0.44
1:C:874:ALA:O	1:C:878:GLY:N	2.50	0.44
1:A:1029:GLU:C	1:A:1031:VAL:H	2.21	0.44
1:A:1094:VAL:HG23	1:A:1101:PHE:HB2	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:58:PHE:HB3	1:C:291:LEU:HD12	2.00	0.44
1:A:325:VAL:HG22	1:A:529:THR:HG22	2.00	0.44
1:A:923:ASN:O	1:A:927:SER:N	2.45	0.44
1:B:724:ILE:CG2	1:B:1058:VAL:O	2.65	0.44
1:A:342:ALA:O	1:A:507:ARG:NH1	2.40	0.44
1:A:561:GLN:HB3	1:B:43:PHE:HB2	2.00	0.44
1:B:292:ASP:O	1:B:295:SER:OG	2.36	0.44
1:A:923:ASN:HA	1:A:926:ASN:HB3	1.98	0.44
1:B:896:PHE:HA	1:B:899:GLN:HB3	2.00	0.44
1:A:643:THR:OG1	1:A:644:ARG:N	2.51	0.44
1:A:790:PRO:HG3	1:C:705:TYR:H	1.81	0.44
1:B:98:SER:O	1:B:98:SER:OG	2.29	0.44
1:B:819:LEU:O	1:B:823:LYS:HG2	2.18	0.44
1:C:751:LEU:HD21	1:C:758:CYS:SG	2.58	0.44
1:A:735:ASP:OD1	1:A:738:MET:N	2.41	0.44
1:B:187:LEU:HB2	1:B:208:ILE:HB	2.00	0.44
1:B:896:PHE:HE1	1:B:903:ARG:HH21	1.64	0.44
1:B:967:ASN:ND2	1:B:970:ALA:O	2.51	0.44
1:C:800:PHE:CD2	1:C:803:ILE:CD1	3.01	0.44
1:A:635:SER:O	1:A:635:SER:OG	2.33	0.43
1:B:348:VAL:HG21	1:B:400:ILE:HD13	2.00	0.43
1:B:613:VAL:H	1:B:646:GLY:HA2	1.82	0.43
1:B:886:PHE:HB2	1:B:891:ALA:HA	1.99	0.43
1:C:572:ASP:O	1:C:583:LEU:N	2.49	0.43
1:A:757:PHE:CE2	1:A:758:CYS:HB3	2.53	0.43
1:A:823:LYS:HE3	1:A:940:ALA:HB1	2.00	0.43
1:A:1022:LEU:HG	1:A:1026:LYS:HD2	2.00	0.43
1:C:328:PRO:HD3	1:C:527:LYS:HD3	2.00	0.43
1:C:740:ILE:HD12	1:C:995:ILE:HG23	2.00	0.43
1:B:220:ALA:HB2	1:B:283:ILE:HB	2.00	0.43
1:B:705:TYR:OH	1:C:794:ASP:OD1	2.34	0.43
1:C:795:PHE:HE2	1:C:800:PHE:CE1	2.37	0.43
1:C:1000:GLN:O	1:C:1004:THR:OG1	2.27	0.43
1:A:187:LEU:HB2	1:A:208:ILE:HB	2.01	0.43
1:B:903:ARG:NH1	1:B:1047:LEU:HB3	2.33	0.43
1:A:607:ALA:HB2	1:A:690:ILE:HG21	2.00	0.43
1:B:752:LEU:HD23	1:B:752:LEU:HA	1.90	0.43
1:C:804:LEU:HD21	1:C:880:ILE:HG21	2.01	0.43
1:A:391:THR:HA	1:A:520:ALA:HA	2.00	0.43
1:A:671:SER:CB	1:A:691:ILE:CD1	2.96	0.43
1:B:982:LEU:HB2	1:B:987:ALA:HB2	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:187:LEU:N	1:C:206:THR:O	2.34	0.43
1:C:328:PRO:CD	1:C:527:LYS:HD3	2.48	0.43
1:A:644:ARG:HB3	1:A:666:ALA:HB1	2.01	0.43
1:B:364:SER:N	1:B:386:ASN:HD21	2.17	0.43
1:B:386:ASN:HA	1:B:525:PRO:HD2	2.01	0.43
1:A:321:THR:OG1	1:A:322:GLU:OE1	2.26	0.43
1:A:438:ASN:N	1:A:438:ASN:OD1	2.51	0.43
1:A:728:SER:HG	1:A:729:MET:N	2.16	0.43
1:A:750:LEU:HD11	1:A:988:GLU:HG2	1.99	0.43
1:B:400:ILE:HG12	1:B:416:ILE:HD13	1.99	0.43
1:B:610:TYR:HE2	1:B:649:ILE:HD12	1.84	0.43
1:C:532:VAL:HG21	1:C:535:LYS:CE	2.30	0.43
1:A:1102:VAL:HG13	1:A:1111:GLN:HG2	2.00	0.43
1:B:1071:LYS:HD2	1:B:1073:PHE:CD2	2.54	0.43
1:A:1045:TYR:H	1:A:1064:THR:HG21	1.84	0.42
1:B:130:VAL:O	1:B:165:THR:OG1	2.34	0.42
1:B:401:ARG:H	1:B:401:ARG:HG2	1.61	0.42
1:A:894:ILE:HD12	1:A:895:PRO:HD2	2.00	0.42
1:B:708:ASN:OD1	1:B:708:ASN:N	2.53	0.42
1:C:325:VAL:HG22	1:C:326:ARG:H	1.84	0.42
1:C:736:CYS:HB2	1:C:758:CYS:HB3	1.73	0.42
1:C:824:VAL:HG11	1:C:1055:PRO:HG2	2.01	0.42
1:B:760:GLN:HA	1:B:763:ARG:HB2	2.00	0.42
1:B:1020:ALA:O	1:B:1024:ALA:N	2.40	0.42
1:C:191:VAL:HG23	1:C:221:LEU:HD22	2.00	0.42
1:A:293:PRO:HB3	1:A:595:VAL:HG11	2.00	0.42
1:A:729:MET:SD	1:A:1009:GLN:NE2	2.91	0.42
1:B:1038:VAL:H	1:C:1029:GLU:HG3	1.83	0.42
1:C:1008:GLN:O	1:C:1012:ARG:N	2.42	0.42
1:A:720:VAL:HG11	1:A:932:ILE:HG21	2.02	0.42
1:B:174:LEU:HG	1:B:188:ARG:HH22	1.84	0.42
1:C:529:THR:O	1:C:530:ASN:O	2.37	0.42
1:A:765:LEU:O	1:A:769:ALA:N	2.50	0.42
1:B:735:ASP:OD1	1:B:735:ASP:N	2.52	0.42
1:C:567:ILE:O	1:C:568:ALA:HB3	2.17	0.42
1:C:945:LYS:HA	1:C:948:ASN:HD22	1.85	0.42
1:C:89:GLY:HA3	1:C:268:LEU:HD12	2.02	0.42
1:C:133:PHE:HA	1:C:161:ALA:HA	2.02	0.42
1:A:1064:THR:HG23	1:A:1064:THR:O	2.19	0.42
1:C:115:GLN:HE21	1:C:130:VAL:HG12	1.84	0.42
1:A:308:LYS:HE2	1:A:308:LYS:HB3	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:756:SER:O	1:C:963:GLN:NE2	2.52	0.42
1:B:551:THR:OG1	1:B:552:GLU:N	2.53	0.42
1:B:584:ASP:OD1	1:B:584:ASP:N	2.53	0.42
1:C:104:TRP:H	1:C:119:ILE:HB	1.85	0.42
1:C:188:ARG:HB3	1:C:190:PHE:CE2	2.55	0.42
1:C:958:ASN:HB3	1:C:962:LYS:NZ	2.35	0.42
1:C:639:ASN:N	1:C:639:ASN:OD1	2.53	0.42
1:A:390:PHE:HD2	1:A:515:LEU:HB2	1.85	0.41
1:A:564:GLY:HA2	1:B:43:PHE:HB3	2.01	0.41
1:B:64:TRP:HE1	1:B:262:ALA:HB1	1.84	0.41
1:C:768:ILE:O	1:C:771:GLU:HG2	2.20	0.41
1:A:550:LEU:HD23	1:A:583:LEU:HD13	2.02	0.41
1:A:731:LYS:HE3	1:A:859:LEU:HB2	2.01	0.41
1:B:440:ASP:OD1	1:B:449:TYR:OH	2.36	0.41
1:C:565:ARG:CZ	1:C:569:ASP:OD1	2.67	0.41
1:A:24:LEU:HD12	1:A:65:PHE:HD2	1.85	0.41
1:A:227:LEU:HD13	1:A:227:LEU:HA	1.83	0.41
1:B:21:ARG:HA	1:B:21:ARG:HD2	1.82	0.41
1:B:131:CYS:HB2	1:B:164:CYS:HB3	1.48	0.41
1:C:401:ARG:HH21	1:C:503:TYR:HD1	1.67	0.41
1:B:536:CYS:HB2	1:B:588:CYS:HB2	1.91	0.41
1:B:56:LEU:N	1:B:268:LEU:HG	2.36	0.41
1:B:1103:THR:HG21	1:B:1108:TYR:CD1	2.55	0.41
1:A:813:ARG:HD2	1:A:817:GLU:HB3	2.01	0.41
1:A:1050:PHE:O	1:A:1052:GLN:NE2	2.54	0.41
1:C:1037:ARG:HB3	1:C:1046:HIS:CE1	2.56	0.41
1:B:737:THR:HA	1:B:741:CYS:HB2	2.03	0.41
1:C:100:ILE:O	1:C:241:ALA:N	2.39	0.41
1:C:327:PHE:H	1:C:328:PRO:HD3	1.85	0.41
1:B:712:ILE:H	1:B:1071:LYS:HG2	1.85	0.41
1:C:292:ASP:OD1	1:C:295:SER:N	2.44	0.41
1:A:293:PRO:HB2	1:A:606:VAL:HG11	2.02	0.41
1:A:893:GLN:NE2	1:C:1072:ASN:OD1	2.41	0.41
1:B:24:LEU:HD12	1:B:65:PHE:HD2	1.86	0.41
1:B:208:ILE:HD12	1:B:208:ILE:HA	1.97	0.41
1:C:1030:CYS:C	1:C:1031:VAL:HG23	2.40	0.41
1:A:358:ASN:HD22	1:A:358:ASN:HA	1.70	0.41
1:A:756:SER:O	1:A:756:SER:OG	2.33	0.41
1:A:872:THR:HA	1:A:875:LEU:HD12	2.03	0.41
1:A:878:GLY:O	1:A:883:GLY:N	2.51	0.41
1:A:1121:SER:HB3	1:B:912:ASN:HB2	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:54:LEU:HD23	1:B:193:LYS:HG2	2.03	0.41
1:B:932:ILE:HD12	1:B:935:SER:HB2	2.03	0.41
1:C:1030:CYS:O	1:C:1031:VAL:HG22	2.21	0.41
1:C:1074:THR:OG1	1:C:1095:SER:OG	2.34	0.41
1:A:530:ASN:OD1	1:A:530:ASN:N	2.54	0.40
1:B:437:ASN:HB2	1:B:504:GLN:HB3	2.02	0.40
1:B:473:ALA:HB3	1:B:485:ASN:HA	2.03	0.40
1:B:788:LYS:NZ	1:B:870:GLN:HE22	2.19	0.40
1:C:451:TYR:CZ	1:C:491:GLN:HB3	2.56	0.40
1:C:998:ARG:O	1:C:1002:LEU:N	2.49	0.40
1:A:139:PRO:HB2	1:A:157:VAL:HG12	2.03	0.40
1:A:901:ALA:HB1	1:A:911:GLN:HG2	2.02	0.40
1:B:615:CYS:HB2	1:B:647:CYS:HB3	1.52	0.40
1:B:820:LEU:HD21	1:B:943:LEU:HD22	2.03	0.40
1:C:750:LEU:HD21	1:C:988:GLU:HB2	2.04	0.40
1:B:773:ASP:OD1	1:B:773:ASP:N	2.54	0.40
1:C:550:LEU:HB3	1:C:583:LEU:HD23	2.02	0.40
1:A:1096:ASN:HD22	1:A:1096:ASN:HA	1.75	0.40
1:B:293:PRO:HB2	1:B:606:VAL:HG11	2.04	0.40
1:B:800:PHE:CD1	1:B:800:PHE:O	2.75	0.40
1:B:1104:GLN:HG2	1:B:1107:PHE:H	1.86	0.40
1:C:101:ILE:HD13	1:C:240:LEU:HG	2.02	0.40
1:C:125:ASN:N	1:C:125:ASN:OD1	2.55	0.40
1:C:360:VAL:HA	1:C:522:VAL:HG13	2.03	0.40
1:A:86:PHE:HB2	1:A:236:PHE:HD1	1.86	0.40
1:A:449:TYR:HB3	1:A:493:TYR:HD2	1.86	0.40
1:B:794:ASP:OD1	1:B:794:ASP:N	2.55	0.40
1:B:1042:GLY:HA2	1:B:1064:THR:HG22	2.02	0.40
1:C:398:PHE:HZ	1:C:408:ILE:HG21	1.86	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	995/1259 (79%)	922 (93%)	70 (7%)	3 (0%)	41 74
1	B	997/1259 (79%)	914 (92%)	80 (8%)	3 (0%)	41 74
1	C	998/1259 (79%)	925 (93%)	64 (6%)	9 (1%)	17 56
2	n	113/115 (98%)	108 (96%)	5 (4%)	0	100 100
3	o	103/105 (98%)	90 (87%)	11 (11%)	2 (2%)	8 41
All	All	3206/3997 (80%)	2959 (92%)	230 (7%)	17 (0%)	32 67

All (17) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	1030	CYS
1	C	327	PHE
1	C	530	ASN
1	C	568	ALA
1	A	1030	CYS
1	A	1064	THR
1	B	87	ASN
1	C	567	ILE
1	B	1028	SER
1	C	333	LEU
1	C	529	THR
1	C	1030	CYS
3	o	7	SER
1	A	33	THR
1	C	87	ASN
3	o	9	SER
1	C	1031	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	885/1091 (81%)	874 (99%)	11 (1%)	71 86
1	B	889/1091 (82%)	885 (100%)	4 (0%)	91 96

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	C	888/1091 (81%)	864 (97%)	24 (3%)	44 72
2	n	96/96 (100%)	96 (100%)	0	100 100
3	o	89/89 (100%)	87 (98%)	2 (2%)	52 76
All	All	2847/3458 (82%)	2806 (99%)	41 (1%)	68 84

All (41) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	310	ILE
1	A	377	CYS
1	A	430	CYS
1	A	671	SER
1	A	672	TYR
1	A	717	THR
1	A	821	PHE
1	A	881	THR
1	A	1028	SER
1	A	1030	CYS
1	A	1035	SER
1	B	88	ASP
1	B	131	CYS
1	B	724	ILE
1	B	1031	VAL
1	C	15	CYS
1	C	31	SER
1	C	299	CYS
1	C	322	GLU
1	C	324	ILE
1	C	326	ARG
1	C	331	THR
1	C	332	ASN
1	C	333	LEU
1	C	334	CYS
1	C	356	ILE
1	C	363	TYR
1	C	527	LYS
1	C	528	SER
1	C	531	LEU
1	C	532	VAL
1	C	567	ILE
1	C	575	ARG

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Mol	Chain	Res	Type
1	C	580	LEU
1	C	583	LEU
1	C	705	TYR
1	C	751	LEU
1	C	871	TYR
1	C	886	PHE
3	o	6	GLN
3	o	10	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (43) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	81	ASN
1	A	209	ASN
1	A	358	ASN
1	A	911	GLN
1	A	1021	ASN
1	A	1034	GLN
1	A	1096	ASN
1	A	1099	HIS
1	A	1117	ASN
1	A	1123	ASN
1	B	23	GLN
1	B	115	GLN
1	B	358	ASN
1	B	386	ASN
1	B	420	ASN
1	B	656	ASN
1	B	802	GLN
1	B	899	GLN
1	B	953	ASN
1	B	963	GLN
1	B	990	GLN
1	B	1000	GLN
1	B	1021	ASN
1	B	1086	HIS
1	C	17	ASN
1	C	115	GLN
1	C	163	ASN
1	C	186	ASN
1	C	446	ASN
1	C	491	GLN

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Mol	Chain	Res	Type
1	C	517	HIS
1	C	782	GLN
1	C	870	GLN
1	C	948	ASN
1	C	953	ASN
1	C	963	GLN
1	C	1000	GLN
1	C	1021	ASN
1	C	1081	HIS
2	n	40	GLN
3	o	6	GLN
3	o	38	GLN
3	o	90	HIS

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 (i)

There are no chain breaks in this entry.

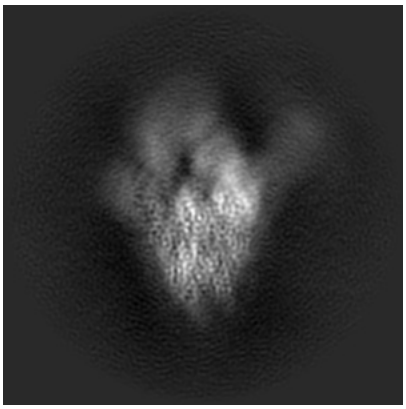
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-39547. These allow visual inspection of the internal detail of the map and identification of artifacts.

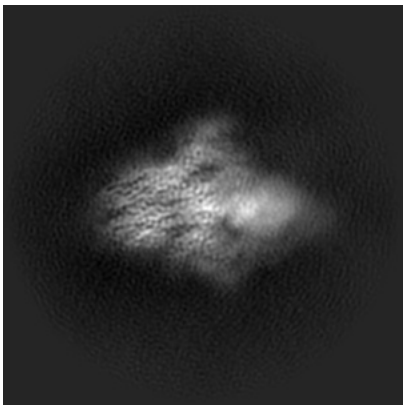
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

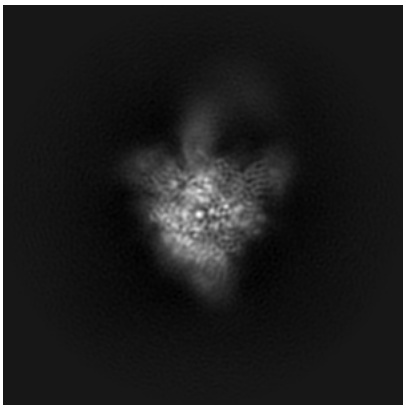
6.1.1 Primary map



X

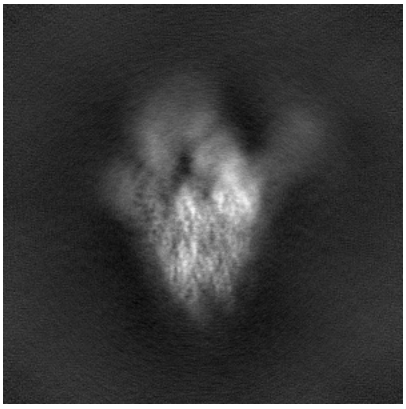


Y

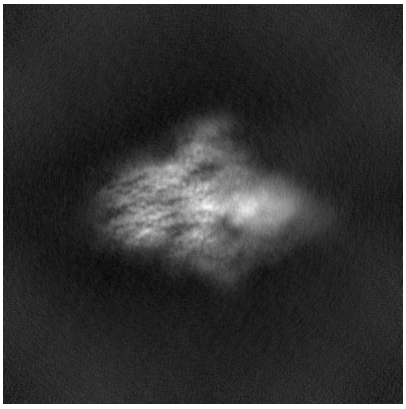


Z

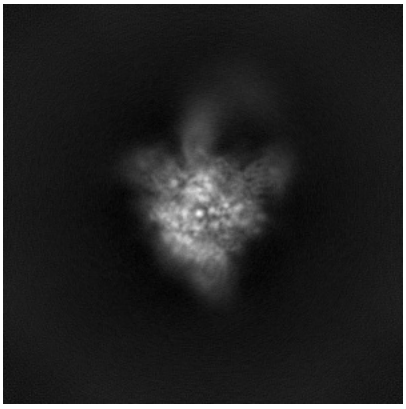
6.1.2 Raw map



X



Y

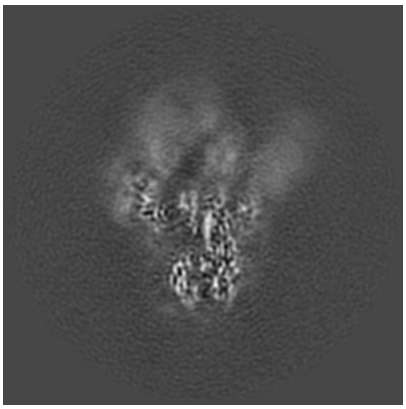


Z

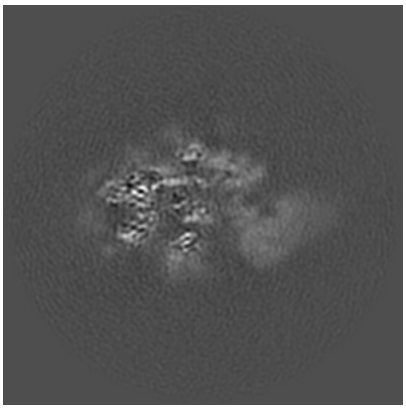
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

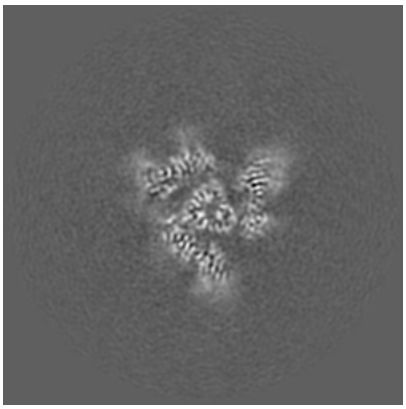
6.2.1 Primary map



X Index: 192

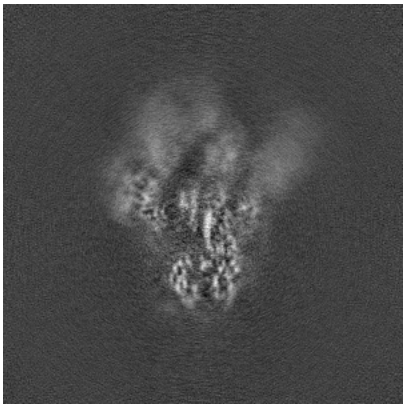


Y Index: 192

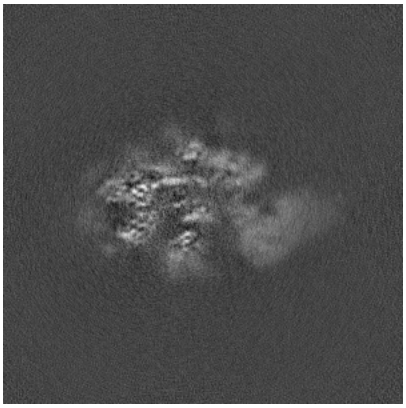


Z Index: 192

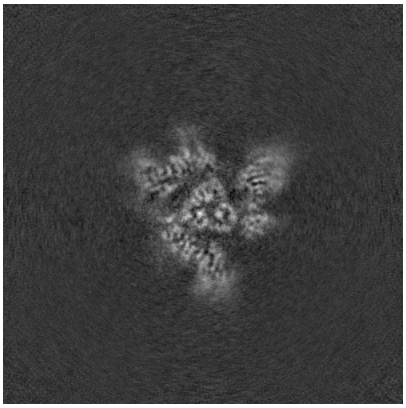
6.2.2 Raw map



X Index: 192



Y Index: 192

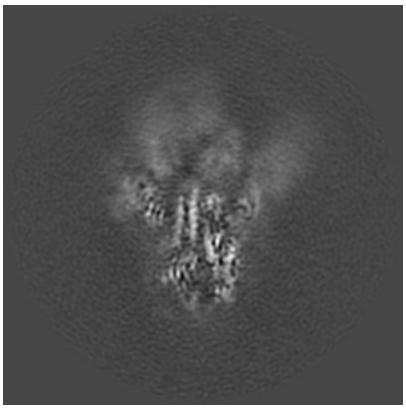


Z Index: 192

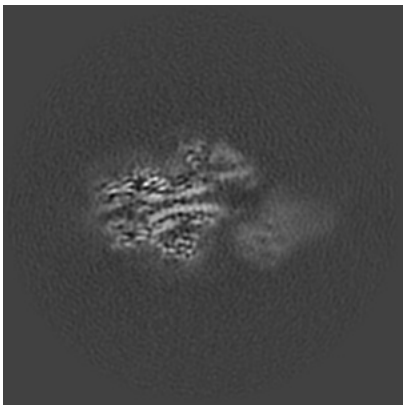
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

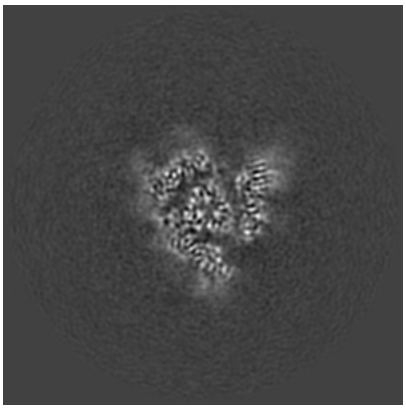
6.3.1 Primary map



X Index: 188

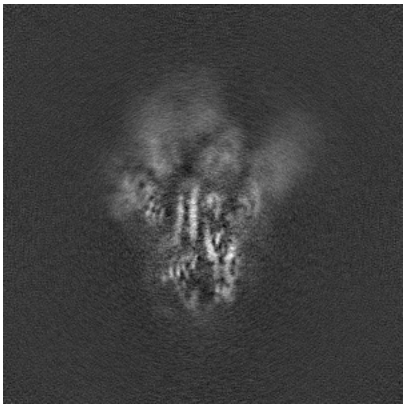


Y Index: 183

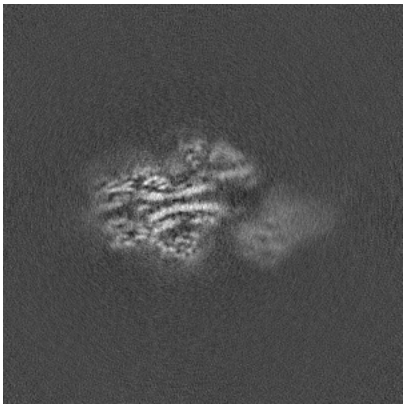


Z Index: 187

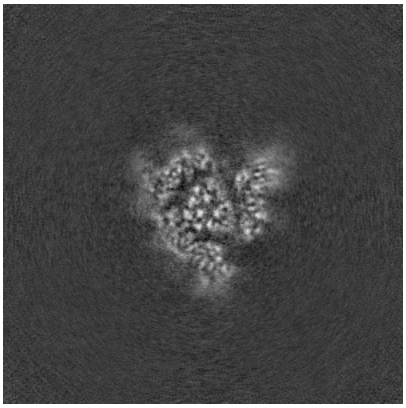
6.3.2 Raw map



X Index: 188



Y Index: 183

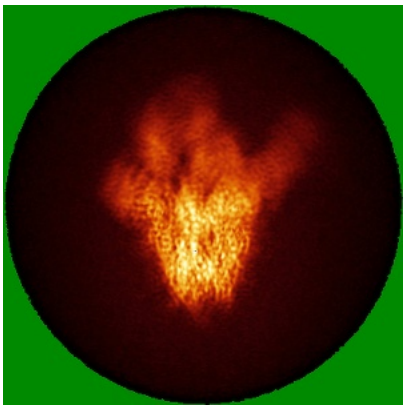


Z Index: 187

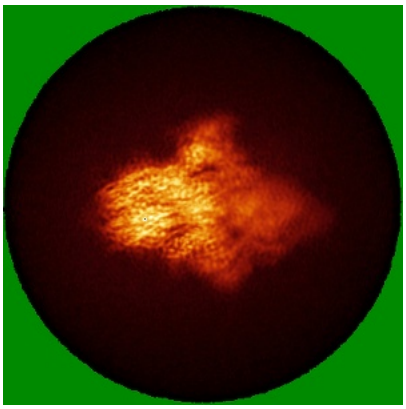
The images above show the largest variance slices of the map in three orthogonal directions.

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

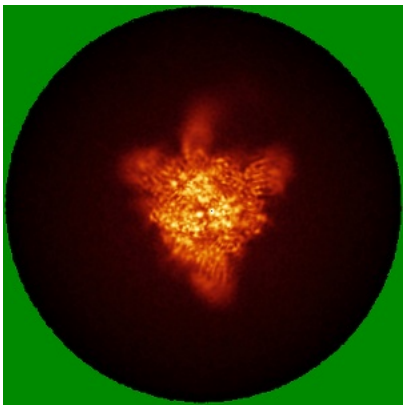
6.4.1 Primary map



X



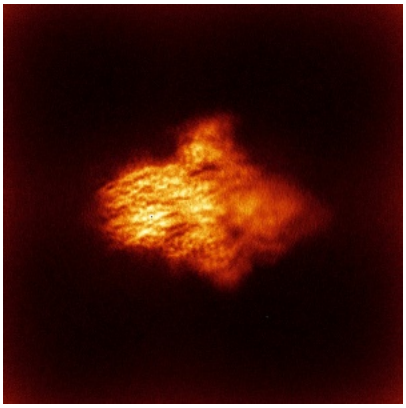
Y



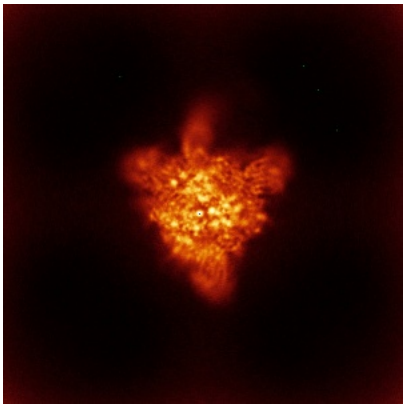
Z

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.

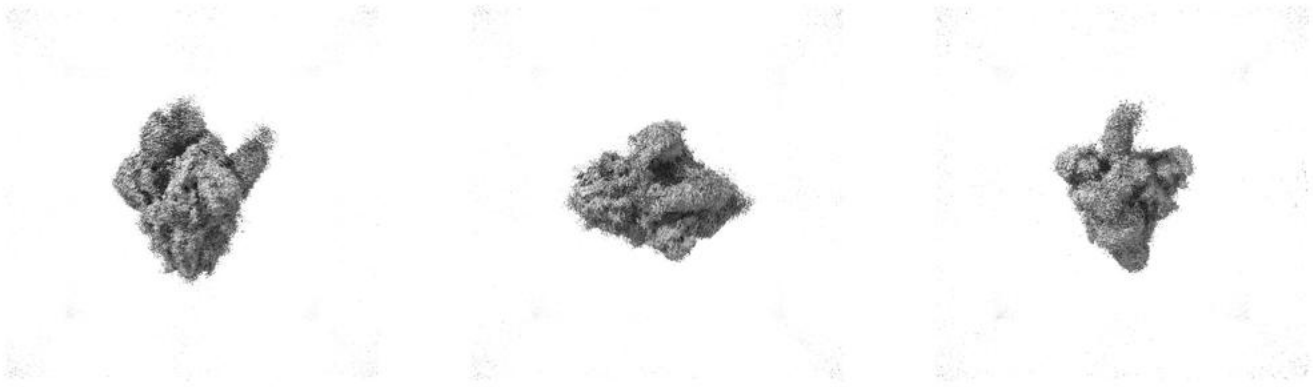
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.115. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

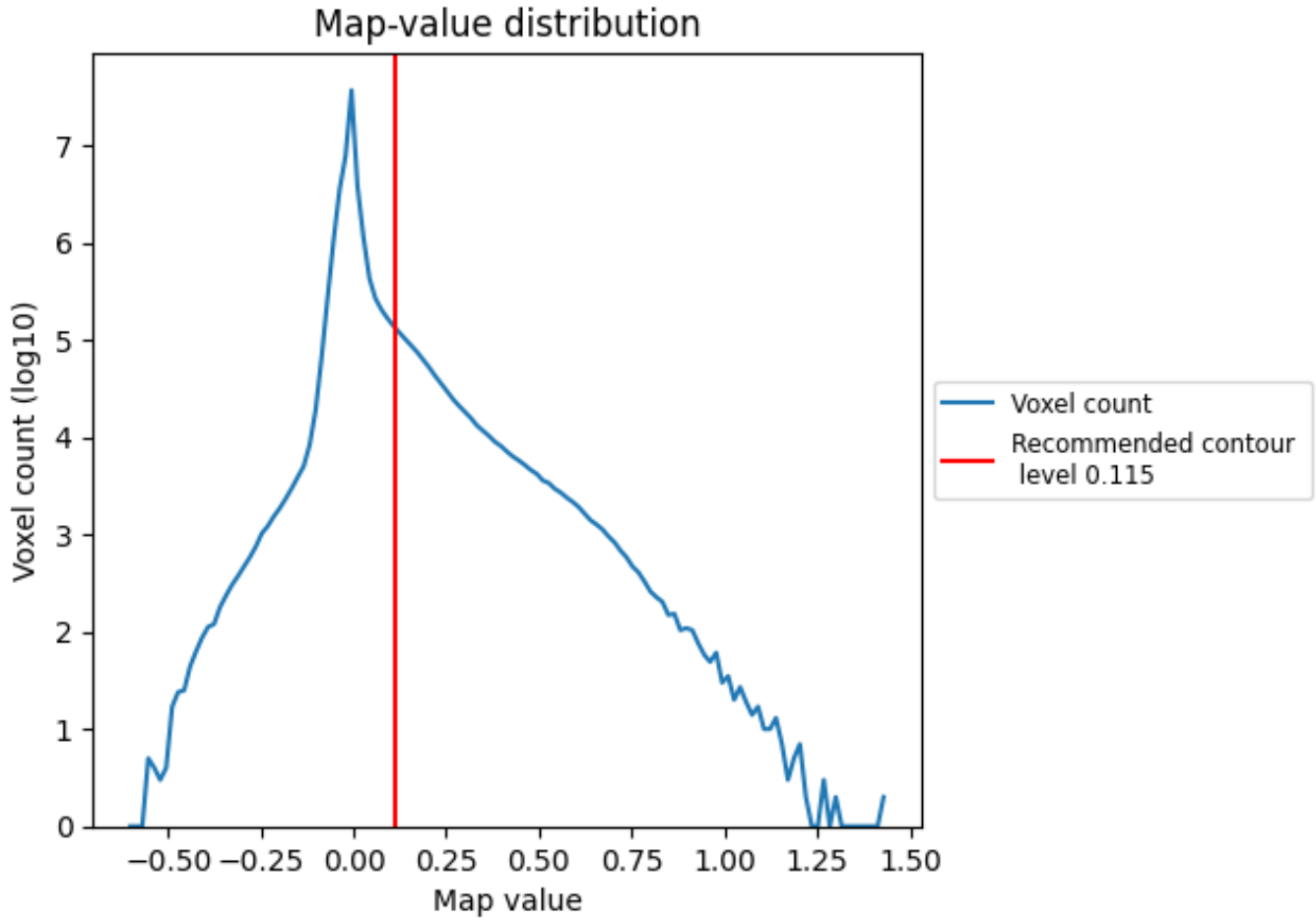
6.6 Mask visualisation (i)

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

7 Map analysis

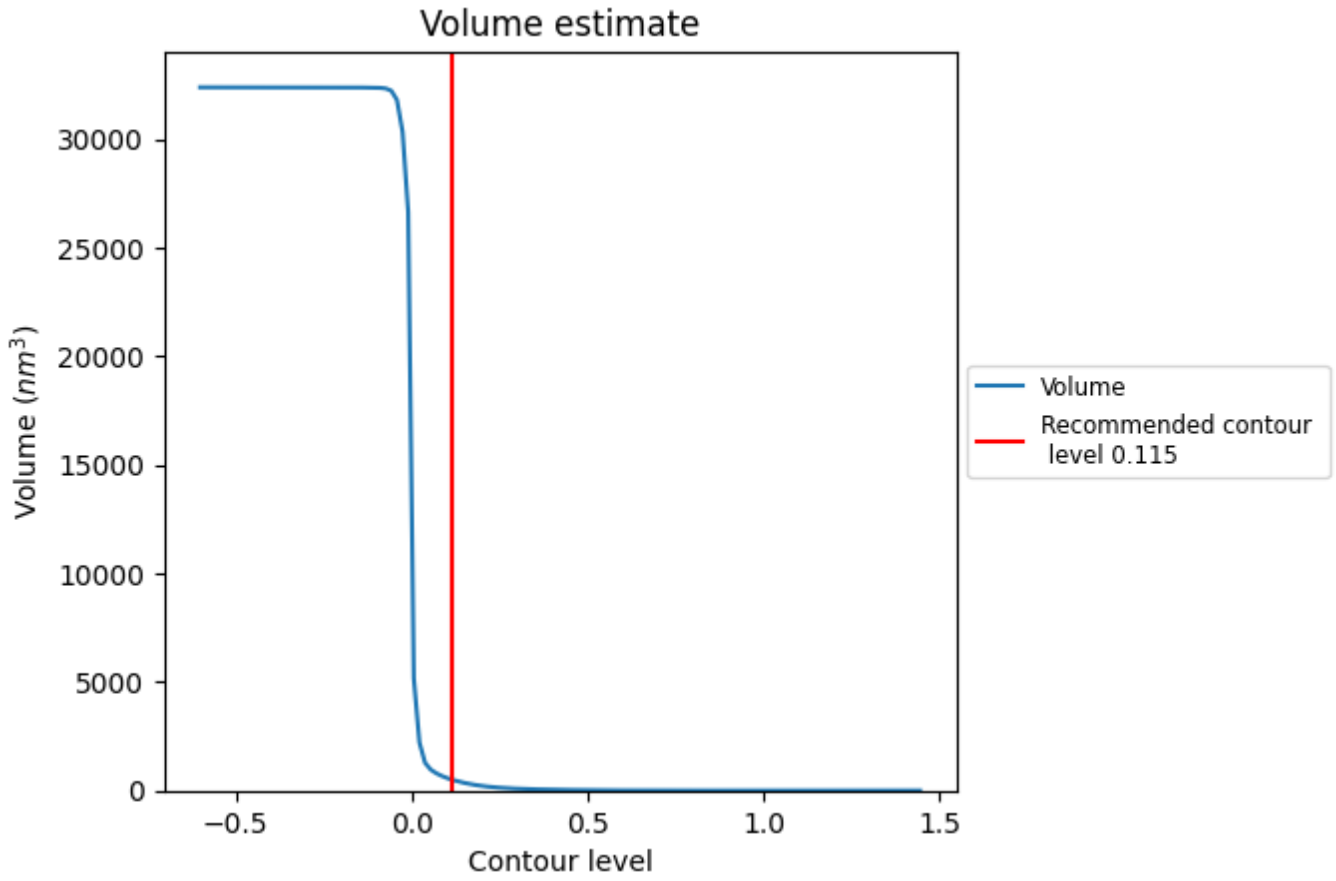
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

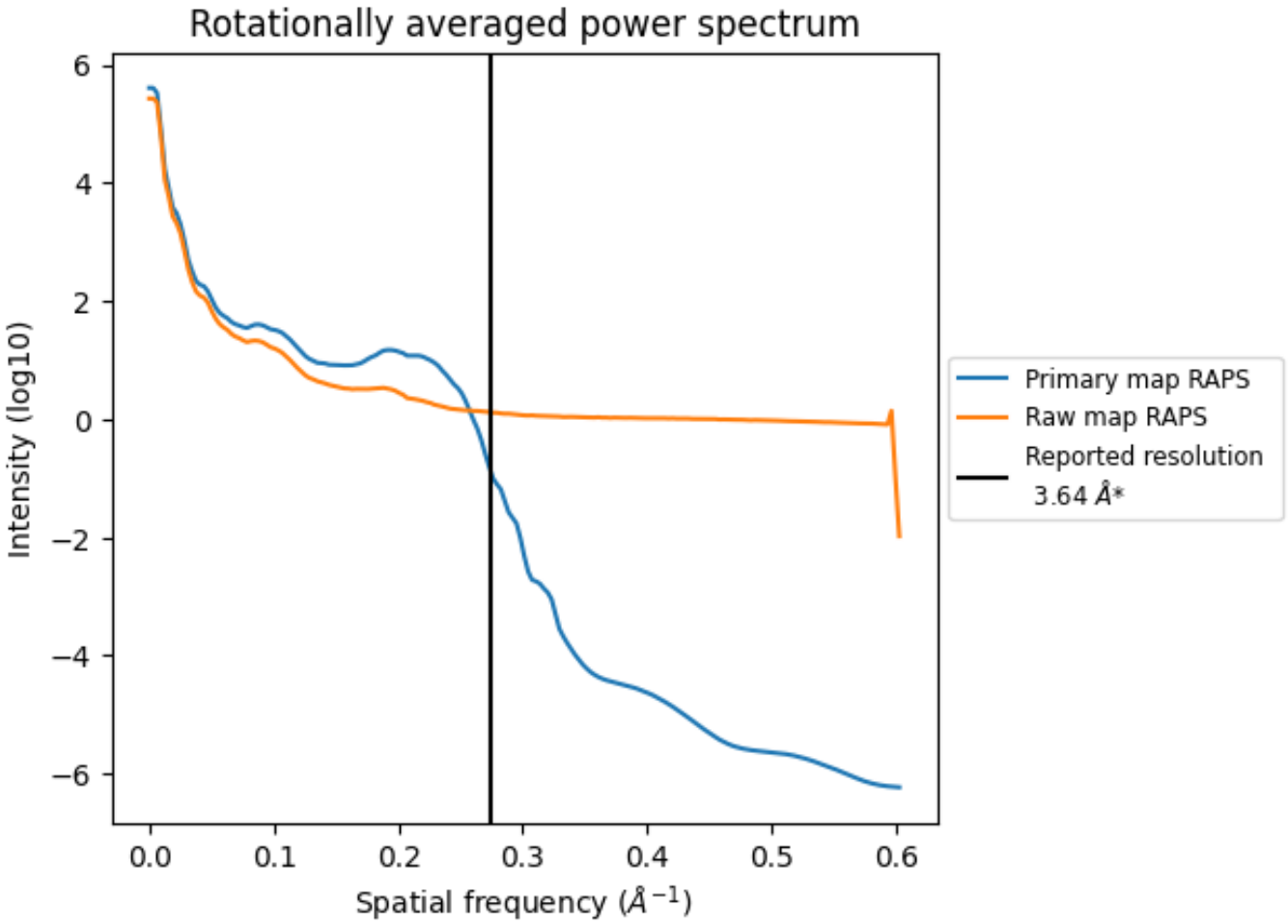
7.2 Volume estimate



The volume at the recommended contour level is 501 nm^3; this corresponds to an approximate mass of 452 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)

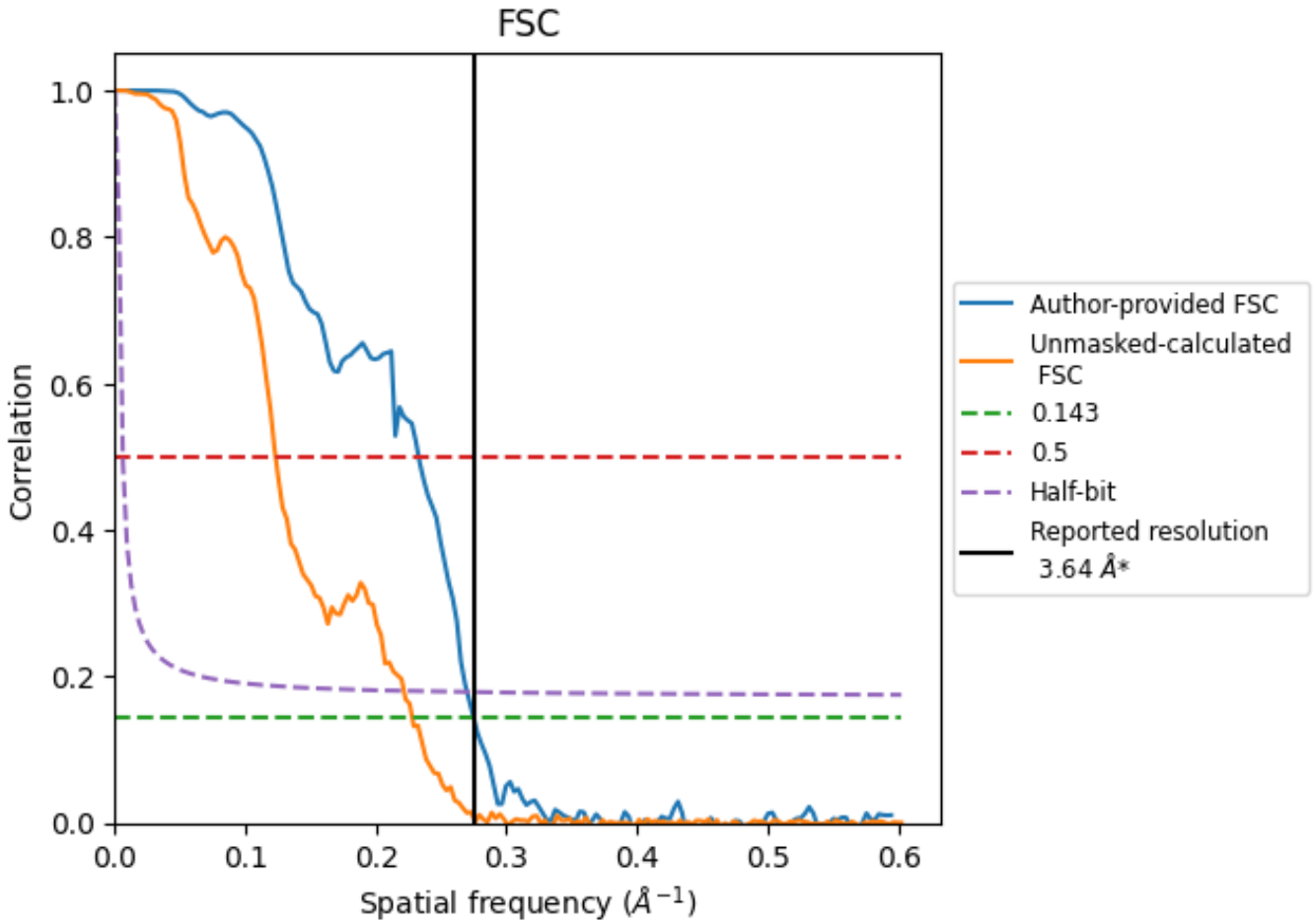


*Reported resolution corresponds to spatial frequency of 0.275 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.275 Å^{-1}

8.2 Resolution estimates (i)

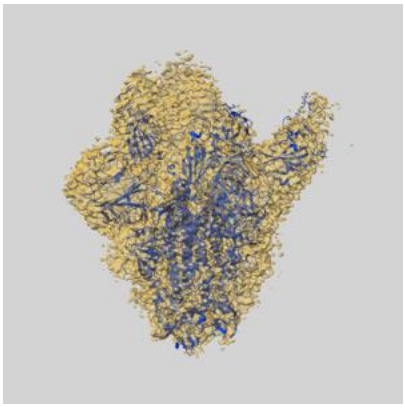
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.64	-	-
Author-provided FSC curve	3.64	4.30	3.71
Unmasked-calculated*	4.39	8.12	4.51

*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 4.39 differs from the reported value 3.64 by more than 10 %

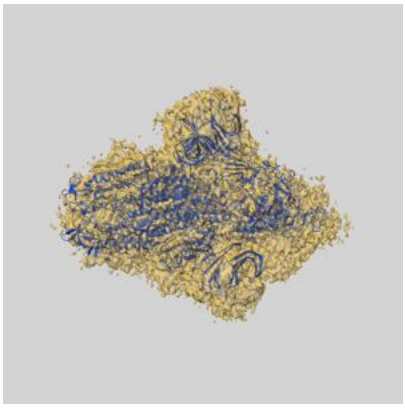
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-39547 and PDB model 8YRP. Per-residue inclusion information can be found in section 3 on page 10.

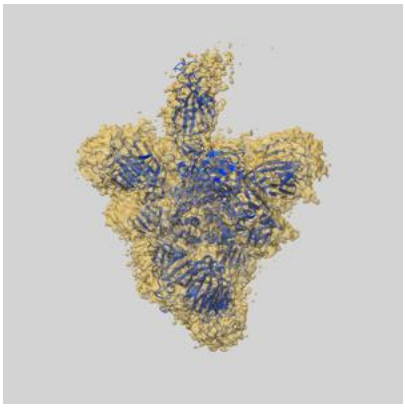
9.1 Map-model overlay



X



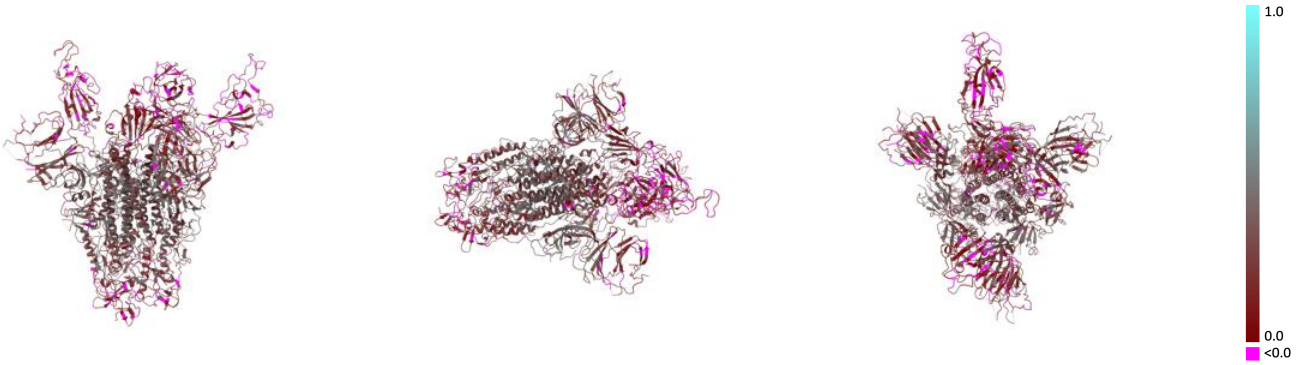
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.115 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.

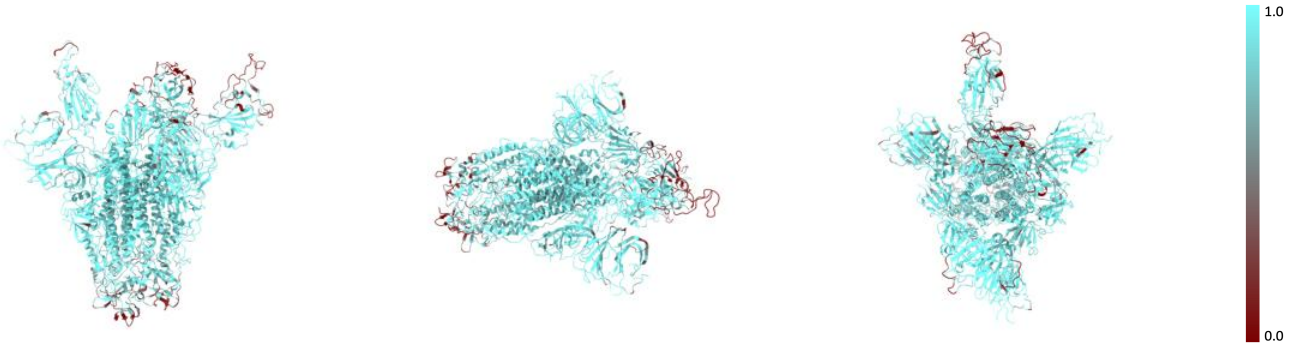
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

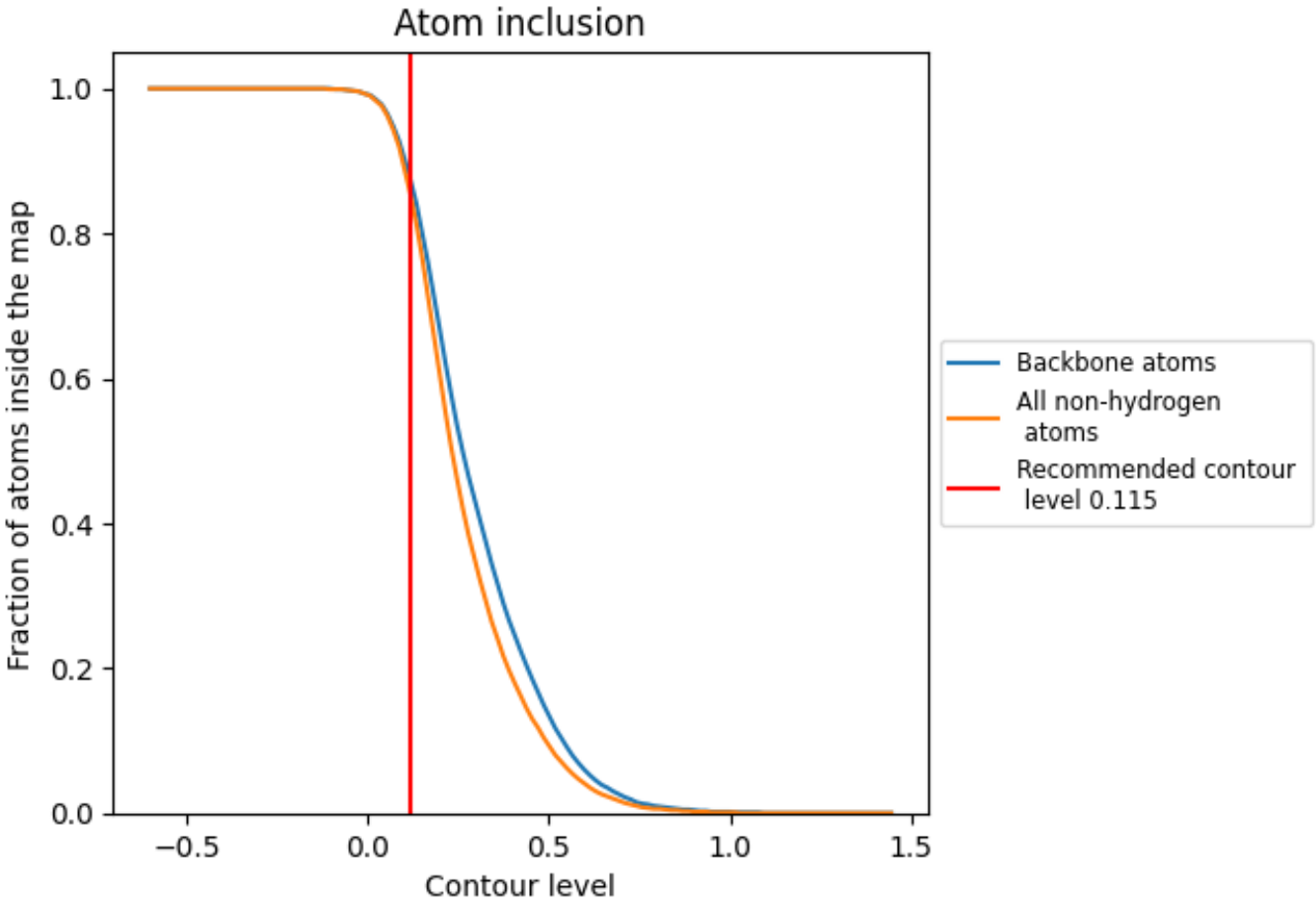
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.115).

9.4 Atom inclusion (i)



At the recommended contour level, 88% of all backbone atoms, 86% 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 (0.115) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8600	0.2500
A	0.8820	0.2490
B	0.8800	0.2700
C	0.8500	0.2520
n	0.5660	0.1430
o	0.8690	0.1620