



Full wwPDB EM Validation Report ⓘ

Feb 8, 2026 – 08:38 PM JST

PDB ID : 9WZX / pdb_00009wzx
EMDB ID : EMD-66411
Title : Cryo-EM structure of Fks1 in open state
Authors : Bai, L.; You, Z.L.
Deposited on : 2025-09-29
Resolution : 3.72 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.dev131
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
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) : 2.48

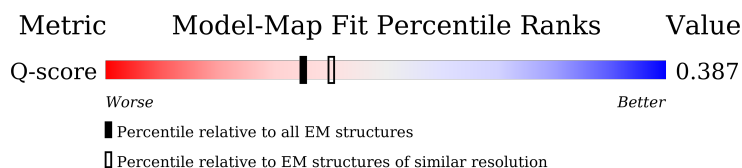
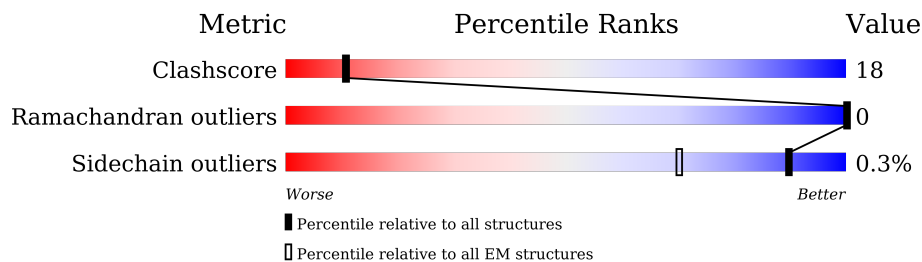
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.72 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	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	10474 (3.22 - 4.22)

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	F	1876	

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 12117 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.

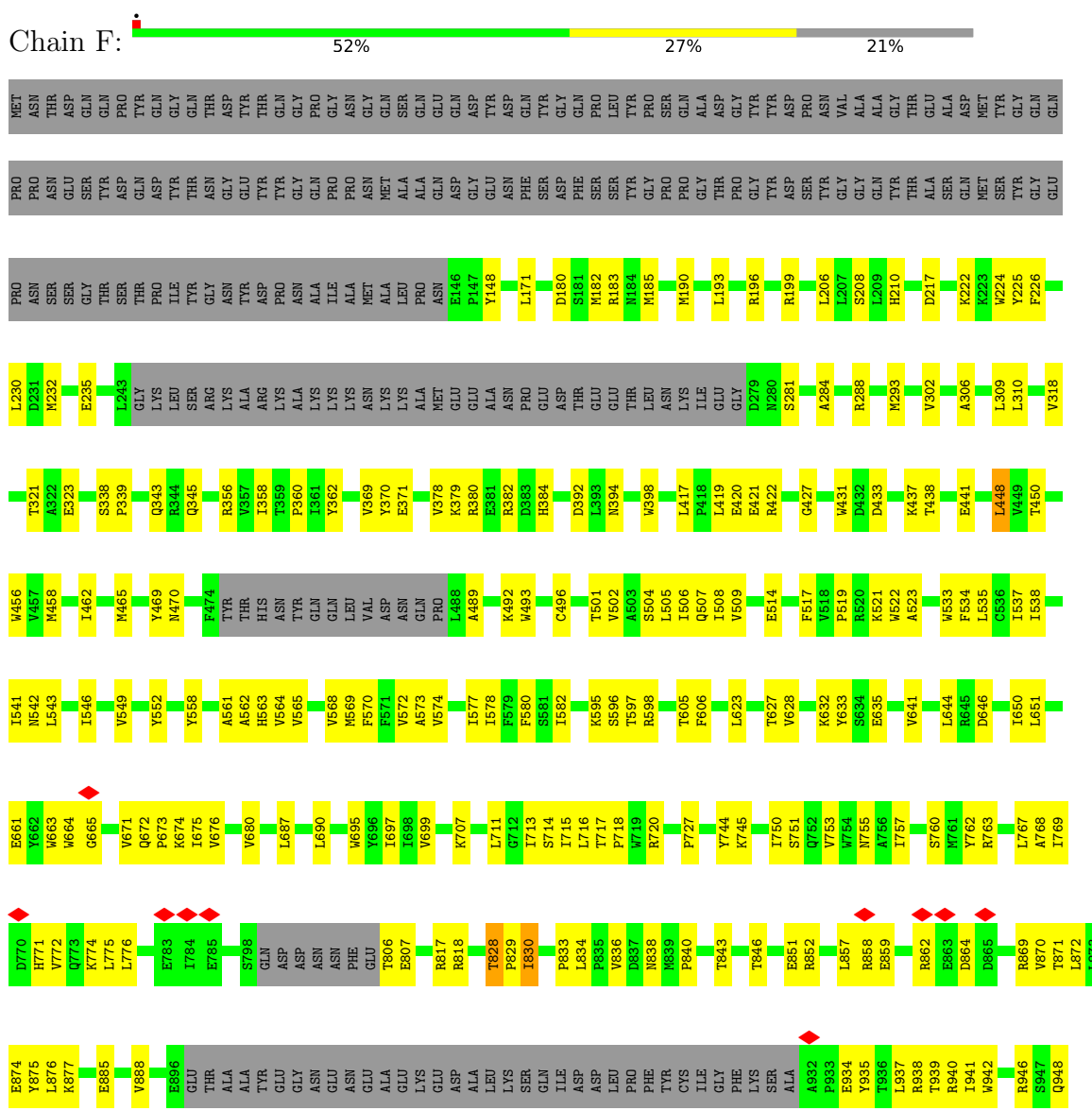
- Molecule 1 is a protein called 1,3-beta-glucan synthase component FKS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	F	1485	12117	7919	2023	2103	72	0	0

3 Residue-property plots

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

- Molecule 1: 1,3-beta-glucan synthase component FKS1



M1848	P1761	F1887	M1457	V1355	GLY	GLU	P1066	R952
T1851	K1762	M1690	L1488	V1359	THR	GLN	K1067	T953
G1852	I1763	I1610	M1459	T1359	PHE	THR	L1072	Y954
S1853	D1764	N1613	F1462	F1370	ASN	GLY	M1075	F957
Q1854	H1767	L1617	Q1469	V1374	THR	LEU	P1076	L966
Q1859	M1770	M1621	A1470	V1375	THR	F1180	D1080	L967
SER	L1771	S1624	P1471	L1378	LYS	A1181	M1085	Y968
HIS	F1772	CYS	L1472	I1379	ILE	T1182	F1092	R969
THR	W1773	GLY	L1473	I1379	GLY	T1183	Q1186	Y976
THR	L1774	CYS	W1474	I1380	ALA	Q1186	F1092	E984
THR	K1775	ASP	F1475	R1381	GLY	G1189	I1101	Q985
HIS	P1776	SER	W1476	G1382	GLY	K1189	D1102	L986
THR	S1777	GLY	A1477	L1383	MET	K1190	E1103	E987
THR	R1778	SER	S1478	L1397		H1190	N1104	H993
PRO	Q1779	ALA	L1479	L1398		L1191	Q1105	K999
SER	Q1779	ALA	S1480	E1402		H1192	D1106	V1002
LEU	I1780	GLY	S1481	A1405		L1193	E1111	S1003
LYS	R1781	ASP	L1482	G1406		G1194	R1116	M1004
THR	I1784	ASP	I1483	Q1407		H1195	E1124	R1006
THR	K1788	ALA	F1484	A1408		P1196	L1125	K1009
SER	Q1789	LYS	P1486	I1408		I1199	Q1129	F1010
THR	Q1789	LYS	F1487	Y1409		N1200	Y1133	N1017
ILE	Q1789	ALA	V1488	S1410		A1201	R1138	L1021
LYS	L1792	HIS	F1489	L1414		M1204	E1141	P1026
	R1795	ARG	L1490	L1418		T1205	A1149	I1030
	M1796	ARG	P1491	ILE		Q1214	I1150	E1036
	K1799	ARG	H1492	GLY		K1215	R1154	P1037
	Y1800	ALA	Q1493	ILE		G1216	E1156	P1038
	L1803	LYS	F1494	GLY		L1217	Y1157	P1045
	Y1804	LYS	F1499	ALA		H1218	F1158	R1046
	V1807	LYS	L1500	ARG		L1219	GLU	I1047
L1808	R1728	TRP	L1501	TYR		N1220	ASN	Y1048
I1810	E1729	GLY	D1502	ILE		E1221	SER	L1051
G1813	L1730	GLY	Y1503	ALA		D1222	GLY	I1052
I1816	T1731	GLY	R1508	TYR		I1223	LEU	G1054
K1827	A1732	GLY	N1515	GLY		Y1224	ASP	C1056
H1828	K1733	ASP	GLN	PHE		M1227	VAL	L1059
S1832	V1734	ASN	THR	ALA		M1228	ALA	R1064
L1833	E1736	SER	HIS	THR		A1229	GLY	R1065
V1836	L1737	ARG	ASN	ARG		M1230	ASP	
V1837	F1740	ARG	SER	I1436		L1231	VAL	
L1840	D1743	TRP	TRP	Y1341		R1232	ALA	
F1841	L1746	ILE	ILE	P1342		Y1241	GLY	
I1844	G1747	GLY	GLY	I1343		Y1242	VAL	
N1845	H1748	TYR	TYR	G1344		Q1243	LEU	
	I1752	VAL	ARG	C1345		K1246	GLY	
	I1760	ARG	MET	Y1346		GLY	ASP	
		ARG	SER	F1348		ARG	VAL	
		ARG	ARG	A1351		ASP	ALA	
		ARG	ARG			LEU	GLY	
		ARG	ARG			GLY	LYS	

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	142777	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TECNAI 20	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.325	Depositor
Minimum map value	-1.679	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.038	Depositor
Recommended contour level	0.15	Depositor
Map size (Å)	407.03998, 407.03998, 407.03998	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	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	F	0.23	1/12443 (0.0%)	0.47	3/16879 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	830	ILE	C-N	12.52	1.50	1.33

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	830	ILE	CA-C-N	18.24	138.27	119.85
1	F	830	ILE	C-N-CA	18.24	138.27	119.85
1	F	569	MET	CB-CG-SD	5.35	128.74	112.70

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	F	12117	0	12107	442	0
All	All	12117	0	12107	442	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 18.

All (442) 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:F:232:MET:CE	1:F:235:GLU:HG3	1.61	1.30
1:F:828:THR:HG22	1:F:829:PRO:CD	1.69	1.20
1:F:830:ILE:HG12	1:F:1241:TYR:CD2	1.78	1.19
1:F:1378:LEU:CD2	1:F:1383:LEU:HD13	1.71	1.18
1:F:232:MET:HE3	1:F:235:GLU:CG	1.74	1.16
1:F:828:THR:CG2	1:F:829:PRO:HD2	1.76	1.13
1:F:1378:LEU:HD22	1:F:1383:LEU:HD13	1.15	1.10
1:F:1154:ARG:NH1	1:F:1156:TYR:HD2	1.49	1.07
1:F:1378:LEU:CD2	1:F:1383:LEU:CD1	2.31	1.07
1:F:232:MET:HE1	1:F:281:SER:O	1.54	1.04
1:F:1378:LEU:HD22	1:F:1383:LEU:CD1	1.89	1.00
1:F:232:MET:CE	1:F:281:SER:O	2.14	0.94
1:F:830:ILE:HD11	1:F:1241:TYR:CB	1.99	0.93
1:F:1378:LEU:HD21	1:F:1383:LEU:HD12	1.54	0.88
1:F:1378:LEU:HD21	1:F:1383:LEU:CD1	2.04	0.86
1:F:230:LEU:HD23	1:F:230:LEU:H	1.45	0.81
1:F:1380:GLU:OE2	1:F:1775:LYS:HE2	1.82	0.78
1:F:1344:GLY:HA3	1:F:1851:THR:HG22	1.64	0.77
1:F:830:ILE:HD11	1:F:1241:TYR:HB2	1.67	0.77
1:F:1649:VAL:HA	1:F:1652:ILE:HG22	1.65	0.76
1:F:830:ILE:CD1	1:F:1241:TYR:CG	2.69	0.76
1:F:1154:ARG:NH1	1:F:1156:TYR:CD2	2.35	0.74
1:F:1182:ARG:HA	1:F:1186:GLN:HB2	1.68	0.74
1:F:830:ILE:HG12	1:F:1241:TYR:CE2	2.23	0.73
1:F:1575:CYS:HB3	1:F:1678:THR:HG22	1.68	0.73
1:F:1312:MET:HB3	1:F:1459:MET:HG2	1.68	0.73
1:F:1381:ARG:HE	1:F:1773:TRP:CD1	2.07	0.73
1:F:199:ARG:NH1	1:F:1124:GLU:O	2.23	0.72
1:F:1154:ARG:HH12	1:F:1156:TYR:HB3	1.53	0.72
1:F:371:GLU:HG2	1:F:380:ARG:HB2	1.71	0.72
1:F:1046:ARG:HG3	1:F:1071:GLN:HE22	1.55	0.72
1:F:1381:ARG:NE	1:F:1773:TRP:CD1	2.60	0.70
1:F:1690:MET:HE1	1:F:1735:ILE:HG13	1.74	0.69
1:F:675:ILE:HD13	1:F:1577:ILE:HD13	1.74	0.69
1:F:846:THR:HB	1:F:1002:VAL:HG12	1.73	0.69
1:F:1048:TYR:HB3	1:F:1071:GLN:HA	1.73	0.69
1:F:1490:ASN:HB3	1:F:1493:GLN:HB2	1.75	0.69
1:F:230:LEU:HD23	1:F:230:LEU:N	2.08	0.68
1:F:1854:GLN:HA	1:F:1854:GLN:HE21	1.57	0.68
1:F:1380:GLU:OE2	1:F:1775:LYS:CE	2.40	0.68
1:F:470:ASN:HD22	1:F:641:VAL:HG13	1.58	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:535:LEU:HD23	1:F:538:ILE:HD11	1.75	0.68
1:F:502:VAL:O	1:F:506:ILE:HD12	1.94	0.68
1:F:828:THR:HG22	1:F:829:PRO:HD2	0.81	0.68
1:F:1687:PHE:HD2	1:F:1735:ILE:HG23	1.58	0.68
1:F:1344:GLY:CA	1:F:1851:THR:HG22	2.24	0.68
1:F:830:ILE:HG12	1:F:1241:TYR:CG	2.28	0.68
1:F:392:ASP:OD1	1:F:1273:ARG:NH2	2.28	0.67
1:F:1381:ARG:NH2	1:F:1773:TRP:CD1	2.63	0.67
1:F:1381:ARG:CZ	1:F:1773:TRP:HD1	2.08	0.67
1:F:1381:ARG:HH21	1:F:1773:TRP:CD1	2.12	0.66
1:F:232:MET:CE	1:F:235:GLU:CG	2.52	0.66
1:F:857:LEU:HD13	1:F:940:ARG:HH12	1.59	0.66
1:F:1683:GLN:O	1:F:1687:PHE:HD1	1.80	0.65
1:F:232:MET:HE3	1:F:235:GLU:HG3	0.77	0.65
1:F:1504:ARG:HD2	1:F:1800:TYR:HE1	1.62	0.65
1:F:1006:ARG:HG3	1:F:1010:PHE:HE1	1.62	0.65
1:F:1220:ASN:OD1	1:F:1269:GLN:NE2	2.30	0.65
1:F:635:GLU:HG2	1:F:695:TRP:HE1	1.62	0.65
1:F:1154:ARG:NH1	1:F:1156:TYR:HB3	2.11	0.65
1:F:834:LEU:O	1:F:1116:ARG:NH1	2.30	0.64
1:F:1005:GLN:OE1	1:F:1085:ASN:ND2	2.30	0.64
1:F:384:HIS:NE2	1:F:1216:GLY:O	2.30	0.64
1:F:501:THR:HG21	1:F:546:ILE:HD13	1.80	0.64
1:F:565:VAL:HA	1:F:568:VAL:HG12	1.79	0.64
1:F:762:TYR:HB2	1:F:767:LEU:HD23	1.78	0.64
1:F:1381:ARG:NE	1:F:1773:TRP:HD1	1.96	0.64
1:F:1840:LEU:HD23	1:F:1841:PHE:HB3	1.81	0.63
1:F:869:ARG:HH22	1:F:1780:ILE:HA	1.62	0.63
1:F:1576:PHE:CZ	1:F:1602:ILE:HG21	2.34	0.63
1:F:828:THR:CG2	1:F:829:PRO:CD	2.55	0.63
1:F:830:ILE:CG1	1:F:1241:TYR:CD2	2.69	0.63
1:F:818:ARG:NE	1:F:1110:GLU:OE1	2.30	0.62
1:F:760:SER:HA	1:F:763:ARG:HD3	1.81	0.62
1:F:1469:GLN:HG3	1:F:1471:PRO:HD2	1.81	0.62
1:F:762:TYR:HD2	1:F:767:LEU:HG	1.64	0.62
1:F:623:LEU:O	1:F:627:THR:HG23	2.00	0.62
1:F:1854:GLN:HA	1:F:1854:GLN:NE2	2.13	0.62
1:F:1655:ILE:HD12	1:F:1658:PHE:HE1	1.65	0.61
1:F:771:HIS:O	1:F:774:LYS:N	2.32	0.61
1:F:1036:GLU:OE2	1:F:1046:ARG:NH1	2.33	0.61
1:F:1561:ILE:HG22	1:F:1692:ALA:HB1	1.83	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:1379:ILE:HD11	1:F:1383:LEU:HD22	1.82	0.61
1:F:224:TRP:HD1	1:F:323:GLU:HG3	1.66	0.60
1:F:543:LEU:HD12	1:F:546:ILE:HD11	1.83	0.60
1:F:1343:ILE:HD11	1:F:1852:GLY:O	2.00	0.60
1:F:180:ASP:OD1	1:F:183:ARG:NH1	2.34	0.60
1:F:1694:MET:HE2	1:F:1728:ARG:HG2	1.83	0.60
1:F:433:ASP:N	1:F:433:ASP:OD1	2.34	0.60
1:F:830:ILE:HD11	1:F:1241:TYR:CG	2.34	0.60
1:F:1656:ALA:O	1:F:1660:VAL:HG23	2.01	0.60
1:F:1047:ILE:HD12	1:F:1072:LEU:HB2	1.84	0.60
1:F:1154:ARG:HH11	1:F:1156:TYR:HD2	0.73	0.60
1:F:870:VAL:HG22	1:F:871:THR:H	1.65	0.60
1:F:1294:HIS:HB2	1:F:1295:PRO:HD3	1.84	0.60
1:F:573:ALA:O	1:F:577:ILE:HG13	2.02	0.59
1:F:1583:ASN:ND2	1:F:1665:GLU:OE2	2.34	0.59
1:F:1827:LYS:NZ	1:F:1828:HIS:O	2.27	0.59
1:F:1199:ILE:HD12	1:F:1204:MET:HG2	1.85	0.59
1:F:1731:THR:O	1:F:1735:ILE:HG12	2.02	0.59
1:F:538:ILE:HA	1:F:541:ILE:HG12	1.84	0.59
1:F:1685:LEU:HD23	1:F:1686:ILE:HD13	1.85	0.59
1:F:852:ARG:HA	1:F:852:ARG:CZ	2.33	0.59
1:F:1312:MET:HA	1:F:1312:MET:HE2	1.85	0.59
1:F:1471:PRO:O	1:F:1474:TRP:HB2	2.02	0.59
1:F:345:GLN:OE1	1:F:345:GLN:N	2.33	0.58
1:F:1854:GLN:O	1:F:1854:GLN:HG3	2.04	0.58
1:F:1318:LEU:HD21	1:F:1351:ALA:HB1	1.85	0.58
1:F:1380:GLU:HG3	1:F:1775:LYS:HZ2	1.68	0.58
1:F:713:ILE:HG22	1:F:715:ILE:H	1.69	0.58
1:F:771:HIS:O	1:F:775:LEU:HD23	2.04	0.58
1:F:1398:SER:HB2	1:F:1402:GLU:HG3	1.86	0.57
1:F:1609:PRO:O	1:F:1613:ASN:ND2	2.37	0.57
1:F:661:GLU:OE1	1:F:1597:ASN:N	2.34	0.57
1:F:1662:TRP:HD1	1:F:1672:MET:HG3	1.69	0.57
1:F:1493:GLN:HB3	1:F:1499:PHE:HE1	1.69	0.56
1:F:1380:GLU:HG3	1:F:1775:LYS:NZ	2.19	0.56
1:F:318:VAL:HG21	1:F:358:ILE:HD12	1.85	0.56
1:F:1193:TYR:OH	1:F:1230:MET:SD	2.59	0.56
1:F:1450:ILE:HG22	1:F:1746:LEU:HD13	1.87	0.56
1:F:1813:GLY:HA2	1:F:1816:ILE:HG22	1.88	0.56
1:F:1217:LEU:HB2	1:F:1219:LEU:HD13	1.87	0.56
1:F:1436:ILE:O	1:F:1493:GLN:NE2	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:380:ARG:HD2	1:F:382:ARG:HE	1.70	0.56
1:F:232:MET:HE2	1:F:281:SER:O	2.00	0.55
1:F:1489:PHE:HA	1:F:1767:HIS:CE1	2.41	0.55
1:F:1617:LEU:O	1:F:1621:MET:HG2	2.05	0.55
1:F:840:PRO:HG3	1:F:1125:LEU:HD21	1.88	0.55
1:F:935:TYR:O	1:F:939:THR:HG23	2.05	0.55
1:F:938:ARG:C	1:F:938:ARG:HH11	2.15	0.55
1:F:1492:HIS:HB3	1:F:1780:ILE:HG21	1.89	0.55
1:F:1795:ARG:HH12	1:F:1799:LYS:HB2	1.71	0.55
1:F:1344:GLY:C	1:F:1851:THR:HG22	2.32	0.55
1:F:1036:GLU:OE1	1:F:1048:TYR:OH	2.19	0.55
1:F:1440:ILE:HD12	1:F:1440:ILE:H	1.72	0.55
1:F:1489:PHE:HA	1:F:1767:HIS:NE2	2.22	0.55
1:F:1804:TYR:O	1:F:1808:LEU:HG	2.07	0.55
1:F:1150:ILE:HD11	1:F:1196:PRO:HA	1.89	0.55
1:F:597:THR:O	1:F:598:ARG:HD2	2.07	0.54
1:F:370:TYR:H	1:F:379:LYS:HA	1.72	0.54
1:F:1407:GLN:HG3	1:F:1481:SER:HB3	1.89	0.54
1:F:1687:PHE:CE2	1:F:1735:ILE:HD12	2.43	0.54
1:F:1291:TYR:O	1:F:1295:PRO:HD2	2.07	0.54
1:F:538:ILE:O	1:F:542:ASN:ND2	2.40	0.54
1:F:568:VAL:O	1:F:572:VAL:HG12	2.08	0.54
1:F:570:PHE:O	1:F:574:VAL:HG22	2.07	0.54
1:F:830:ILE:CG1	1:F:1241:TYR:CG	2.90	0.54
1:F:1489:PHE:HA	1:F:1767:HIS:HE2	1.72	0.54
1:F:864:ASP:HB3	1:F:870:VAL:HG23	1.89	0.54
1:F:1381:ARG:CZ	1:F:1773:TRP:CD1	2.89	0.54
1:F:1571:TYR:HB3	1:F:1681:GLN:NE2	2.23	0.54
1:F:596:SER:OG	1:F:597:THR:N	2.39	0.54
1:F:869:ARG:NH2	1:F:1779:GLN:O	2.41	0.54
1:F:651:LEU:HD21	1:F:673:PRO:HB2	1.90	0.53
1:F:858:ARG:O	1:F:858:ARG:NH1	2.40	0.53
1:F:1772:PHE:HA	1:F:1776:PRO:HD3	1.89	0.53
1:F:1414:LEU:HD21	1:F:1482:LEU:C	2.33	0.53
1:F:1342:PRO:HB2	1:F:1345:CYS:SG	2.49	0.53
1:F:338:SER:HB2	1:F:420:GLU:HG3	1.90	0.53
1:F:371:GLU:N	1:F:378:VAL:O	2.41	0.53
1:F:369:VAL:HG23	1:F:370:TYR:HD1	1.73	0.53
1:F:650:ILE:HD11	1:F:1347:ASN:O	2.08	0.53
1:F:830:ILE:HD11	1:F:1241:TYR:HB3	1.87	0.53
1:F:217:ASP:N	1:F:217:ASP:OD1	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:1038:PRO:HD3	1:F:1045:PRO:HB3	1.91	0.53
1:F:1486:PRO:HA	1:F:1489:PHE:CZ	2.44	0.53
1:F:651:LEU:O	1:F:674:LYS:NZ	2.37	0.52
1:F:502:VAL:HG12	1:F:506:ILE:HD11	1.90	0.52
1:F:1056:CYS:SG	1:F:1064:ARG:NH1	2.82	0.52
1:F:458:MET:O	1:F:633:TYR:OH	2.26	0.52
1:F:751:SER:O	1:F:755:ASN:HB2	2.10	0.52
1:F:1220:ASN:H	1:F:1224:TYR:HD2	1.58	0.52
1:F:1687:PHE:CD2	1:F:1735:ILE:HG23	2.43	0.52
1:F:1841:PHE:CZ	1:F:1844:ILE:HA	2.45	0.52
1:F:1725:GLN:OE1	1:F:1729:GLU:HG2	2.10	0.52
1:F:206:LEU:HD21	1:F:302:VAL:HG23	1.90	0.52
1:F:1748:HIS:O	1:F:1752:ILE:HG23	2.09	0.52
1:F:462:ILE:HA	1:F:465:MET:HB2	1.90	0.52
1:F:1183:THR:HB	1:F:1375:VAL:HG11	1.90	0.52
1:F:226:PHE:HA	1:F:230:LEU:HD21	1.91	0.51
1:F:595:LYS:NZ	1:F:596:SER:O	2.32	0.51
1:F:1381:ARG:HE	1:F:1773:TRP:NE1	2.06	0.51
1:F:1397:LEU:HB3	1:F:1402:GLU:OE2	2.11	0.51
1:F:714:SER:O	1:F:714:SER:OG	2.25	0.51
1:F:1004:MET:HB2	1:F:1030:ILE:HG23	1.91	0.51
1:F:230:LEU:N	1:F:230:LEU:CD2	2.74	0.51
1:F:687:LEU:HD12	1:F:690:LEU:HD12	1.92	0.51
1:F:1479:LEU:HA	1:F:1482:LEU:HB2	1.91	0.51
1:F:966:LEU:HA	1:F:969:ARG:HG2	1.91	0.51
1:F:199:ARG:HB3	1:F:838:ASN:HB2	1.93	0.51
1:F:1194:GLY:O	1:F:1196:PRO:HD2	2.10	0.51
1:F:1380:GLU:CD	1:F:1775:LYS:HZ3	2.19	0.51
1:F:441:GLU:HG3	1:F:1271:LEU:HD21	1.93	0.51
1:F:753:VAL:O	1:F:757:ILE:HG23	2.10	0.51
1:F:851:GLU:OE1	1:F:851:GLU:N	2.44	0.51
1:F:1605:CYS:HA	1:F:1657:PHE:CE1	2.46	0.50
1:F:836:VAL:HG11	1:F:968:TYR:HA	1.94	0.50
1:F:954:ILE:HD12	1:F:1021:LEU:HD21	1.93	0.50
1:F:1841:PHE:HZ	1:F:1844:ILE:HA	1.76	0.50
1:F:1473:LEU:HA	1:F:1476:TRP:HB2	1.93	0.50
1:F:1733:LYS:O	1:F:1736:GLU:HG3	2.12	0.50
1:F:646:ASP:O	1:F:650:ILE:HG22	2.12	0.50
1:F:534:PHE:O	1:F:537:ILE:HG13	2.11	0.50
1:F:937:LEU:O	1:F:941:ILE:HG22	2.12	0.50
1:F:1450:ILE:HD13	1:F:1483:ILE:HD11	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:874:GLU:HA	1:F:877:LYS:HG2	1.93	0.49
1:F:1381:ARG:NH2	1:F:1773:TRP:HD1	2.04	0.49
1:F:1341:VAL:HG13	1:F:1342:PRO:HD3	1.94	0.49
1:F:818:ARG:NH2	1:F:1110:GLU:OE2	2.44	0.49
1:F:1102:ASP:OD2	1:F:1105:GLN:NE2	2.44	0.49
1:F:470:ASN:ND2	1:F:641:VAL:HG13	2.24	0.49
1:F:1380:GLU:OE2	1:F:1775:LYS:NZ	2.46	0.49
1:F:1807:VAL:HA	1:F:1810:ILE:HG12	1.94	0.49
1:F:661:GLU:HB3	1:F:665:GLY:HA3	1.95	0.49
1:F:1649:VAL:O	1:F:1653:VAL:HG12	2.12	0.49
1:F:1505:ASP:HA	1:F:1508:ARG:HG2	1.94	0.49
1:F:1101:ILE:HB	1:F:1105:GLN:HG3	1.95	0.48
1:F:1129:GLN:CD	1:F:1129:GLN:N	2.71	0.48
1:F:938:ARG:NH1	1:F:939:THR:HA	2.28	0.48
1:F:1559:ASN:HA	1:F:1562:MET:HE2	1.96	0.48
1:F:323:GLU:HG2	1:F:398:TRP:CD1	2.48	0.48
1:F:967:LEU:CD2	1:F:1116:ARG:HE	2.26	0.48
1:F:1662:TRP:CD1	1:F:1672:MET:HG3	2.48	0.48
1:F:450:THR:HG21	1:F:517:PHE:HE2	1.79	0.48
1:F:872:LEU:H	1:F:872:LEU:HD23	1.79	0.48
1:F:1598:SER:HA	1:F:1601:ARG:HH11	1.79	0.48
1:F:1854:GLN:HE21	1:F:1854:GLN:CA	2.21	0.48
1:F:852:ARG:HA	1:F:852:ARG:NH1	2.29	0.48
1:F:1832:SER:OG	1:F:1836:VAL:O	2.30	0.48
1:F:565:VAL:HA	1:F:568:VAL:CG1	2.44	0.47
1:F:356:ARG:HG3	1:F:427:GLY:HA3	1.96	0.47
1:F:360:PRO:HB2	1:F:431:TRP:HD1	1.79	0.47
1:F:859:GLU:CD	1:F:862:ARG:HB2	2.39	0.47
1:F:869:ARG:HH12	1:F:1781:ARG:H	1.61	0.47
1:F:1410:SER:O	1:F:1414:LEU:HD13	2.14	0.47
1:F:1582:ILE:HG21	1:F:1674:ILE:HD13	1.96	0.47
1:F:1799:LYS:HE3	1:F:1803:LEU:HD11	1.95	0.47
1:F:306:ALA:O	1:F:310:LEU:HD12	2.15	0.47
1:F:1600:LEU:HA	1:F:1603:ILE:HG12	1.96	0.47
1:F:651:LEU:O	1:F:651:LEU:HD23	2.14	0.47
1:F:1006:ARG:HH11	1:F:1009:LYS:NZ	2.11	0.47
1:F:493:TRP:HA	1:F:496:CYS:SG	2.54	0.47
1:F:1141:GLU:OE1	1:F:1141:GLU:N	2.48	0.47
1:F:1224:TYR:CD1	1:F:1227:MET:HE3	2.50	0.47
1:F:339:PRO:O	1:F:343:GLN:HG2	2.15	0.47
1:F:505:LEU:O	1:F:509:VAL:HG12	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:210:HIS:HE1	1:F:293:MET:SD	2.37	0.47
1:F:597:THR:HG23	1:F:598:ARG:H	1.79	0.47
1:F:942:TRP:O	1:F:946:ARG:HG2	2.14	0.47
1:F:1105:GLN:HE22	1:F:1246:LYS:HA	1.79	0.47
1:F:1601:ARG:NH2	1:F:1840:LEU:O	2.39	0.47
1:F:1111:GLU:HG3	1:F:1243:GLN:HB3	1.96	0.47
1:F:768:ALA:HB3	1:F:771:HIS:CE1	2.50	0.46
1:F:1414:LEU:HB2	1:F:1485:ALA:HB3	1.97	0.46
1:F:1682:CYS:O	1:F:1686:ILE:HG12	2.14	0.46
1:F:369:VAL:HG23	1:F:370:TYR:CD1	2.50	0.46
1:F:504:SER:O	1:F:508:ILE:HG13	2.15	0.46
1:F:1610:ILE:HA	1:F:1613:ASN:HD21	1.79	0.46
1:F:952:ARG:NH2	1:F:1106:ASP:OD1	2.47	0.46
1:F:885:GLU:O	1:F:888:VAL:HG22	2.14	0.46
1:F:1378:LEU:HD21	1:F:1383:LEU:HA	1.97	0.46
1:F:321:THR:HG22	1:F:394:ASN:HB3	1.98	0.46
1:F:507:GLN:HE21	1:F:580:PHE:HB3	1.81	0.46
1:F:1828:HIS:CD2	1:F:1844:ILE:HD11	2.51	0.46
1:F:1845:ASN:OD1	1:F:1845:ASN:N	2.47	0.46
1:F:1189:GLY:HA3	1:F:1193:TYR:HB2	1.97	0.46
1:F:1347:ASN:O	1:F:1348:PHE:HD1	1.98	0.46
1:F:1217:LEU:HD12	1:F:1219:LEU:HD22	1.98	0.46
1:F:744:TYR:HD2	1:F:745:LYS:HZ3	1.63	0.46
1:F:1359:THR:HG22	1:F:1475:PHE:HE2	1.81	0.46
1:F:185:MET:HE2	1:F:309:LEU:O	2.16	0.46
1:F:171:LEU:HD23	1:F:171:LEU:HA	1.79	0.46
1:F:967:LEU:HD23	1:F:1116:ARG:HE	1.81	0.46
1:F:1272:SER:OG	1:F:1273:ARG:N	2.48	0.46
1:F:1690:MET:C	1:F:1690:MET:SD	2.99	0.46
1:F:1327:MET:SD	1:F:1327:MET:N	2.90	0.45
1:F:437:LYS:O	1:F:438:THR:HG22	2.16	0.45
1:F:976:VAL:HG22	1:F:986:LEU:HD11	1.98	0.45
1:F:1006:ARG:HG3	1:F:1010:PHE:CE1	2.45	0.45
1:F:1026:PRO:HA	1:F:1054:GLY:HA3	1.98	0.45
1:F:1687:PHE:CD2	1:F:1735:ILE:HD12	2.52	0.45
1:F:362:TYR:OH	1:F:1075:ASN:O	2.20	0.45
1:F:533:TRP:O	1:F:537:ILE:HG12	2.15	0.45
1:F:1579:PHE:HA	1:F:1582:ILE:HG22	1.98	0.45
1:F:1761:PRO:O	1:F:1764:ASP:HB3	2.16	0.45
1:F:806:THR:O	1:F:807:GLU:HG3	2.16	0.45
1:F:1379:ILE:C	1:F:1381:ARG:H	2.24	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:1445:PHE:CE2	1:F:1450:ILE:HD11	2.51	0.45
1:F:1827:LYS:HG3	1:F:1828:HIS:H	1.82	0.45
1:F:217:ASP:HA	1:F:222:LYS:HD3	1.97	0.45
1:F:537:ILE:O	1:F:541:ILE:HG23	2.16	0.45
1:F:767:LEU:CD1	1:F:771:HIS:HB2	2.46	0.45
1:F:767:LEU:HD11	1:F:772:VAL:HB	1.99	0.45
1:F:1336:LYS:HE2	1:F:1336:LYS:HA	1.99	0.45
1:F:1383:LEU:O	1:F:1383:LEU:HG	2.16	0.45
1:F:549:VAL:HA	1:F:552:TYR:HE1	1.82	0.45
1:F:644:LEU:HD11	1:F:680:VAL:HG12	1.97	0.45
1:F:1359:THR:HG22	1:F:1475:PHE:CE2	2.52	0.45
1:F:1149:ALA:HB1	1:F:1204:MET:HE1	1.99	0.45
1:F:210:HIS:CE1	1:F:1133:TYR:HH	2.25	0.45
1:F:417:LEU:HB3	1:F:421:GLU:OE2	2.16	0.45
1:F:830:ILE:HD13	1:F:1241:TYR:CD1	2.52	0.45
1:F:1582:ILE:HG21	1:F:1674:ILE:HG21	1.99	0.45
1:F:549:VAL:HA	1:F:552:TYR:CE1	2.51	0.45
1:F:671:VAL:HG13	1:F:671:VAL:O	2.17	0.45
1:F:1351:ALA:O	1:F:1355:VAL:HG23	2.17	0.45
1:F:1571:TYR:HB3	1:F:1681:GLN:HE22	1.81	0.45
1:F:1795:ARG:HA	1:F:1795:ARG:HD2	1.77	0.45
1:F:1480:SER:O	1:F:1483:ILE:HG22	2.17	0.44
1:F:1051:LEU:HD23	1:F:1092:PHE:CG	2.52	0.44
1:F:1504:ARG:HD2	1:F:1800:TYR:CE1	2.47	0.44
1:F:469:TYR:HD1	1:F:492:LYS:HD2	1.82	0.44
1:F:558:TYR:HB3	1:F:561:ALA:HB3	2.00	0.44
1:F:635:GLU:HG2	1:F:695:TRP:NE1	2.30	0.44
1:F:875:TYR:HE1	1:F:1778:ARG:HG2	1.83	0.44
1:F:1647:HIS:HB3	1:F:1740:PHE:CE2	2.52	0.44
1:F:697:ILE:HD13	1:F:697:ILE:HA	1.91	0.44
1:F:1472:LEU:HD12	1:F:1472:LEU:HA	1.69	0.44
1:F:1642:MET:HE2	1:F:1642:MET:HA	1.99	0.44
1:F:1833:LEU:HD12	1:F:1837:VAL:HB	2.00	0.44
1:F:1155:GLU:HA	1:F:1155:GLU:OE1	2.17	0.44
1:F:1767:HIS:HA	1:F:1770:MET:HB2	2.00	0.44
1:F:148:TYR:CE2	1:F:190:MET:HB3	2.53	0.44
1:F:1334:LYS:HD2	1:F:1334:LYS:HA	1.84	0.44
1:F:1379:ILE:C	1:F:1381:ARG:N	2.75	0.44
1:F:224:TRP:HA	1:F:606:PHE:HZ	1.83	0.44
1:F:769:ILE:HA	1:F:772:VAL:HG12	1.99	0.44
1:F:1228:ASN:O	1:F:1232:ARG:HG3	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:1488:VAL:O	1:F:1767:HIS:NE2	2.51	0.44
1:F:1621:MET:HE1	1:F:1730:LEU:HD21	1.98	0.44
1:F:1072:LEU:HD13	1:F:1076:PRO:HG3	1.99	0.44
1:F:872:LEU:O	1:F:876:LEU:HD22	2.18	0.43
1:F:1224:TYR:CE1	1:F:1227:MET:HE3	2.53	0.43
1:F:1788:LYS:O	1:F:1792:LEU:HG	2.18	0.43
1:F:224:TRP:CD1	1:F:323:GLU:HG3	2.51	0.43
1:F:1232:ARG:HE	1:F:1232:ARG:HB3	1.58	0.43
1:F:1506:TYR:OH	1:F:1747:GLY:HA3	2.18	0.43
1:F:1017:ASN:OD1	1:F:1017:ASN:N	2.51	0.43
1:F:323:GLU:CD	1:F:398:TRP:HE1	2.27	0.43
1:F:521:LYS:HD3	1:F:521:LYS:HA	1.83	0.43
1:F:582:ILE:HA	1:F:1284:VAL:HG11	2.01	0.43
1:F:632:LYS:HE3	1:F:633:TYR:CD1	2.53	0.43
1:F:718:PRO:HD2	1:F:720:ARG:HH11	1.83	0.43
1:F:707:LYS:HD2	1:F:711:LEU:HD23	1.99	0.43
1:F:1317:ASN:OD1	1:F:1578:ALA:HB2	2.19	0.43
1:F:1462:PHE:CD2	1:F:1462:PHE:C	2.97	0.43
1:F:857:LEU:HD23	1:F:1017:ASN:HD21	1.84	0.43
1:F:1321:LEU:HD21	1:F:1348:PHE:CE2	2.54	0.43
1:F:1760:ILE:HD11	1:F:1762:LYS:HE2	1.99	0.43
1:F:628:VAL:HG23	1:F:699:VAL:HG11	2.01	0.43
1:F:984:GLU:O	1:F:987:GLU:HG3	2.18	0.43
1:F:1493:GLN:HB3	1:F:1499:PHE:CE1	2.52	0.43
1:F:1566:ILE:HG22	1:F:1567:PRO:HD3	2.01	0.43
1:F:1602:ILE:HA	1:F:1605:CYS:SG	2.59	0.43
1:F:672:GLN:N	1:F:673:PRO:HD2	2.34	0.42
1:F:1566:ILE:N	1:F:1567:PRO:HD2	2.34	0.42
1:F:1195:HIS:CE1	1:F:1246:LYS:HE3	2.54	0.42
1:F:1201:ALA:O	1:F:1205:THR:OG1	2.15	0.42
1:F:1737:LEU:O	1:F:1740:PHE:HB3	2.19	0.42
1:F:1803:LEU:O	1:F:1807:VAL:HG22	2.19	0.42
1:F:833:PRO:HB2	1:F:1116:ARG:NH1	2.34	0.42
1:F:843:THR:HA	1:F:999:LYS:O	2.19	0.42
1:F:182:MET:SD	1:F:183:ARG:HG3	2.59	0.42
1:F:562:ALA:HA	1:F:565:VAL:HG22	2.00	0.42
1:F:578:ILE:O	1:F:582:ILE:HG23	2.20	0.42
1:F:1501:LEU:HA	1:F:1504:ARG:HD3	2.01	0.42
1:F:1502:ASP:HA	1:F:1505:ASP:OD2	2.20	0.42
1:F:1646:ALA:HA	1:F:1649:VAL:HG22	2.00	0.42
1:F:561:ALA:HA	1:F:564:VAL:HG22	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:1046:ARG:HD3	1:F:1071:GLN:OE1	2.20	0.42
1:F:1138:ARG:HB3	1:F:1141:GLU:OE1	2.19	0.42
1:F:1690:MET:CE	1:F:1735:ILE:HG13	2.48	0.42
1:F:489:ALA:HB3	1:F:563:HIS:HE1	1.85	0.42
1:F:538:ILE:HD12	1:F:580:PHE:HZ	1.83	0.42
1:F:1475:PHE:O	1:F:1478:SER:OG	2.29	0.42
1:F:1638:THR:HB	1:F:1641:VAL:HB	2.02	0.42
1:F:767:LEU:HD21	1:F:772:VAL:HG23	2.02	0.42
1:F:1494:PHE:H	1:F:1499:PHE:HE1	1.67	0.42
1:F:687:LEU:HA	1:F:690:LEU:HD12	2.02	0.42
1:F:1219:LEU:HB3	1:F:1220:ASN:H	1.60	0.42
1:F:1270:MET:SD	1:F:1270:MET:N	2.92	0.42
1:F:1833:LEU:HD12	1:F:1833:LEU:HA	1.92	0.42
1:F:1006:ARG:HH11	1:F:1009:LYS:HZ2	1.67	0.42
1:F:1375:VAL:O	1:F:1379:ILE:HG12	2.20	0.42
1:F:206:LEU:HD12	1:F:206:LEU:HA	1.89	0.41
1:F:605:THR:HG23	1:F:606:PHE:CD1	2.55	0.41
1:F:934:GLU:O	1:F:937:LEU:HG	2.20	0.41
1:F:1621:MET:HG2	1:F:1621:MET:H	1.64	0.41
1:F:514:GLU:HA	1:F:517:PHE:CD2	2.55	0.41
1:F:948:GLN:HG2	1:F:1104:ASN:ND2	2.35	0.41
1:F:1056:CYS:O	1:F:1064:ARG:NH1	2.53	0.41
1:F:1059:LEU:HD21	1:F:1065:ARG:HB2	2.02	0.41
1:F:1414:LEU:HD23	1:F:1486:PRO:HD3	2.03	0.41
1:F:193:LEU:HD12	1:F:193:LEU:HA	1.94	0.41
1:F:767:LEU:HD11	1:F:772:VAL:N	2.35	0.41
1:F:771:HIS:HA	1:F:774:LYS:HG2	2.01	0.41
1:F:836:VAL:HG22	1:F:993:MET:HE1	2.02	0.41
1:F:1451:TYR:OH	1:F:1743:ASP:OD1	2.28	0.41
1:F:1326:ILE:HD11	1:F:1848:ASN:O	2.20	0.41
1:F:284:ALA:HB1	1:F:288:ARG:HH12	1.85	0.41
1:F:727:PRO:HB2	1:F:750:ILE:HD13	2.01	0.41
1:F:196:ARG:NH1	1:F:208:SER:OG	2.53	0.41
1:F:1647:HIS:CE1	1:F:1737:LEU:HD11	2.56	0.41
1:F:676:VAL:HG11	1:F:1318:LEU:HD13	2.02	0.41
1:F:769:ILE:O	1:F:772:VAL:HG12	2.21	0.41
1:F:1056:CYS:SG	1:F:1064:ARG:HD3	2.60	0.41
1:F:1191:LEU:O	1:F:1195:HIS:HB2	2.20	0.41
1:F:370:TYR:N	1:F:379:LYS:HA	2.35	0.41
1:F:1204:MET:HE2	1:F:1204:MET:HB2	1.87	0.41
1:F:1330:TYR:CZ	1:F:1335:PRO:HB2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:1414:LEU:HD11	1:F:1482:LEU:HD23	2.02	0.41
1:F:1454:ALA:HA	1:F:1457:MET:HB2	2.01	0.41
1:F:1673:LEU:HD23	1:F:1673:LEU:HA	1.82	0.41
1:F:225:TYR:O	1:F:230:LEU:CD2	2.69	0.41
1:F:419:LEU:HA	1:F:422:ARG:HG3	2.03	0.41
1:F:448:LEU:O	1:F:456:TRP:NE1	2.42	0.41
1:F:663:TRP:HD1	1:F:664:TRP:N	2.19	0.41
1:F:1462:PHE:CE1	1:F:1674:ILE:HB	2.55	0.41
1:F:1576:PHE:HE1	1:F:1682:CYS:HG	1.69	0.41
1:F:1590:THR:OG1	1:F:1591:THR:N	2.54	0.41
1:F:1789:GLN:O	1:F:1792:LEU:HD12	2.20	0.41
1:F:438:THR:HA	1:F:519:PRO:HG3	2.02	0.41
1:F:817:ARG:HE	1:F:1157:ILE:HG21	1.86	0.41
1:F:858:ARG:HA	1:F:858:ARG:HD2	1.92	0.41
1:F:953:THR:O	1:F:957:PHE:HB2	2.21	0.41
1:F:1038:PRO:HB3	1:F:1045:PRO:HA	2.03	0.41
1:F:1321:LEU:C	1:F:1321:LEU:HD23	2.46	0.41
1:F:1565:ILE:HD13	1:F:1565:ILE:HA	1.89	0.41
1:F:1370:PHE:O	1:F:1374:VAL:HG12	2.20	0.40
1:F:379:LYS:HE3	1:F:379:LYS:HB3	1.95	0.40
1:F:1652:ILE:HD12	1:F:1655:ILE:HG23	2.04	0.40
1:F:522:TRP:CG	1:F:523:ALA:N	2.89	0.40
1:F:1310:MET:HE3	1:F:1310:MET:HB2	1.87	0.40
1:F:1381:ARG:CZ	1:F:1773:TRP:O	2.69	0.40
1:F:1030:ILE:O	1:F:1051:LEU:HA	2.21	0.40
1:F:1053:ASP:O	1:F:1064:ARG:NH1	2.53	0.40
1:F:1325:SER:OG	1:F:1326:ILE:N	2.50	0.40
1:F:1405:ALA:HB1	1:F:1409:TYR:CZ	2.57	0.40
1:F:716:LEU:HB3	1:F:717:THR:H	1.73	0.40
1:F:776:LEU:HD23	1:F:776:LEU:HA	1.88	0.40
1:F:1051:LEU:HD11	1:F:1067:LYS:HE3	2.02	0.40
1:F:1796:MET:HA	1:F:1796:MET:HE2	2.04	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	F	1463/1876 (78%)	1352 (92%)	111 (8%)	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	F	1307/1620 (81%)	1303 (100%)	4 (0%)	91	94

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	448	LEU
1	F	828	THR
1	F	1310	MET
1	F	1328	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	F	156	GLN
1	F	173	ASN
1	F	355	ASN
1	F	526	GLN
1	F	542	ASN
1	F	778	HIS
1	F	1087	ASN
1	F	1146	HIS
1	F	1748	HIS
1	F	1779	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](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

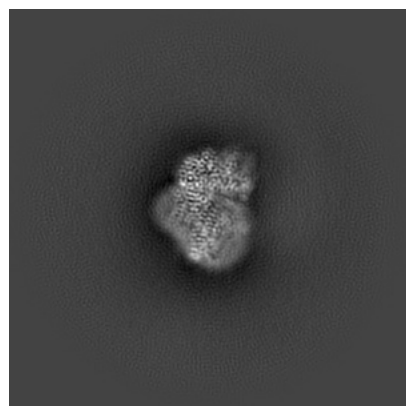
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-66411. These allow visual inspection of the internal detail of the map and identification of artifacts.

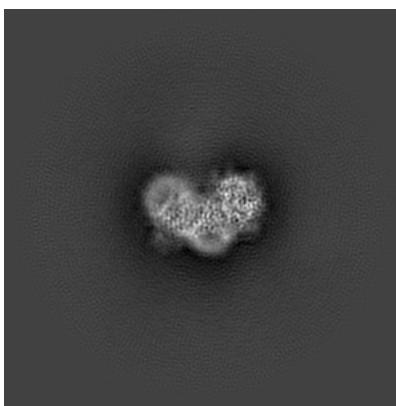
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

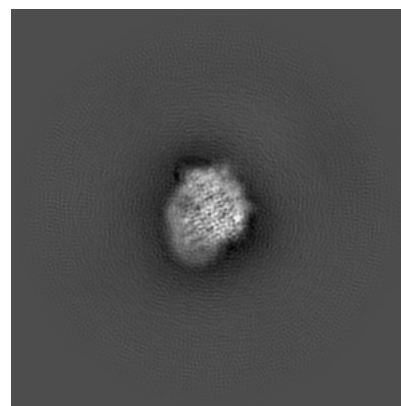
6.1.1 Primary map



X

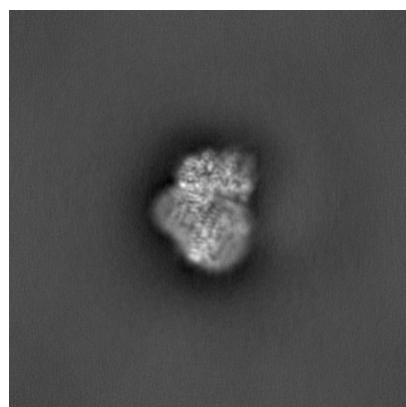


Y

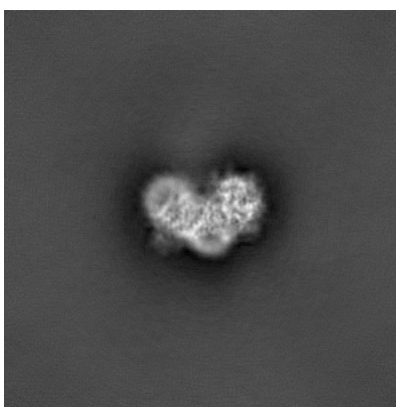


Z

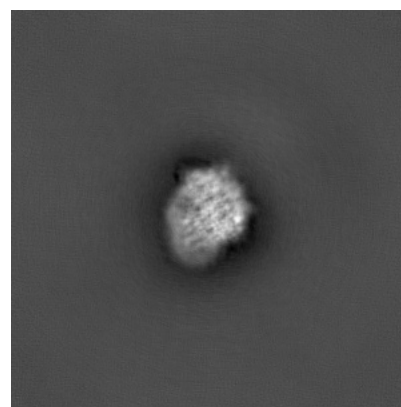
6.1.2 Raw map



X



Y

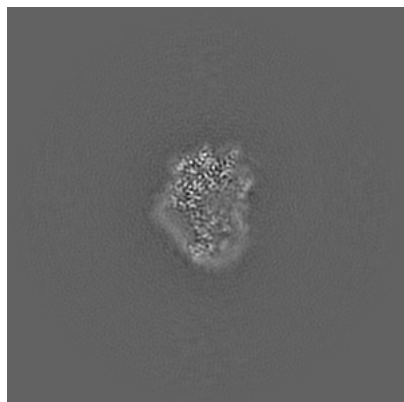


Z

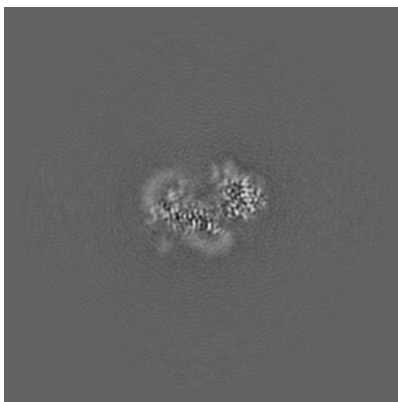
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

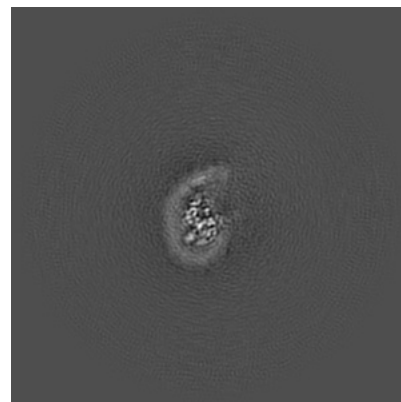
6.2.1 Primary map



X Index: 192

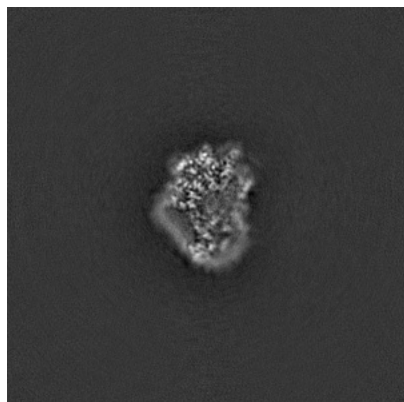


Y Index: 192

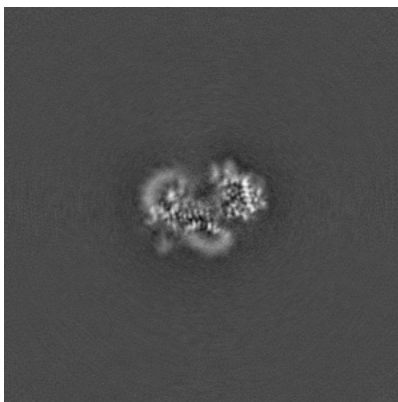


Z Index: 192

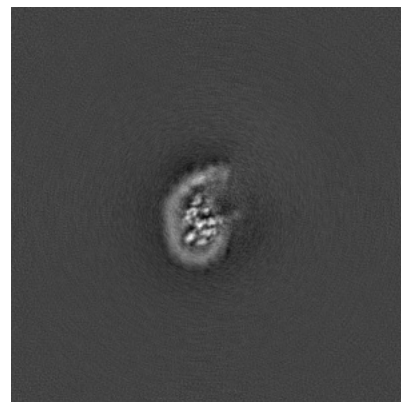
6.2.2 Raw map



X Index: 192



Y Index: 192

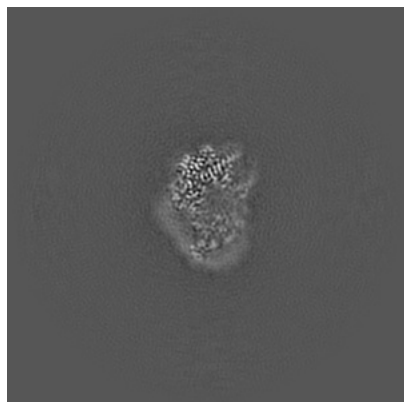


Z Index: 192

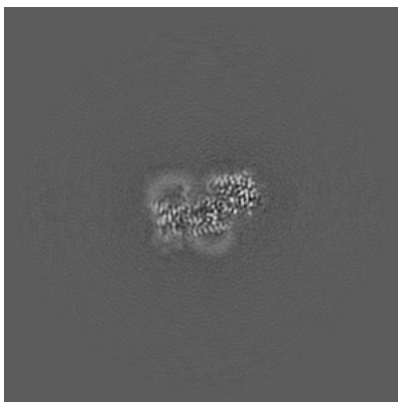
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

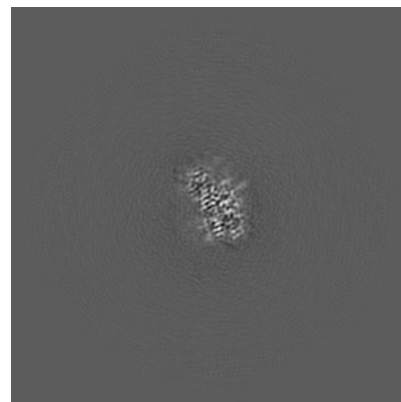
6.3.1 Primary map



X Index: 195

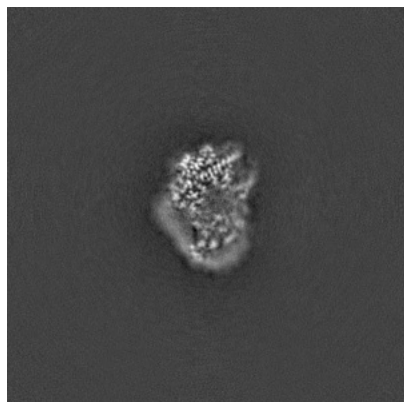


Y Index: 183

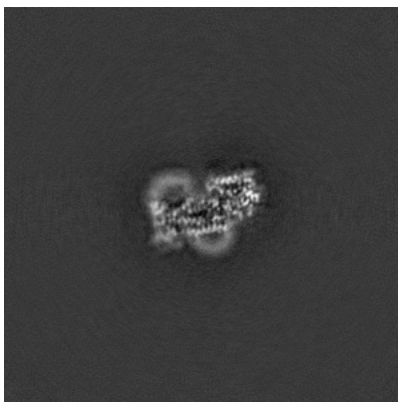


Z Index: 224

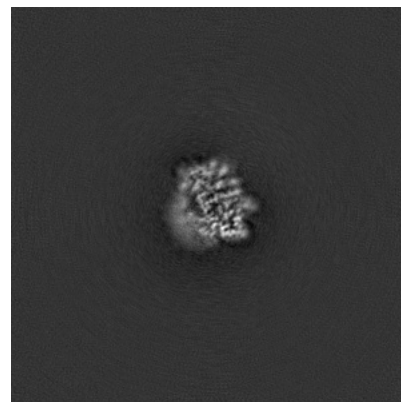
6.3.2 Raw map



X Index: 195



Y Index: 181

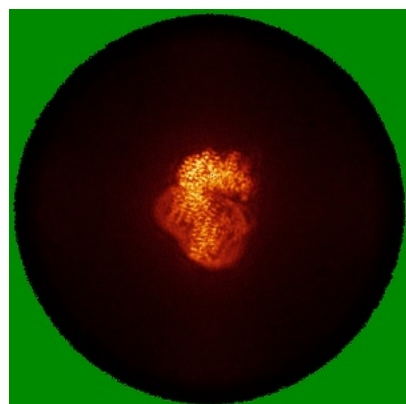


Z Index: 215

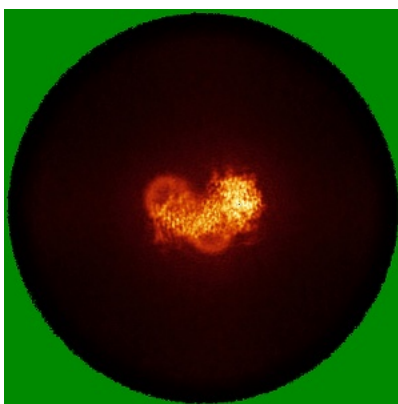
The images above show the largest variance slices of the map in three orthogonal directions.

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

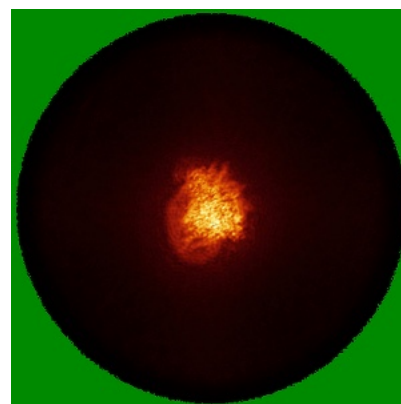
6.4.1 Primary map



X

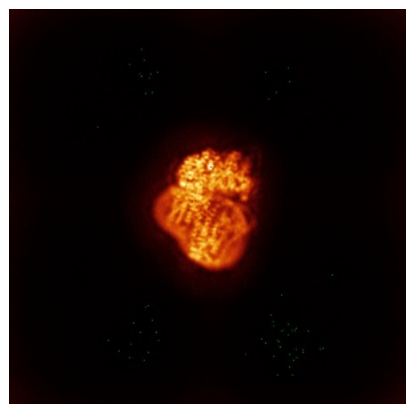


Y

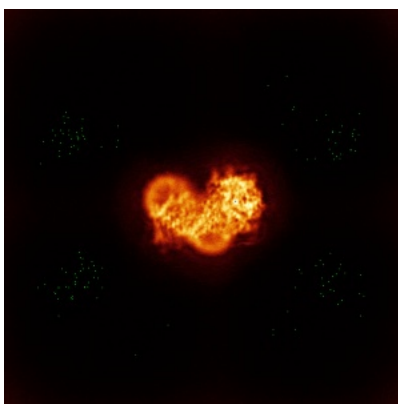


Z

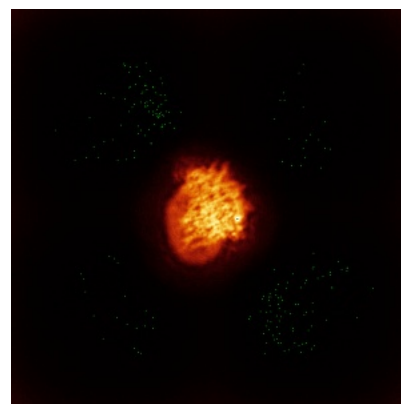
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views [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 0.15. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

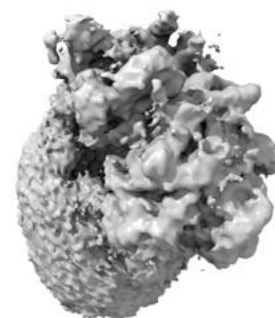
6.5.2 Raw map



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.

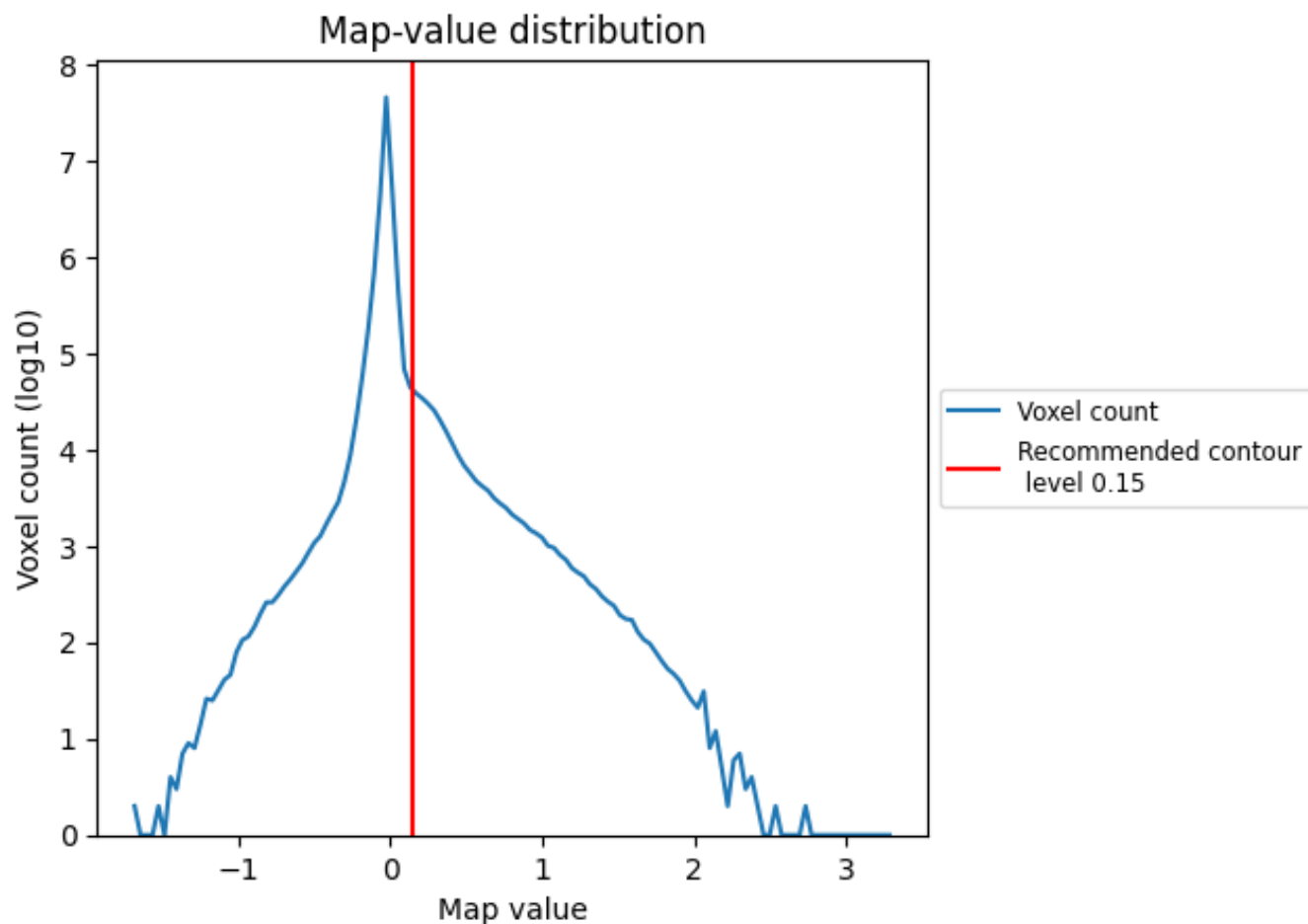
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

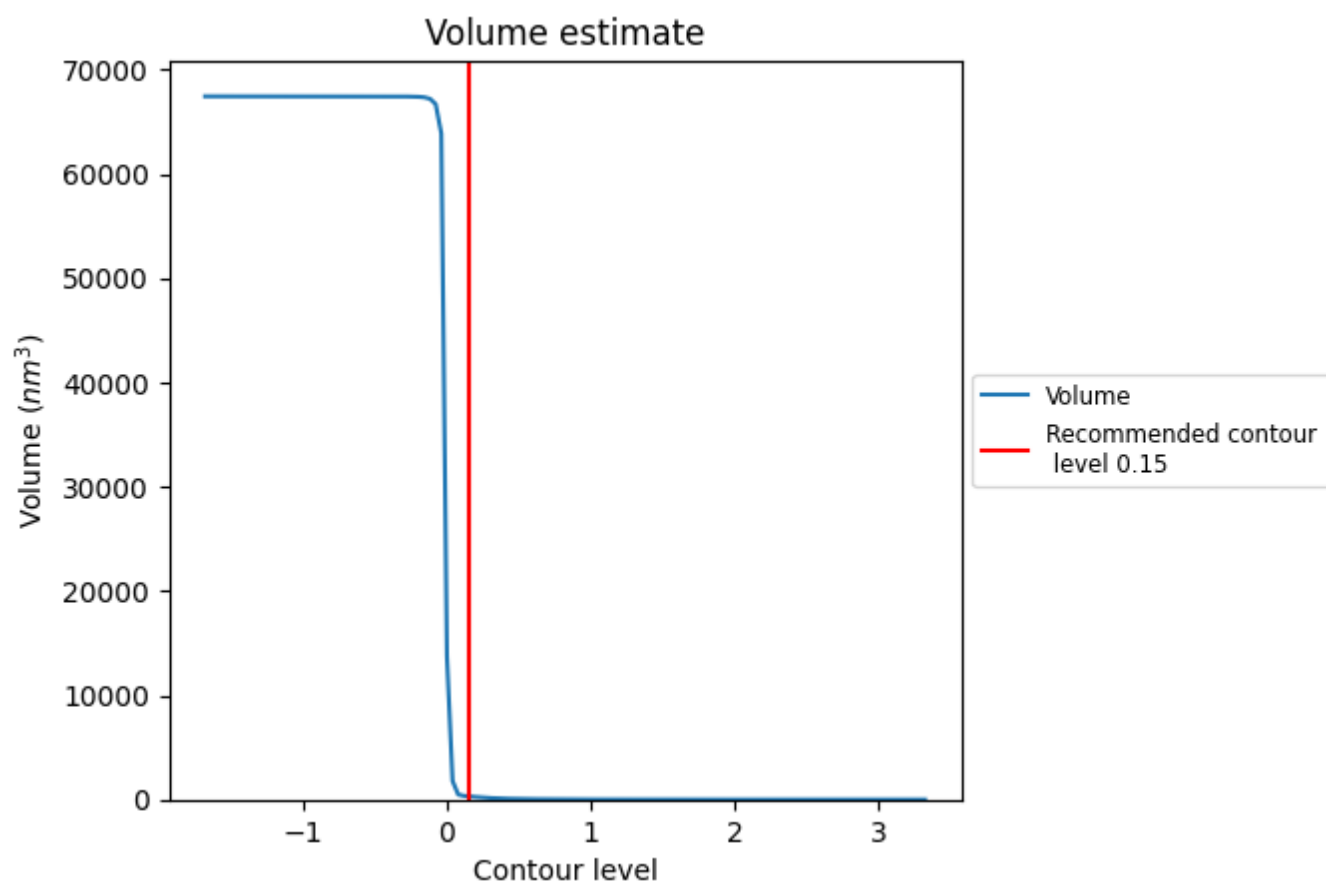
This section contains the results of statistical analysis of the map.

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.

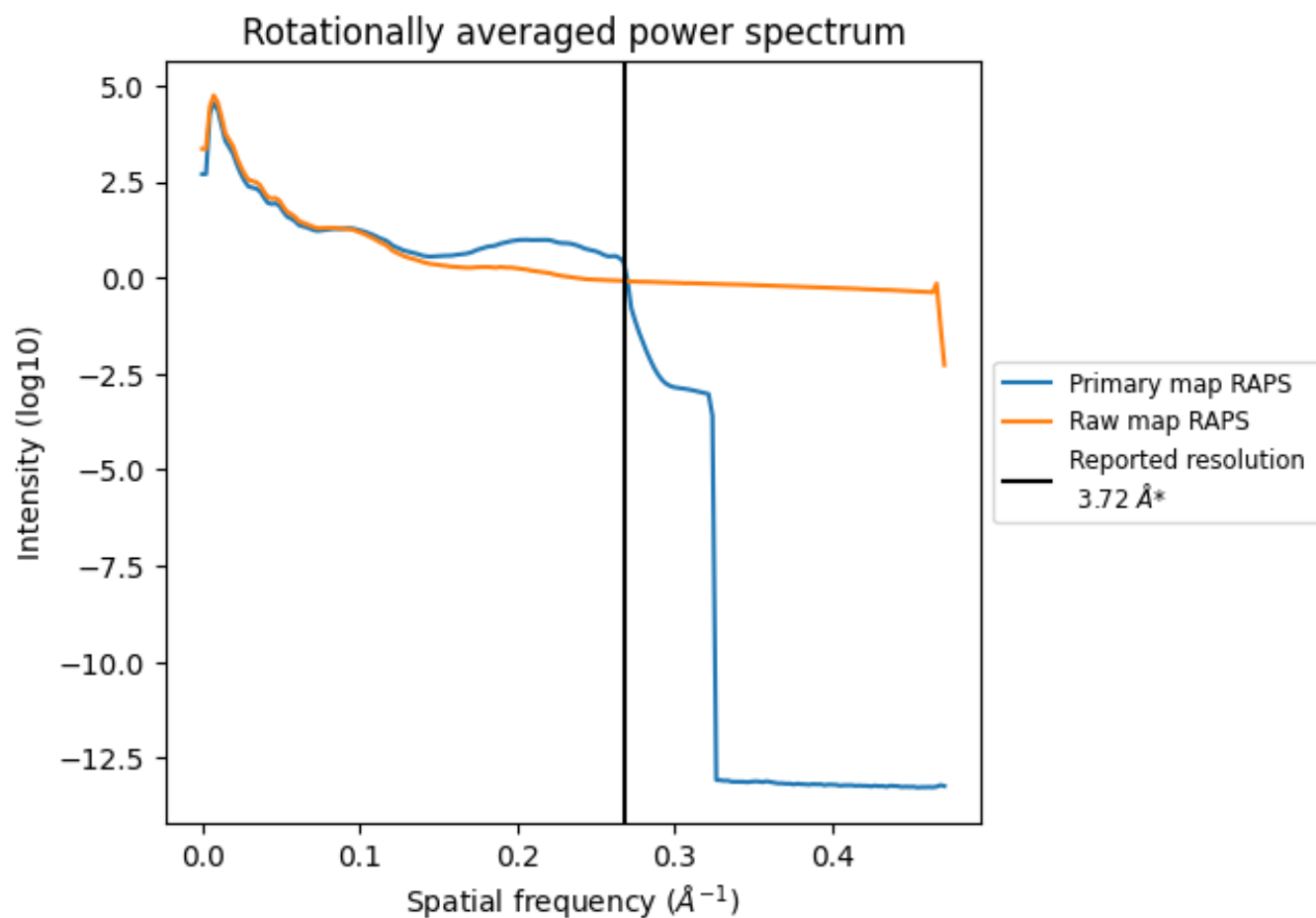
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 312 nm³; this corresponds to an approximate mass of 282 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 ⓘ

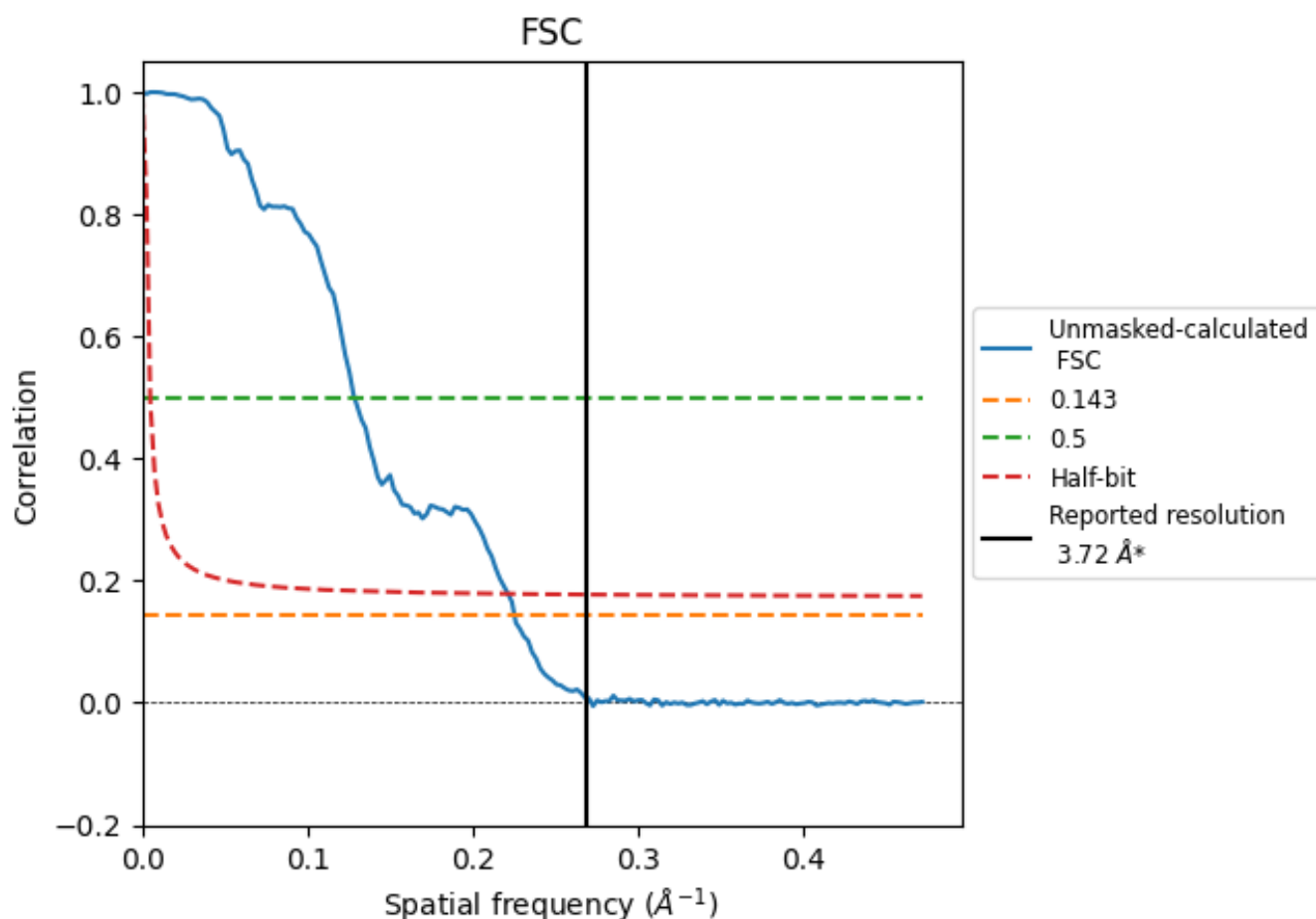


*Reported resolution corresponds to spatial frequency of 0.269 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.269 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

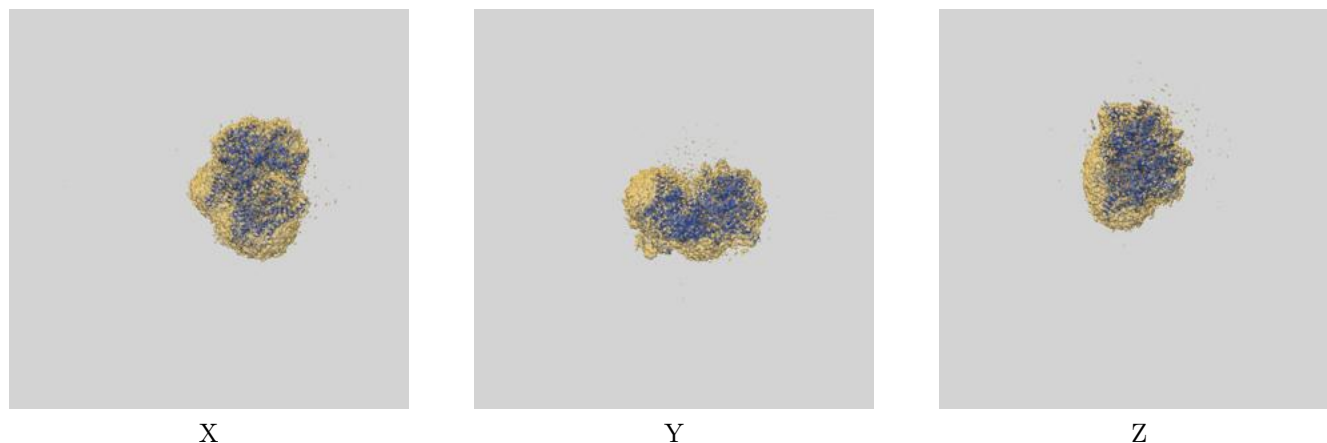
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.72	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.44	7.80	4.52

*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 4.44 differs from the reported value 3.72 by more than 10 %

9 Map-model fit [i](#)

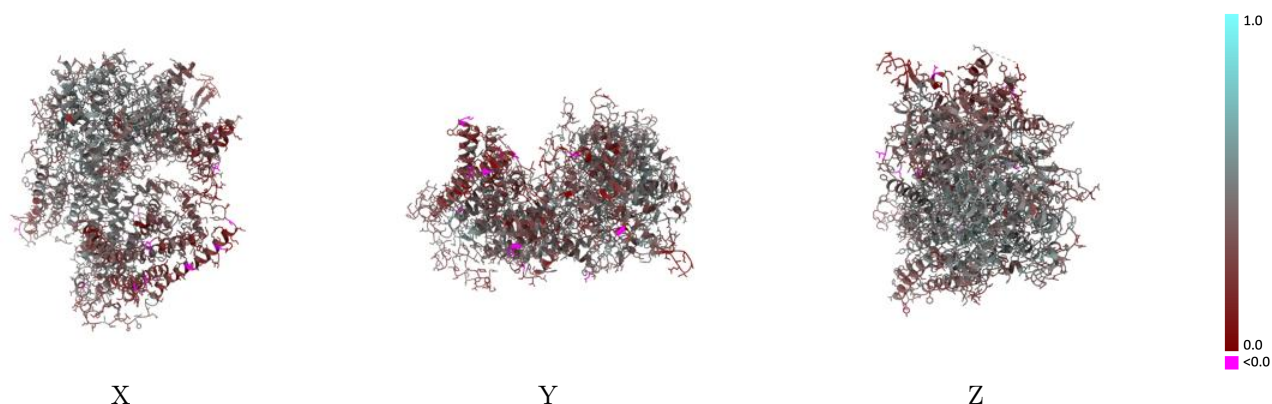
This section contains information regarding the fit between EMDB map EMD-66411 and PDB model 9WZX. Per-residue inclusion information can be found in [section 3](#) on [page 4](#).

9.1 Map-model overlay [i](#)



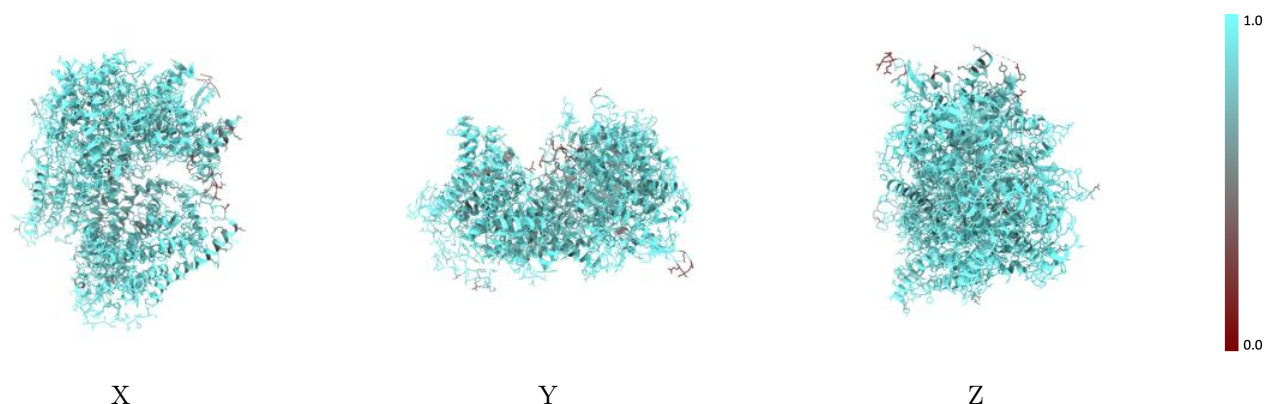
The images above show the 3D surface view of the map at the recommended contour level 0.15 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



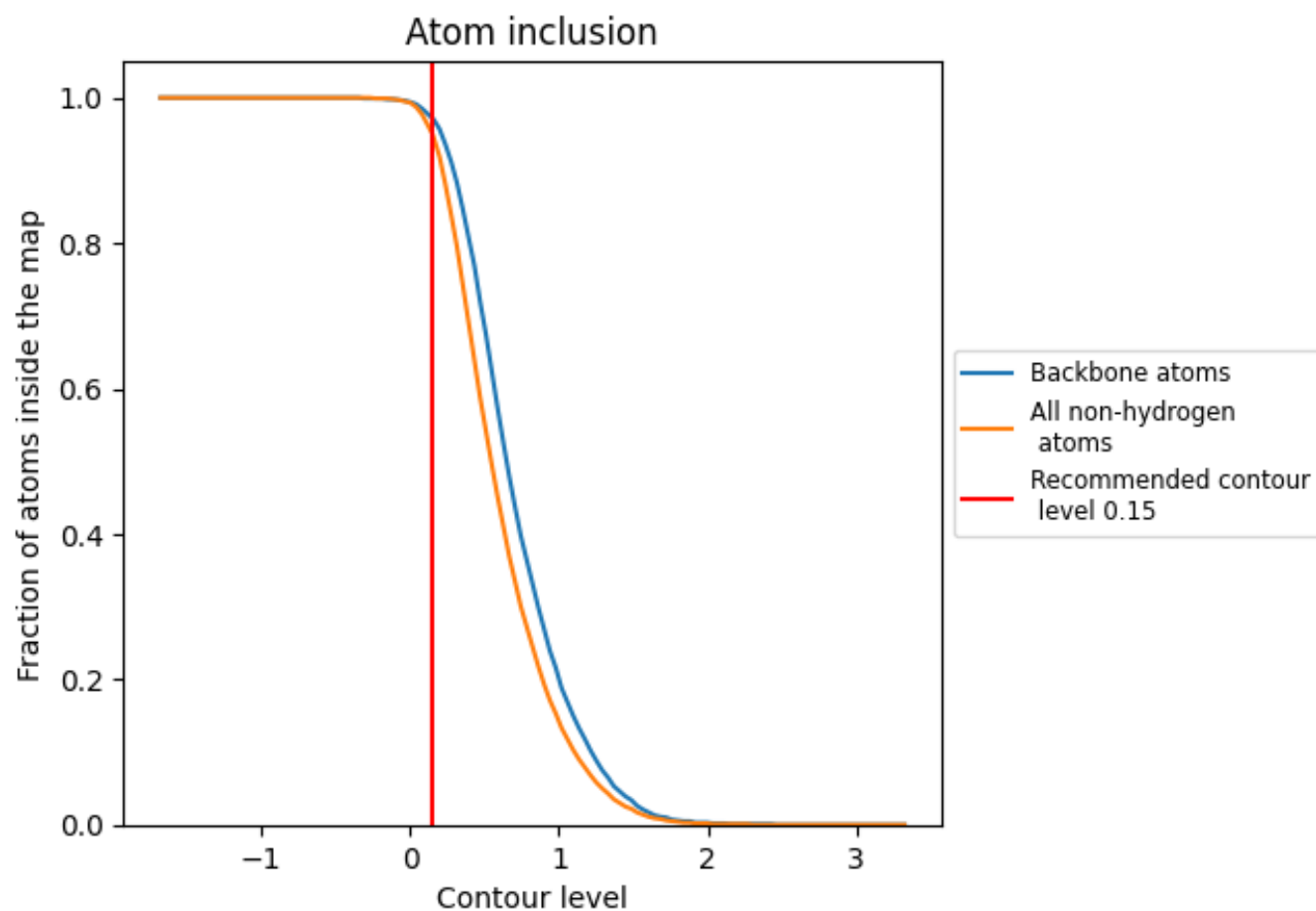
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.15).

9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 95% 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 (0.15) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9500	0.3870
F	0.9500	0.3870

