



## Full wwPDB EM Validation Report ⓘ

Nov 13, 2023 – 03:24 am GMT

PDB ID : 8PBY  
EMDB ID : EMD-17588  
Title : Single particle cryo-EM of the P140-P110 heterodimer with an alternative conformation in the P140 stalk of Mycoplasma genitalium at a resolution of 3.7 Angstrom.  
Authors : Sprankel, L.; Scheffer, M.P.; Frangakis, A.S.  
Deposited on : 2023-06-09  
Resolution : 3.70 Å(reported)  
Based on initial models : 6R3T, 6RUT

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

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

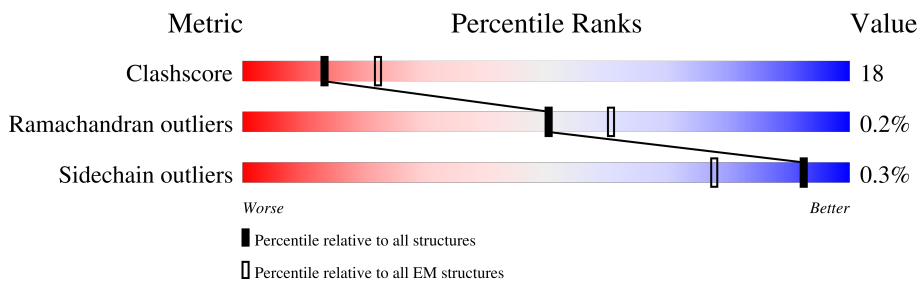
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.70 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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1059	
2	B	1444	

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 33480 atoms, of which 16474 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 Mgp-operon protein 3.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	A	902	13658	4350	6714	1165	1423	6	2	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1053	HIS	-	expression tag	UNP P22747
A	1054	HIS	-	expression tag	UNP P22747
A	1055	HIS	-	expression tag	UNP P22747
A	1056	HIS	-	expression tag	UNP P22747
A	1057	HIS	-	expression tag	UNP P22747
A	1058	HIS	-	expression tag	UNP P22747

- Molecule 2 is a protein called Adhesin P1.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
2	B	1285	19822	6373	9760	1701	1974	14	0	0





THR	SER	ALA	SER	S789	T795	F796	S797	N798	G802	I807	L811	T816	F820	N823	F824	I828	G833	Y834	R835	V836	Q837	I845	F846	V850	K851	N855	S856	T857	F858	D860	D864	D865	N866	G872	G873	T878	T879	Y880	P884	N885	S886													
I887	T890	S891	D892	W893	I894	N895	A896	T900	N901	K902	N903	N904	P905	Q906	N907	N908	Q909	L910	L911	L912	L915	L916	I919	P920	R921	L922	I923	N924	D928	S929	N930	D931	Q932	D936	S937	E938	Q939	D942	K943	T944	E945	E948	G949	N950	L951	F954	G955	E956	V957	N958				
G959	L960	Y961	N962	L965	L966	R967	Y969	G973	T976	N977	S978	T979	D980	N981	K982	I983	K986	A987	D988	L997	V998	G999	S1000	T1005	S1006	Q1007	D1008	V1009	G1010	M1011	L1012	V1013	M1016	S1019	F1020	G1021	F1022	Q1023	L1024	I1029	T1030	F1031	I1035	L1042	G1043	I1044	T1045							
L1046	S1047	S1048	L1049	Q1050	D1051	Q1052	T1053	I1054	I1055	Q1059	T1062	K1065	Y1068	T1074	P1075	L1078	W1079	D1080	P1081	L1084	K1085	S1086	L1087	P1088	N1089	S1090	S1091	T1092	T1093	Y1094	D1095	T1096	N1097	L1100	Q1105	L1106	Y1107	Q1108	P1109	N1110	K1111	V1112	Q1116	N1119	T1120	Y1121	L1124							
I1125	D1129	A1134	L1143	K1150	L1153	G1156	T1157	A1158	S1159	S1160	Q1161	G1162	N1163	N1164	M1165	G1166	G1167	Q1171	T1172	I1173	M1174	T1175	I1176	T1179	L1186	K1187	E1188	E1189	S1191	T1190	I1192	Q1193	A1194	E1195	T1196	L1197	K1198	K1199	F1200	F1201	D1202	S1203	K1204	Q1205	G1212	I1213	G1214	D1222						
G1223	K1224	V1228	T1231	P1232	L1233	V1234	G1241	A1242	T1243	S1244	D1245	S1246	D1247	T1248	E1249	K1250	I1251	S1252	F1253	K1254	P1255	G1256	I1259	R1263	L1267	P1268	V1269	T1270	LYS	E1271	L1272	F1273	D1274	P1275	N1276	T1277	M1278	F1279	V1280	Y1281	D1282	Q1283	Y1284	Y1285	P1286	L1287	L1288	V1289	N1290	L1291	P1292	S1293	G1294	F1295
D1296	Q1297	A1298	S1299	R1301	L1302	K1303	V1304	I1305	S1306	Y1307	S1308	M1311	Q1312	T1313	L1314	G1315	V1316	R1317	L1318	K1321	D1322	P1323	Q1324	T1325	Q1326	Q1327	F1328	L1332	N1333	A1334	S1335	S1336	T1337	G1338	P1339	Q1340	F1343	F1346	N1347	W1349	ALA	ASP	TYR	THR	VAL	LEU	PRO	LEU	ILE	VAL	THR	VAL	VAL	PRO
ILE	VAL	VAL	ILE	LEU	SER	VAL	THR	GLY	LEU	THR	ILE	GLY	ILE	MET	HIS	ARG	ASN	LYS	ALA	LEU	GLN	ALA	GLY	PHE	ASP	LEU	SER	ASN	LYS	VAL	ASP	VAL	VAL	LEU	THR	LYS	LYS	ALA	VAL	THR	THR	VAL	LEU	PRO	ASN	ALA	ALA	PRO						
LYS	LYS	LEU	GLN	ALA	THR	PRO	THR	LYS	PRO	THR	LYS	THR	PRO	PRO	LYS	PRO	VAL	LYS	GLN	LYS	GLY	LYS	PHE	ASP	LEU	SER	ASN	LYS	VAL	ASP	VAL	VAL	LEU	THR	LYS	LYS	ALA	VAL	THR	THR	VAL	LEU	PRO	ASN	ALA	ALA	PRO							

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	67091	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	130000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.945	Depositor
Minimum map value	-1.485	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.062	Depositor
Recommended contour level	0.34	Depositor
Map size (Å)	315.0, 315.0, 315.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	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	0.25	0/7076	0.47	0/9624
2	B	0.26	0/10316	0.48	0/14045
All	All	0.26	0/17392	0.47	0/23669

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
2	B	0	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	589	LEU	Peptide

### 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	6944	6714	6705	227	0
2	B	10062	9760	9759	383	0
All	All	17006	16474	16464	603	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 (603) 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:530:ASN:O	1:A:530:ASN:ND2	2.03	0.91
1:A:165:LYS:NZ	1:A:206:LYS:O	2.05	0.90
2:B:387:TYR:OH	2:B:418:ASN:OD1	1.89	0.89
2:B:273:ARG:NH2	2:B:878:THR:OG1	2.07	0.88
2:B:391:ASN:OD1	2:B:418:ASN:ND2	2.08	0.87
1:A:505:THR:HG1	1:A:510:TYR:HH	0.95	0.87
2:B:1050:GLN:O	2:B:1052:GLN:NE2	2.08	0.86
2:B:580:GLN:O	2:B:688:TYR:OH	1.94	0.83
2:B:1051:ASP:OD1	2:B:1163:ASN:ND2	2.11	0.83
2:B:1187:LYS:NZ	2:B:1188:GLU:OE2	2.11	0.83
1:A:519:ASP:O	1:A:577:TYR:OH	1.95	0.83
2:B:380:ASN:OD1	2:B:383:GLY:N	2.11	0.82
2:B:919:ILE:O	2:B:969:TYR:OH	1.98	0.82
2:B:123:ASP:OD1	2:B:208:LYS:NZ	2.10	0.82
2:B:906:GLN:NE2	2:B:958:ASN:O	2.13	0.81
2:B:1074:THR:OG1	2:B:1171:GLN:OE1	1.98	0.81
1:A:460:GLN:OE1	2:B:816:THR:OG1	1.97	0.80
1:A:646:TYR:OH	1:A:666:ASP:OD1	1.99	0.80
2:B:381:HIS:NE2	2:B:681:ASN:O	2.14	0.80
2:B:976:THR:HG21	2:B:1153:LEU:HD22	1.62	0.80
2:B:887:ILE:HG21	2:B:1124:LEU:HD21	1.65	0.78
1:A:154:LEU:HD21	1:A:505:THR:HG22	1.65	0.78
1:A:254:SER:OG	1:A:270:ASN:ND2	2.16	0.78
2:B:631:ASN:O	2:B:656:TYR:OH	2.01	0.78
1:A:634:ASP:OD1	1:A:742:ARG:NE	2.18	0.77
2:B:1116:GLN:NE2	2:B:1119:ASN:O	2.17	0.77
1:A:357:GLU:OE1	1:A:374:HIS:NE2	2.16	0.77
1:A:512:ASP:OD1	1:A:607:PHE:N	2.18	0.77
2:B:392:LEU:HD12	2:B:605:VAL:HG11	1.68	0.76
2:B:1231:THR:OG1	2:B:1234:VAL:O	2.02	0.76
2:B:969:TYR:O	2:B:976:THR:OG1	2.04	0.76
2:B:514:ASN:ND2	2:B:673:LEU:O	2.18	0.75
2:B:798:ASN:ND2	2:B:890:THR:O	2.19	0.75
2:B:488:ARG:NH1	2:B:708:ASP:OD1	2.20	0.75
1:A:371:HIS:O	1:A:499:ASN:ND2	2.19	0.75
1:A:457:PHE:O	1:A:600:ARG:NH2	2.19	0.75
2:B:529:ARG:NH1	2:B:729:LEU:O	2.19	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:100:ASP:OD2	1:A:103:SER:OG	2.02	0.74
2:B:186:LYS:NZ	2:B:337:GLY:O	2.17	0.74
2:B:576:ASN:HB3	2:B:591:ILE:HD13	1.69	0.74
1:A:889:THR:OG1	1:A:897:SER:O	2.06	0.74
2:B:834:TYR:OH	2:B:945:GLU:OE2	2.04	0.74
1:A:338:THR:CG2	1:A:559:ALA:HB2	2.17	0.74
1:A:365:THR:O	1:A:366:THR:OG1	2.05	0.74
1:A:41:THR:OG1	1:A:45:THR:OG1	2.06	0.73
2:B:405:HIS:NE2	2:B:686:ASN:O	2.21	0.73
2:B:390:ARG:NH2	2:B:398:GLY:O	2.22	0.73
2:B:1150:LYS:NZ	2:B:1156:GLY:O	2.20	0.73
1:A:155:THR:OG1	1:A:224:GLU:OE2	2.05	0.73
2:B:478:THR:OG1	2:B:1105:GLN:OE1	2.07	0.73
1:A:130:TYR:OH	1:A:327:ARG:O	2.06	0.73
2:B:977:ASN:OD1	2:B:978:SER:N	2.22	0.73
1:A:93:GLY:O	1:A:96:ASN:ND2	2.23	0.72
2:B:566:LEU:HD21	2:B:577:LEU:HD22	1.70	0.72
2:B:445:LEU:HD11	2:B:453:ASN:ND2	2.05	0.72
2:B:132:ARG:NH1	2:B:345:ASP:OD2	2.22	0.72
1:A:657:VAL:HG21	1:A:681:PHE:CE1	2.24	0.72
2:B:1253:PHE:N	2:B:1334:ALA:O	2.23	0.72
2:B:404:ARG:NH1	2:B:559:ASP:OD2	2.22	0.72
1:A:784:GLU:O	1:A:804:ASN:ND2	2.23	0.71
2:B:1296:ASP:OD1	2:B:1299:SER:N	2.24	0.71
1:A:315:SER:OG	1:A:385:ILE:O	2.03	0.71
2:B:1282:ASP:OD1	2:B:1301:ARG:NH2	2.23	0.71
1:A:434:ASP:OD2	1:A:473:HIS:ND1	2.24	0.71
2:B:1335:SER:OG	2:B:1338:GLY:O	2.09	0.70
2:B:390:ARG:NE	2:B:396:THR:O	2.25	0.70
2:B:256:LEU:HD23	2:B:606:GLY:HA3	1.73	0.70
2:B:599:ASN:OD1	2:B:600:ARG:N	2.24	0.70
1:A:251:ASP:OD2	1:A:268:TYR:N	2.24	0.69
1:A:523:LEU:HD21	1:A:588:ILE:CG2	2.22	0.69
2:B:404:ARG:O	2:B:405:HIS:ND1	2.25	0.69
2:B:679:SER:HA	2:B:730:LEU:HD21	1.73	0.69
2:B:1078:LEU:HD11	2:B:1228:VAL:HG13	1.74	0.68
2:B:700:GLU:N	2:B:700:GLU:OE1	2.27	0.68
2:B:166:PRO:O	2:B:349:SER:OG	2.12	0.68
2:B:248:ASP:OD1	2:B:250:SER:N	2.26	0.68
2:B:395:GLN:OE1	2:B:565:ARG:NH1	2.25	0.68
2:B:591:ILE:HD11	2:B:955:GLY:O	1.94	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:338:THR:HG23	1:A:559:ALA:HB2	1.76	0.67
1:A:633:ILE:O	1:A:703:TYR:OH	2.12	0.67
2:B:394:LEU:O	2:B:582:GLN:NE2	2.28	0.67
2:B:949:GLY:O	2:B:961:TYR:OH	2.09	0.67
1:A:160:ASN:HD22	1:A:610:LEU:HD22	1.59	0.67
1:A:524:ASN:OD1	1:A:533:ARG:NH1	2.27	0.67
2:B:136:ASN:O	2:B:1243:THR:OG1	2.12	0.67
2:B:1201:PHE:O	2:B:1205:GLN:N	2.29	0.66
2:B:83:GLU:N	2:B:83:GLU:OE1	2.30	0.65
1:A:66:ILE:HG23	1:A:78:VAL:HG13	1.77	0.65
2:B:374:TRP:CH2	2:B:534:VAL:HG22	2.30	0.65
2:B:1068:TYR:CE1	2:B:1228:VAL:HG11	2.32	0.65
1:A:35:LYS:NZ	1:A:64:TYR:O	2.29	0.65
2:B:286:GLN:OE1	2:B:289:SER:N	2.29	0.65
2:B:645:LYS:NZ	2:B:646:ASN:OD1	2.30	0.65
2:B:328:ASP:OD1	2:B:332:ARG:NH2	2.30	0.64
2:B:540:SER:O	2:B:1012:LEU:N	2.30	0.64
2:B:1121:TYR:HD1	2:B:1125:ILE:HD11	1.61	0.64
2:B:374:TRP:NE1	2:B:531:PHE:O	2.29	0.64
2:B:924:ASN:OD1	2:B:986:LYS:N	2.31	0.64
1:A:203:THR:OG1	1:A:423:GLN:NE2	2.31	0.64
2:B:247:LYS:NZ	2:B:248:ASP:O	2.23	0.64
2:B:223:GLU:OE2	2:B:478:THR:N	2.28	0.64
1:A:271:THR:O	1:A:275:LEU:HD23	1.98	0.64
1:A:314:ASN:OD1	1:A:315:SER:N	2.31	0.63
1:A:342:ASN:ND2	1:A:558:SER:OG	2.32	0.63
2:B:954:PHE:O	2:B:1110:ASN:ND2	2.31	0.63
2:B:835:ARG:NH1	2:B:887:ILE:HD12	2.14	0.63
1:A:297:ALA:HB1	1:A:317:LEU:HD21	1.81	0.63
2:B:463:SER:OG	2:B:489:ILE:O	2.12	0.63
2:B:965:LEU:O	2:B:968:THR:OG1	2.17	0.63
1:A:303:ALA:HB3	1:A:310:VAL:HG22	1.82	0.62
2:B:246:VAL:O	2:B:301:LYS:N	2.32	0.62
1:A:428:SER:OG	1:A:519:ASP:OD2	2.12	0.62
1:A:133:ASP:OD2	1:A:334:SER:OG	2.17	0.62
2:B:105:LYS:NZ	2:B:109:ASP:O	2.31	0.62
1:A:176:LEU:HD23	1:A:180:GLN:HB2	1.82	0.62
2:B:273:ARG:NH2	2:B:866:ASN:O	2.32	0.62
1:A:41:THR:HG1	1:A:45:THR:HG1	1.47	0.62
1:A:459:ILE:HD13	1:A:464:SER:OG	2.00	0.61
1:A:708:GLY:O	1:A:742:ARG:NH1	2.32	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:412:SER:OG	1:A:417:SER:N	2.33	0.61
2:B:588:ASP:OD2	2:B:691:ASN:ND2	2.32	0.61
1:A:491:ASP:OD1	1:A:492:GLN:N	2.33	0.61
2:B:939:GLN:OE1	2:B:950:ASN:ND2	2.32	0.61
1:A:770:GLN:NE2	2:B:737:ASN:OD1	2.33	0.61
1:A:85:VAL:O	1:A:288:ARG:NH1	2.32	0.61
1:A:744:GLY:O	2:B:548:GLN:NE2	2.34	0.61
2:B:701:ASP:OD1	2:B:702:LEU:N	2.33	0.61
2:B:527:THR:HG22	2:B:528:ASN:H	1.65	0.61
1:A:540:GLN:NE2	1:A:622:ILE:O	2.33	0.61
2:B:928:ASP:OD1	2:B:929:SER:N	2.34	0.61
2:B:279:VAL:HG11	2:B:295:PHE:CE1	2.36	0.61
2:B:633:ASN:OD1	2:B:634:ASN:N	2.34	0.60
1:A:846:ASN:OD1	1:A:928:ARG:NH2	2.35	0.60
2:B:663:ALA:CB	2:B:900:THR:HG23	2.31	0.60
2:B:758:SER:O	2:B:907:ARG:NH1	2.34	0.60
2:B:559:ASP:N	2:B:685:GLU:O	2.34	0.60
1:A:528:LYS:NZ	2:B:820:PHE:O	2.33	0.60
2:B:895:ASN:OD1	2:B:896:ALA:N	2.33	0.60
1:A:65:GLN:N	1:A:81:LYS:O	2.34	0.60
2:B:89:GLY:O	2:B:131:ARG:N	2.35	0.60
2:B:765:LEU:HD11	2:B:911:LEU:HA	1.82	0.60
2:B:166:PRO:CB	2:B:1305:ILE:HD12	2.32	0.59
1:A:606:THR:O	1:A:610:LEU:N	2.35	0.59
1:A:589:ILE:HG22	1:A:590:ASP:OD1	2.02	0.59
2:B:701:ASP:O	2:B:704:THR:OG1	2.21	0.59
2:B:1254:LYS:NZ	2:B:1286:PRO:O	2.35	0.59
2:B:594:PRO:HG2	2:B:1124:LEU:HD22	1.83	0.59
1:A:69:GLN:OE1	1:A:69:GLN:N	2.36	0.59
2:B:631:ASN:N	2:B:878:THR:O	2.34	0.59
1:A:166:GLU:OE2	1:A:209:THR:OG1	2.21	0.58
2:B:980:ASP:OD1	2:B:982:LYS:N	2.35	0.58
1:A:396:ILE:HG23	1:A:629:LEU:HD21	1.84	0.58
1:A:648:ALA:O	1:A:659:LEU:N	2.32	0.58
1:A:576:ARG:NH2	1:A:678:PRO:O	2.37	0.58
1:A:354:GLN:NE2	1:A:357:GLU:OE2	2.37	0.58
1:A:786:PHE:CD1	1:A:905:LEU:HD23	2.39	0.58
2:B:942:ASP:OD1	2:B:943:LYS:N	2.37	0.58
2:B:134:ASP:OD1	2:B:138:ARG:N	2.33	0.58
2:B:470:ASN:OD1	2:B:1009:VAL:HG12	2.04	0.58
1:A:64:TYR:OH	1:A:108:PRO:O	2.19	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:604:VAL:HG12	1:A:604:VAL:O	2.02	0.58
1:A:70:THR:HG22	1:A:302:LEU:HD11	1.86	0.58
1:A:81:LYS:NZ	1:A:296:TYR:OH	2.20	0.58
2:B:280:GLU:N	2:B:280:GLU:OE1	2.36	0.58
2:B:681:ASN:OD1	2:B:682:PHE:N	2.37	0.58
2:B:956:GLU:OE2	2:B:962:ASN:N	2.37	0.57
2:B:754:PRO:HB3	2:B:1042:LEU:HD23	1.85	0.57
2:B:856:SER:O	2:B:857:THR:OG1	2.15	0.57
1:A:699:LYS:HE2	1:A:776:LEU:HD11	1.87	0.57
2:B:459:ALA:CB	2:B:464:VAL:HG22	2.35	0.57
2:B:536:ARG:NH2	2:B:688:TYR:O	2.38	0.57
2:B:122:LEU:O	2:B:126:GLN:N	2.38	0.57
1:A:601:GLY:O	1:A:605:THR:HG22	2.03	0.57
2:B:666:LEU:HD22	2:B:903:ASN:ND2	2.20	0.57
1:A:915:THR:HG22	1:A:920:PRO:HA	1.86	0.57
2:B:166:PRO:HB3	2:B:1305:ILE:HD12	1.87	0.56
2:B:1288:LEU:HD22	2:B:1343:PHE:CE2	2.39	0.56
1:A:303:ALA:HB2	1:A:388:ILE:CG2	2.35	0.56
1:A:544:TYR:CD2	1:A:659:LEU:HD11	2.41	0.56
2:B:381:HIS:ND1	2:B:532:GLU:OE2	2.39	0.56
2:B:400:PHE:CE2	2:B:534:VAL:HG11	2.40	0.56
2:B:536:ARG:CZ	2:B:556:THR:HG21	2.35	0.56
2:B:1267:LEU:O	2:B:1312:GLN:NE2	2.38	0.56
2:B:1062:THR:HG21	2:B:1085:LYS:CB	2.35	0.56
1:A:452:PRO:O	1:A:453:ILE:HD13	2.05	0.56
1:A:611:LYS:NZ	1:A:612:SER:O	2.38	0.56
2:B:128:PHE:CG	2:B:187:VAL:HG23	2.40	0.56
2:B:645:LYS:O	2:B:652:HIS:NE2	2.38	0.56
2:B:1284:TYR:HB3	2:B:1287:LEU:HD12	1.87	0.56
2:B:392:LEU:CD1	2:B:605:VAL:HG11	2.36	0.56
2:B:903:ASN:OD1	2:B:906:GLN:N	2.26	0.56
2:B:1048:SER:N	2:B:1214:GLY:O	2.38	0.56
1:A:453:ILE:HD11	1:A:484:THR:CG2	2.36	0.56
2:B:140:LEU:HD12	2:B:141:TYR:HB2	1.86	0.56
2:B:467:PHE:CD2	2:B:542:VAL:HG11	2.40	0.56
2:B:59:GLN:OE1	2:B:143:ILE:N	2.36	0.56
1:A:87:VAL:O	1:A:289:ASN:ND2	2.36	0.56
1:A:133:ASP:OD1	1:A:134:VAL:N	2.38	0.56
1:A:150:LEU:HD21	1:A:294:LEU:HD11	1.87	0.56
2:B:374:TRP:HH2	2:B:534:VAL:HG13	1.71	0.55
1:A:155:THR:C	1:A:158:THR:HG1	2.09	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:723:ASP:OD1	1:A:724:GLY:N	2.38	0.55
2:B:887:ILE:HG22	2:B:887:ILE:O	2.05	0.55
1:A:331:GLU:OE2	1:A:332:ASN:ND2	2.38	0.55
1:A:453:ILE:HD11	1:A:484:THR:HG22	1.88	0.55
2:B:143:ILE:HD11	2:B:353:THR:HG21	1.88	0.55
2:B:1062:THR:HG21	2:B:1085:LYS:HB3	1.88	0.55
2:B:384:ILE:HG23	2:B:385:TRP:H	1.71	0.55
1:A:312:MET:HE3	1:A:312:MET:HA	1.88	0.55
2:B:140:LEU:HD12	2:B:141:TYR:N	2.22	0.55
2:B:282:GLU:N	2:B:282:GLU:OE1	2.39	0.55
1:A:389:ASP:OD1	1:A:390:SER:N	2.39	0.55
1:A:163:LEU:CB	1:A:622:ILE:HD11	2.37	0.54
1:A:192:ASP:OD2	1:A:490:LYS:NZ	2.31	0.54
2:B:167:PHE:CZ	2:B:1305:ILE:HD11	2.42	0.54
2:B:374:TRP:CZ2	2:B:534:VAL:HG22	2.42	0.54
1:A:312:MET:HE2	1:A:385:ILE:HD13	1.88	0.54
2:B:776:PRO:O	2:B:779:ASN:ND2	2.41	0.54
1:A:132:LEU:HD12	1:A:323:TRP:CD2	2.43	0.54
1:A:735:PHE:O	1:A:771:SER:N	2.40	0.54
2:B:136:ASN:HD22	2:B:1332:LEU:HD23	1.73	0.54
1:A:352:GLN:O	1:A:356:VAL:HG23	2.08	0.54
2:B:945:GLU:O	2:B:1120:THR:OG1	2.13	0.54
1:A:607:PHE:CE1	1:A:622:ILE:HG21	2.42	0.54
2:B:524:PRO:HG2	2:B:557:MET:HB3	1.89	0.54
2:B:702:LEU:O	2:B:706:LEU:HD13	2.08	0.53
1:A:297:ALA:CB	1:A:317:LEU:HD21	2.38	0.53
1:A:700:GLU:O	1:A:713:ILE:HG22	2.09	0.53
2:B:902:LYS:HZ3	2:B:959:GLY:HA2	1.72	0.53
1:A:526:ASN:OD1	1:A:532:GLU:N	2.36	0.53
2:B:187:VAL:HG11	2:B:211:LEU:HD11	1.91	0.53
2:B:741:ALA:HB3	2:B:742:ARG:NH2	2.24	0.53
2:B:1186:LEU:HD22	2:B:1197:LEU:HD11	1.91	0.53
1:A:657:VAL:HG23	1:A:682:SER:O	2.09	0.53
2:B:103:VAL:HG12	2:B:114:TYR:CE1	2.43	0.53
2:B:142:ASP:OD1	2:B:143:ILE:N	2.42	0.53
2:B:225:LEU:HG	2:B:478:THR:HG21	1.91	0.53
2:B:906:GLN:O	2:B:910:LEU:HD23	2.09	0.53
1:A:523:LEU:HD21	1:A:588:ILE:HG23	1.91	0.53
2:B:761:PHE:CE1	2:B:765:LEU:HD21	2.44	0.53
1:A:589:ILE:HG21	2:B:681:ASN:ND2	2.23	0.53
2:B:151:PRO:C	2:B:176:ALA:HB2	2.29	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:761:PHE:O	2:B:765:LEU:HD23	2.09	0.52
2:B:764:PHE:CE1	2:B:1042:LEU:HD11	2.44	0.52
1:A:111:VAL:HG13	1:A:132:LEU:HD21	1.90	0.52
2:B:539:VAL:HG12	2:B:541:GLY:H	1.74	0.52
2:B:1205:GLN:N	2:B:1205:GLN:OE1	2.40	0.52
2:B:1272:LEU:HD13	2:B:1280:VAL:HG13	1.92	0.52
1:A:443:VAL:O	1:A:537:ARG:NH1	2.36	0.52
2:B:1121:TYR:CD1	2:B:1125:ILE:HD11	2.43	0.52
2:B:1186:LEU:CD2	2:B:1197:LEU:HD11	2.39	0.52
2:B:930:ASN:N	2:B:932:GLN:OE1	2.43	0.52
2:B:346:ALA:N	2:B:352:HIS:O	2.38	0.52
2:B:1202:ASP:O	2:B:1205:GLN:NE2	2.42	0.52
1:A:147:ASN:O	1:A:407:TYR:OH	2.22	0.52
1:A:97:ILE:HG22	1:A:134:VAL:CG2	2.40	0.52
1:A:867:GLU:OE1	1:A:867:GLU:N	2.36	0.52
2:B:73:ASN:O	2:B:1011:ASN:ND2	2.43	0.52
2:B:481:PRO:O	2:B:1007:GLN:NE2	2.41	0.52
2:B:69:THR:HG21	2:B:1065:LYS:O	2.10	0.51
2:B:220:VAL:O	2:B:222:LYS:NZ	2.42	0.51
2:B:691:ASN:C	2:B:912:LEU:HD13	2.30	0.51
2:B:130:ILE:N	2:B:142:ASP:O	2.43	0.51
2:B:520:LEU:HD12	2:B:908:ASN:CG	2.30	0.51
2:B:755:ASN:C	2:B:756:LEU:HD22	2.31	0.51
1:A:310:VAL:CG2	1:A:395:ILE:HD13	2.41	0.51
2:B:847:PHE:CE2	2:B:850:VAL:HG12	2.45	0.51
2:B:923:ILE:HD11	2:B:966:LEU:HD11	1.91	0.51
1:A:322:TYR:O	1:A:338:THR:N	2.35	0.51
2:B:223:GLU:OE2	2:B:478:THR:HG22	2.10	0.51
2:B:233:SER:O	2:B:234:PHE:CB	2.58	0.51
2:B:590:GLN:HB3	2:B:906:GLN:OE1	2.11	0.51
2:B:634:ASN:O	2:B:638:GLU:OE1	2.28	0.51
1:A:49:ASP:OD1	1:A:49:ASP:O	2.28	0.51
1:A:657:VAL:HG21	1:A:681:PHE:CD1	2.46	0.51
2:B:758:SER:OG	2:B:759:SER:N	2.43	0.51
2:B:256:LEU:HB3	2:B:277:LEU:HD22	1.92	0.51
2:B:482:LEU:HD11	2:B:538:ALA:HA	1.93	0.51
1:A:32:GLU:OE2	1:A:40:TYR:OH	2.22	0.51
1:A:886:LEU:HD22	1:A:898:VAL:HB	1.92	0.51
2:B:163:ILE:O	2:B:163:ILE:HG23	2.11	0.51
2:B:958:ASN:OD1	2:B:959:GLY:N	2.44	0.51
1:A:114:PHE:O	1:A:115:THR:OG1	2.29	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:238:GLN:OE1	2:B:239:ARG:NH1	2.44	0.50
1:A:906:ASP:OD2	1:A:910:TYR:OH	2.18	0.50
2:B:562:THR:HG21	2:B:581:GLY:HA2	1.93	0.50
2:B:627:ASP:OD1	2:B:628:ILE:N	2.44	0.50
2:B:828:ILE:HD11	2:B:893:TRP:CZ3	2.47	0.50
2:B:890:THR:OG1	2:B:902:LYS:NZ	2.27	0.50
1:A:310:VAL:HG22	1:A:395:ILE:HD13	1.93	0.50
1:A:904:PHE:O	1:A:907:GLY:N	2.38	0.50
2:B:594:PRO:CG	2:B:1124:LEU:HD22	2.42	0.50
2:B:475:LYS:NZ	2:B:480:ASN:OD1	2.44	0.50
2:B:542:VAL:O	2:B:543:LYS:HE2	2.12	0.50
2:B:662:TYR:HB3	2:B:901:ASN:HD22	1.76	0.50
2:B:1193:GLN:HA	2:B:1196:THR:HG22	1.92	0.50
1:A:530:ASN:HD22	1:A:530:ASN:C	2.00	0.50
2:B:152:SER:OG	2:B:174:GLY:N	2.45	0.50
2:B:532:GLU:HG3	2:B:683:VAL:HG21	1.93	0.50
2:B:760:THR:CG2	2:B:1197:LEU:HD12	2.41	0.50
1:A:610:LEU:HD23	1:A:611:LYS:N	2.26	0.50
2:B:632:VAL:HG12	2:B:632:VAL:O	2.12	0.50
1:A:87:VAL:O	1:A:292:THR:OG1	2.30	0.50
1:A:550:ASN:OD1	1:A:553:ARG:NH1	2.43	0.50
2:B:904:ASN:HA	2:B:907:ARG:HD2	1.93	0.50
1:A:37:VAL:HG12	1:A:54:LEU:HD21	1.94	0.49
1:A:275:LEU:HD13	1:A:280:ILE:HD12	1.94	0.49
1:A:656:VAL:O	1:A:684:THR:OG1	2.15	0.49
2:B:281:VAL:HG12	2:B:726:PHE:CD1	2.46	0.49
2:B:600:ARG:HD3	2:B:603:ILE:HD11	1.94	0.49
2:B:798:ASN:ND2	2:B:890:THR:OG1	2.44	0.49
1:A:318:PRO:CB	1:A:382:ALA:HB1	2.42	0.49
1:A:522:GLY:HA2	1:A:533:ARG:NH2	2.28	0.49
1:A:893:ASP:OD1	1:A:894:THR:N	2.44	0.49
1:A:275:LEU:CD1	1:A:280:ILE:HD12	2.42	0.49
2:B:912:LEU:O	2:B:916:LEU:HD23	2.13	0.49
1:A:429:THR:OG1	1:A:537:ARG:HB2	2.13	0.49
1:A:303:ALA:O	1:A:309:ILE:HG23	2.12	0.49
2:B:445:LEU:HD11	2:B:453:ASN:HD21	1.78	0.49
2:B:475:LYS:HE2	2:B:1005:THR:HG21	1.94	0.49
2:B:761:PHE:CD1	2:B:907:ARG:HB3	2.47	0.49
2:B:1305:ILE:HD13	2:B:1340:GLN:OE1	2.12	0.49
1:A:150:LEU:CD2	1:A:294:LEU:HD11	2.43	0.49
1:A:657:VAL:HG23	1:A:682:SER:C	2.34	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1046:LEU:N	2:B:1212:GLY:O	2.38	0.49
1:A:156:LYS:HG3	1:A:696:THR:HG21	1.93	0.49
2:B:135:ASN:OD1	2:B:1233:LEU:HD13	2.13	0.49
2:B:957:VAL:CG2	2:B:960:LEU:HD21	2.42	0.49
2:B:1288:LEU:HD22	2:B:1343:PHE:HE2	1.78	0.49
2:B:1092:THR:OG1	2:B:1093:THR:N	2.45	0.48
2:B:1173:ILE:HD12	2:B:1173:ILE:H	1.78	0.48
1:A:812:ASP:OD2	1:A:815:LEU:HD23	2.13	0.48
2:B:69:THR:HG21	2:B:1065:LYS:C	2.33	0.48
2:B:754:PRO:HB2	2:B:756:LEU:HD23	1.96	0.48
2:B:833:GLY:CA	2:B:951:LEU:HD13	2.43	0.48
2:B:579:ALA:HB2	2:B:1108:GLN:HG3	1.95	0.48
2:B:521:LYS:O	2:B:904:ASN:ND2	2.38	0.48
2:B:807:ILE:O	2:B:816:THR:HG21	2.13	0.48
2:B:1289:VAL:HG13	2:B:1291:LEU:CD2	2.44	0.48
2:B:692:SER:N	2:B:912:LEU:HD13	2.28	0.48
1:A:368:THR:O	1:A:371:HIS:NE2	2.47	0.48
1:A:886:LEU:HD23	1:A:899:SER:O	2.14	0.48
2:B:71:ASN:O	2:B:472:HIS:HB2	2.14	0.48
2:B:527:THR:HG22	2:B:528:ASN:N	2.29	0.48
1:A:515:ILE:HD12	1:A:515:ILE:H	1.78	0.48
2:B:192:VAL:HG21	2:B:457:MET:SD	2.54	0.48
2:B:467:PHE:HD1	2:B:486:VAL:HG23	1.79	0.48
1:A:545:GLY:HA3	1:A:573:THR:HA	1.96	0.48
2:B:452:ALA:O	2:B:469:GLY:N	2.47	0.47
1:A:892:SER:N	1:A:895:SER:O	2.47	0.47
2:B:344:TYR:N	2:B:354:ALA:O	2.37	0.47
2:B:593:THR:HG23	2:B:593:THR:O	2.14	0.47
2:B:668:ASN:HB2	2:B:669:TRP:CE3	2.49	0.47
2:B:837:GLN:HG3	2:B:845:ILE:HD12	1.96	0.47
1:A:143:GLN:HB3	1:A:371:HIS:CD2	2.50	0.47
2:B:538:ALA:HB3	2:B:554:THR:OG1	2.13	0.47
1:A:280:ILE:HG23	1:A:293:GLN:OE1	2.14	0.47
2:B:1094:TYR:CE2	2:B:1096:THR:HG22	2.49	0.47
1:A:765:VAL:HG12	1:A:766:GLN:N	2.29	0.47
2:B:385:TRP:CH2	2:B:602:ASP:HB2	2.49	0.47
2:B:1020:PHE:O	2:B:1031:PHE:N	2.48	0.47
2:B:1059:GLN:OE1	2:B:1062:THR:N	2.48	0.47
2:B:232:SER:O	2:B:233:SER:CB	2.63	0.47
2:B:529:ARG:NE	2:B:715:GLU:OE1	2.46	0.47
2:B:1302:LEU:HD11	2:B:1316:VAL:CG2	2.45	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:470:ASN:O	2:B:470:ASN:ND2	2.47	0.47
1:A:87:VAL:N	1:A:292:THR:OG1	2.40	0.47
2:B:671:ASN:HB3	2:B:683:VAL:HG12	1.97	0.47
2:B:1012:LEU:HD12	2:B:1021:GLY:O	2.15	0.47
2:B:1081:PRO:HA	2:B:1084:LEU:HD23	1.97	0.47
2:B:587:GLU:OE2	2:B:589:LEU:HB2	2.15	0.47
1:A:224:GLU:OE1	1:A:271:THR:OG1	2.24	0.46
2:B:597:TRP:CH2	2:B:662:TYR:HB2	2.50	0.46
1:A:303:ALA:HB3	1:A:310:VAL:CG2	2.45	0.46
1:A:303:ALA:HB2	1:A:388:ILE:HG21	1.96	0.46
1:A:547:VAL:HG23	1:A:551:GLU:OE2	2.15	0.46
2:B:605:VAL:HG12	2:B:608:TRP:CZ3	2.50	0.46
2:B:811:LEU:HD12	2:B:880:TYR:CD2	2.51	0.46
2:B:860:ASP:O	2:B:866:ASN:ND2	2.44	0.46
2:B:1112:VAL:CG2	2:B:1125:ILE:HG22	2.46	0.46
1:A:315:SER:O	1:A:384:LEU:HG	2.15	0.46
1:A:382:ALA:HB3	1:A:402:ALA:HB3	1.96	0.46
2:B:112:LEU:HD23	2:B:116:ASN:OD1	2.16	0.46
2:B:571:LEU:HD11	2:B:578:VAL:HG23	1.98	0.46
2:B:1176:ILE:N	2:B:1179:THR:OG1	2.48	0.46
1:A:696:THR:O	1:A:718:LEU:HD22	2.14	0.46
2:B:131:ARG:HA	2:B:142:ASP:HA	1.98	0.46
2:B:464:VAL:N	2:B:489:ILE:O	2.38	0.46
1:A:379:THR:HG22	1:A:380:GLN:N	2.30	0.46
1:A:539:ASP:OD1	1:A:540:GLN:N	2.48	0.46
2:B:92:ARG:NH2	2:B:126:GLN:OE1	2.41	0.46
2:B:374:TRP:CH2	2:B:534:VAL:HG13	2.51	0.46
2:B:374:TRP:CE3	2:B:443:ILE:HG21	2.51	0.46
1:A:137:VAL:HG12	1:A:142:ASN:HB2	1.97	0.46
2:B:459:ALA:HB2	2:B:464:VAL:HG22	1.97	0.46
2:B:973:GLY:N	2:B:980:ASP:OD2	2.48	0.46
1:A:28:PHE:HB2	1:A:40:TYR:HB2	1.98	0.46
1:A:303:ALA:HB2	1:A:388:ILE:HG22	1.97	0.46
2:B:561:ALA:HB1	2:B:580:GLN:OE1	2.16	0.46
2:B:232:SER:O	2:B:233:SER:HB3	2.16	0.46
1:A:278:ILE:HG22	1:A:316:PHE:HE2	1.82	0.45
2:B:73:ASN:HD21	2:B:189:VAL:HG22	1.81	0.45
1:A:66:ILE:HG23	1:A:78:VAL:CG1	2.46	0.45
1:A:558:SER:OG	1:A:566:THR:O	2.25	0.45
1:A:566:THR:O	1:A:566:THR:HG23	2.16	0.45
1:A:861:GLU:O	1:A:865:THR:HG23	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:208:LYS:O	2:B:211:LEU:N	2.49	0.45
2:B:410:ASP:OD1	2:B:410:ASP:N	2.48	0.45
2:B:90:LEU:HD11	2:B:188:PRO:O	2.17	0.45
2:B:694:PHE:CZ	2:B:696:ALA:HB2	2.52	0.45
1:A:171:GLN:N	1:A:201:ALA:O	2.45	0.45
1:A:446:ASP:OD1	1:A:470:SER:OG	2.34	0.45
2:B:417:ASP:OD1	2:B:419:THR:N	2.49	0.45
1:A:389:ASP:OD2	1:A:631:ALA:N	2.50	0.45
1:A:395:ILE:HD12	1:A:552:LEU:HD11	1.97	0.45
1:A:544:TYR:HE2	1:A:668:LEU:HD21	1.81	0.45
1:A:767:SER:OG	1:A:768:GLY:N	2.49	0.45
1:A:338:THR:HG22	1:A:559:ALA:HB2	1.95	0.45
2:B:597:TRP:O	2:B:624:ASN:N	2.38	0.45
2:B:764:PHE:CE1	2:B:1042:LEU:HD21	2.51	0.45
1:A:84:ASP:OD2	1:A:107:LYS:NZ	2.31	0.45
1:A:305:THR:N	1:A:308:HIS:O	2.47	0.45
2:B:765:LEU:O	2:B:768:LEU:HG	2.17	0.45
2:B:779:ASN:OD1	2:B:968:THR:HG22	2.17	0.45
2:B:176:ALA:HB1	2:B:177:PRO:HD2	1.98	0.45
2:B:560:THR:O	2:B:662:TYR:OH	2.32	0.45
1:A:152:GLN:HB2	1:A:153:PRO:CD	2.47	0.45
2:B:286:GLN:OE1	2:B:288:ASP:N	2.49	0.45
2:B:755:ASN:O	2:B:756:LEU:HD22	2.17	0.45
2:B:1116:GLN:O	2:B:1120:THR:HG22	2.17	0.45
2:B:1191:SER:HB3	2:B:1195:GLU:OE2	2.17	0.45
2:B:70:TRP:O	2:B:74:ASN:N	2.50	0.44
2:B:377:PRO:HA	2:B:399:PHE:CE2	2.51	0.44
2:B:816:THR:HG22	2:B:816:THR:O	2.17	0.44
2:B:962:ASN:O	2:B:966:LEU:HD23	2.17	0.44
2:B:1080:ASP:OD2	2:B:1224:LYS:NZ	2.37	0.44
2:B:811:LEU:HD21	2:B:884:PRO:HD3	2.00	0.44
2:B:936:ASP:OD1	2:B:936:ASP:N	2.48	0.44
2:B:1013:VAL:HG23	2:B:1013:VAL:O	2.17	0.44
1:A:624:ASN:OD1	1:A:625:PHE:N	2.49	0.44
2:B:427:ASP:N	2:B:433:ASP:OD2	2.50	0.44
1:A:433:LEU:HB2	1:A:468:PRO:HA	2.00	0.44
1:A:607:PHE:HE1	1:A:622:ILE:HG21	1.81	0.44
1:A:615:PRO:HB2	2:B:733:ASN:OD1	2.18	0.44
2:B:697:ILE:HD11	2:B:1035:ILE:HD12	2.00	0.44
1:A:278:ILE:HB	1:A:316:PHE:HD2	1.83	0.44
1:A:305:THR:HG23	1:A:393:ASP:O	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1044:ILE:HG22	2:B:1045:THR:N	2.33	0.44
2:B:1274:ASP:N	2:B:1274:ASP:OD1	2.50	0.44
2:B:384:ILE:HG23	2:B:385:TRP:N	2.32	0.44
2:B:637:VAL:O	2:B:641:ILE:HG22	2.18	0.44
2:B:176:ALA:HB3	2:B:180:TRP:HE1	1.82	0.44
2:B:264:MET:O	2:B:267:GLY:N	2.50	0.44
2:B:283:ARG:NH2	2:B:286:GLN:O	2.48	0.44
2:B:1091:SER:HB2	2:B:1096:THR:HG23	2.00	0.44
1:A:149:ILE:C	1:A:150:LEU:HD12	2.37	0.44
2:B:851:LYS:O	2:B:851:LYS:HG3	2.17	0.44
1:A:158:THR:HG22	1:A:163:LEU:CD2	2.48	0.43
1:A:361:GLY:O	1:A:374:HIS:ND1	2.45	0.43
1:A:542:PHE:CD2	1:A:578:LEU:HD13	2.53	0.43
1:A:875:PHE:O	2:B:158:LEU:HD22	2.18	0.43
2:B:359:ASP:OD2	2:B:498:SER:OG	2.36	0.43
1:A:155:THR:N	1:A:158:THR:OG1	2.45	0.43
2:B:185:GLY:O	2:B:208:LYS:HE3	2.18	0.43
2:B:404:ARG:NH1	2:B:685:GLU:OE1	2.51	0.43
2:B:1013:VAL:HG21	2:B:1075:PRO:HG3	2.00	0.43
1:A:155:THR:CA	1:A:158:THR:HG1	2.30	0.43
1:A:565:ASP:OD1	1:A:566:THR:N	2.52	0.43
1:A:757:ASP:OD1	1:A:757:ASP:N	2.51	0.43
2:B:132:ARG:HG2	2:B:140:LEU:HD21	2.00	0.43
2:B:233:SER:O	2:B:1097:ASN:ND2	2.51	0.43
2:B:281:VAL:HG13	2:B:281:VAL:O	2.18	0.43
1:A:28:PHE:O	1:A:40:TYR:N	2.47	0.43
1:A:354:GLN:NE2	1:A:358:ASN:OD1	2.50	0.43
2:B:523:LEU:HD11	2:B:908:ASN:OD1	2.18	0.43
1:A:317:LEU:HD23	1:A:317:LEU:H	1.82	0.43
1:A:379:THR:HG22	1:A:380:GLN:H	1.83	0.43
2:B:460:ILE:HD11	2:B:549:LEU:CD1	2.48	0.43
2:B:623:LEU:HD12	2:B:623:LEU:O	2.19	0.43
2:B:760:THR:HG21	2:B:1197:LEU:HD12	2.01	0.43
1:A:838:TRP:CZ3	1:A:925:PHE:CZ	3.06	0.43
1:A:848:VAL:HG13	1:A:849:LEU:HD12	2.01	0.43
2:B:203:VAL:HG13	2:B:205:LEU:CD1	2.48	0.43
2:B:258:GLU:OE2	2:B:275:LYS:HB3	2.18	0.43
2:B:1022:PHE:CE2	2:B:1029:ILE:HD11	2.54	0.43
2:B:1163:ASN:OD1	2:B:1163:ASN:O	2.36	0.43
2:B:309:VAL:O	2:B:309:VAL:HG13	2.18	0.43
1:A:274:ALA:O	1:A:278:ILE:HG12	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:621:SER:O	1:A:621:SER:OG	2.29	0.43
2:B:61:VAL:HG13	2:B:131:ARG:HD3	2.01	0.43
2:B:1222:ASP:OD1	2:B:1223:GLY:N	2.52	0.43
1:A:83:ARG:O	1:A:288:ARG:NH1	2.51	0.43
1:A:350:ASP:OD1	1:A:350:ASP:N	2.52	0.43
2:B:187:VAL:HG12	2:B:206:VAL:O	2.19	0.43
2:B:1016:ASN:OD1	2:B:1019:SER:N	2.52	0.43
1:A:153:PRO:HG3	1:A:275:LEU:HD11	2.01	0.43
1:A:318:PRO:HB2	1:A:382:ALA:HB1	2.00	0.43
1:A:578:LEU:HD23	1:A:578:LEU:C	2.40	0.43
2:B:327:THR:O	2:B:330:ILE:HG22	2.19	0.43
2:B:1062:THR:HG21	2:B:1085:LYS:HB2	2.01	0.43
2:B:1192:ILE:O	2:B:1195:GLU:HG3	2.18	0.43
2:B:374:TRP:CZ3	2:B:443:ILE:HG21	2.54	0.42
2:B:598:ALA:HB1	2:B:621:TYR:CE1	2.54	0.42
2:B:915:LEU:HD22	2:B:1024:LEU:HD23	2.01	0.42
2:B:1304:VAL:HA	2:B:1316:VAL:HG12	2.01	0.42
2:B:90:LEU:HD21	2:B:189:VAL:HA	2.01	0.42
2:B:700:GLU:HG2	2:B:701:ASP:N	2.34	0.42
2:B:983:ILE:HD13	2:B:1143:LEU:HD21	2.01	0.42
2:B:997:LEU:HB2	2:B:1107:TYR:HB3	2.00	0.42
1:A:474:THR:OG1	1:A:477:GLY:O	2.26	0.42
2:B:235:ASN:O	2:B:238:GLN:HG3	2.20	0.42
2:B:467:PHE:CD1	2:B:486:VAL:HG23	2.54	0.42
2:B:1043:GLY:C	2:B:1044:ILE:HD12	2.39	0.42
2:B:1068:TYR:HE1	2:B:1228:VAL:HG11	1.81	0.42
1:A:155:THR:HG22	1:A:157:TYR:H	1.84	0.42
1:A:904:PHE:CG	1:A:905:LEU:N	2.87	0.42
2:B:520:LEU:O	2:B:523:LEU:HD23	2.18	0.42
1:A:604:VAL:O	1:A:604:VAL:CG1	2.67	0.42
1:A:657:VAL:HG21	1:A:681:PHE:CZ	2.55	0.42
2:B:69:THR:OG1	2:B:74:ASN:HA	2.20	0.42
2:B:268:MET:SD	2:B:268:MET:N	2.91	0.42
2:B:466:ILE:HB	2:B:487:PHE:HB2	2.01	0.42
1:A:384:LEU:HB3	1:A:400:PHE:HB2	2.01	0.42
1:A:78:VAL:HG12	1:A:79:LEU:N	2.35	0.42
1:A:138:SER:O	1:A:142:ASN:HB2	2.20	0.42
1:A:576:ARG:HD2	1:A:681:PHE:CD2	2.55	0.42
1:A:816:SER:O	1:A:819:VAL:HG22	2.20	0.42
2:B:921:VAL:HB	2:B:966:LEU:HD21	2.02	0.42
1:A:163:LEU:HB2	1:A:622:ILE:HD11	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:220:TRP:CD1	1:A:290:VAL:CG2	3.03	0.42
2:B:75:PHE:CD2	2:B:190:GLU:HG3	2.55	0.42
2:B:265:SER:O	2:B:266:SER:OG	2.30	0.42
2:B:602:ASP:OD2	2:B:669:TRP:NE1	2.53	0.42
2:B:648:ASP:OD1	2:B:649:LYS:N	2.53	0.42
2:B:761:PHE:CE1	2:B:907:ARG:HB3	2.55	0.42
2:B:835:ARG:HH12	2:B:887:ILE:HD12	1.84	0.42
2:B:98:LEU:O	2:B:100:ILE:HD12	2.20	0.41
1:A:28:PHE:C	1:A:29:LEU:HD22	2.40	0.41
1:A:372:ASN:OD1	1:A:375:SER:N	2.44	0.41
1:A:817:ASN:OD1	1:A:818:SER:N	2.52	0.41
2:B:152:SER:OG	2:B:173:THR:N	2.53	0.41
2:B:1289:VAL:HG11	2:B:1318:LEU:HD11	2.01	0.41
2:B:94:GLN:OE1	2:B:94:GLN:N	2.44	0.41
2:B:179:ASP:O	2:B:183:ILE:HG22	2.19	0.41
2:B:190:GLU:OE1	2:B:457:MET:HG3	2.20	0.41
2:B:418:ASN:OD1	2:B:418:ASN:O	2.38	0.41
2:B:1048:SER:OG	2:B:1049:LEU:N	2.52	0.41
2:B:1100:LEU:HD12	2:B:1100:LEU:H	1.86	0.41
2:B:1150:LYS:HA	2:B:1153:LEU:HD12	2.01	0.41
1:A:242:SER:OG	1:A:243:THR:N	2.53	0.41
1:A:779:VAL:HG22	1:A:780:LEU:N	2.34	0.41
2:B:312:GLU:OE2	2:B:315:LYS:HB2	2.20	0.41
2:B:447:PHE:CE1	2:B:451:PHE:CE1	3.09	0.41
2:B:471:GLY:O	2:B:475:LYS:N	2.53	0.41
2:B:520:LEU:HD11	2:B:761:PHE:CE1	2.56	0.41
1:A:76:LEU:HD23	1:A:76:LEU:O	2.21	0.41
1:A:160:ASN:ND2	1:A:610:LEU:HD22	2.30	0.41
1:A:165:LYS:HE2	1:A:210:GLY:HA3	2.01	0.41
1:A:283:ASP:N	1:A:286:THR:O	2.50	0.41
1:A:304:VAL:O	1:A:390:SER:OG	2.33	0.41
1:A:384:LEU:N	1:A:400:PHE:O	2.49	0.41
1:A:667:SER:OG	1:A:668:LEU:N	2.54	0.41
2:B:95:ASN:OD1	2:B:95:ASN:N	2.52	0.41
2:B:316:GLU:N	2:B:316:GLU:OE1	2.53	0.41
2:B:366:MET:SD	2:B:502:GLY:HA3	2.60	0.41
1:A:486:TYR:CD2	1:A:487:PRO:HD2	2.55	0.41
2:B:256:LEU:HD21	2:B:294:ASP:O	2.20	0.41
2:B:765:LEU:HD13	2:B:768:LEU:HD21	2.02	0.41
1:A:163:LEU:HG	1:A:622:ILE:HD11	2.03	0.41
2:B:181:ASN:OD1	2:B:181:ASN:N	2.52	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:520:LEU:HD12	2:B:908:ASN:OD1	2.21	0.41
2:B:760:THR:HG23	2:B:1197:LEU:HD12	2.02	0.41
1:A:699:LYS:CE	1:A:776:LEU:HD11	2.49	0.41
1:A:838:TRP:CZ3	1:A:923:ILE:HG21	2.56	0.41
2:B:134:ASP:OD1	2:B:137:GLY:N	2.42	0.41
2:B:155:GLN:N	2:B:171:GLY:O	2.43	0.41
2:B:575:LEU:HA	2:B:578:VAL:HG12	2.02	0.41
2:B:605:VAL:HG12	2:B:608:TRP:CH2	2.56	0.41
2:B:622:PHE:CE2	2:B:628:ILE:HD11	2.56	0.41
2:B:702:LEU:HD23	2:B:746:VAL:HA	2.03	0.41
2:B:754:PRO:HD2	2:B:761:PHE:HE2	1.86	0.41
2:B:850:VAL:HB	2:B:858:PRO:HB3	2.03	0.41
2:B:1325:THR:O	2:B:1327:GLN:N	2.51	0.41
2:B:66:THR:O	2:B:92:ARG:N	2.49	0.41
2:B:154:VAL:N	2:B:355:PHE:O	2.45	0.41
2:B:600:ARG:HE	2:B:669:TRP:HZ2	1.68	0.41
2:B:662:TYR:HB3	2:B:901:ASN:ND2	2.35	0.41
1:A:302:LEU:HD23	1:A:302:LEU:H	1.85	0.40
2:B:251:LYS:NZ	2:B:298:LYS:O	2.54	0.40
1:A:155:THR:HB	1:A:158:THR:OG1	2.21	0.40
1:A:568:VAL:HG12	1:A:569:ASN:N	2.37	0.40
1:A:578:LEU:HD23	1:A:578:LEU:O	2.21	0.40
2:B:638:GLU:O	2:B:642:SER:OG	2.39	0.40
2:B:893:TRP:HA	2:B:893:TRP:CE3	2.57	0.40
2:B:76:SER:O	2:B:76:SER:OG	2.36	0.40
2:B:520:LEU:HD12	2:B:908:ASN:ND2	2.35	0.40
2:B:693:LEU:HD23	2:B:752:THR:O	2.21	0.40
1:A:270:ASN:OD1	1:A:271:THR:N	2.54	0.40
1:A:467:VAL:O	1:A:467:VAL:HG13	2.21	0.40
2:B:693:LEU:O	2:B:752:THR:OG1	2.31	0.40
2:B:795:THR:HG23	2:B:796:PHE:N	2.37	0.40
2:B:835:ARG:NH1	2:B:886:SER:N	2.70	0.40
2:B:1269:VAL:HG23	2:B:1270:THR:HG23	2.04	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	896/1059 (85%)	839 (94%)	56 (6%)	1 (0%)	51	83
2	B	1281/1444 (89%)	1151 (90%)	126 (10%)	4 (0%)	41	74
All	All	2177/2503 (87%)	1990 (91%)	182 (8%)	5 (0%)	50	78

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	233	SER
2	B	234	PHE
2	B	1300	ILE
1	A	120	ILE
2	B	143	ILE

### 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	786/920 (85%)	784 (100%)	2 (0%)	92	96
2	B	1127/1267 (89%)	1124 (100%)	3 (0%)	92	96
All	All	1913/2187 (88%)	1908 (100%)	5 (0%)	92	96

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	530	ASN

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Mol	Chain	Res	Type
1	A	556	LYS
2	B	120	LYS
2	B	835	ARG
2	B	1263	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	142	ASN
1	A	160	ASN
1	A	270	ASN
1	A	354	GLN
1	A	358	ASN
1	A	770	GLN
2	B	382	HIS
2	B	631	ASN
2	B	668	ASN
2	B	735	ASN
2	B	737	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no 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.

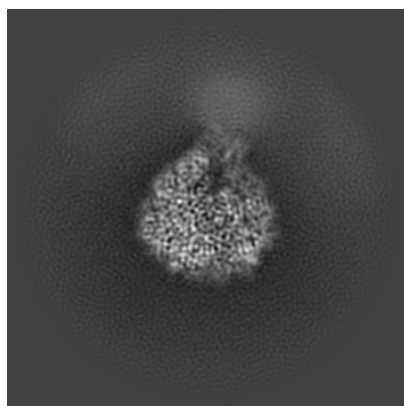
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-17588. These allow visual inspection of the internal detail of the map and identification of artifacts.

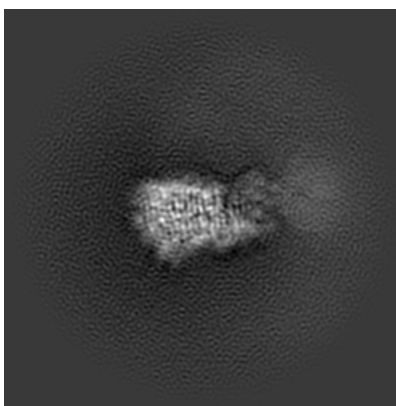
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

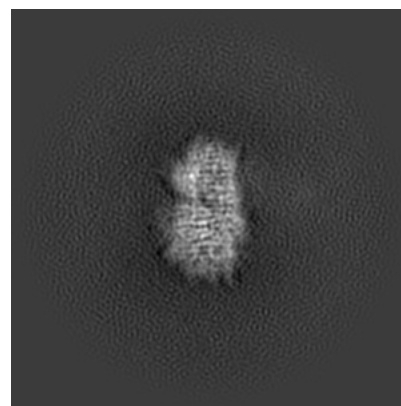
#### 6.1.1 Primary map



X

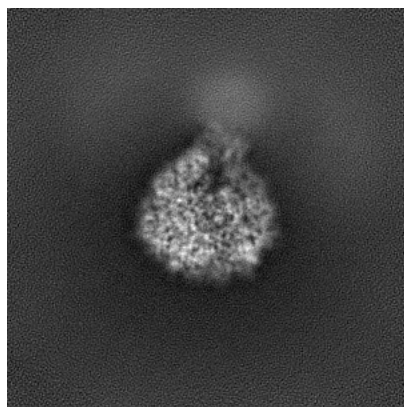


Y

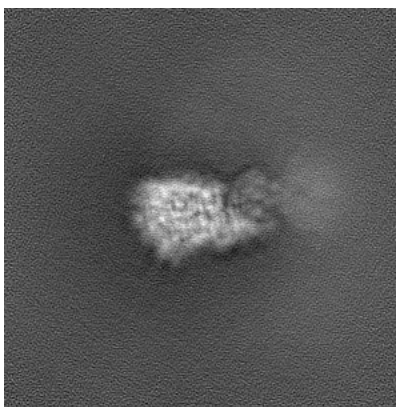


Z

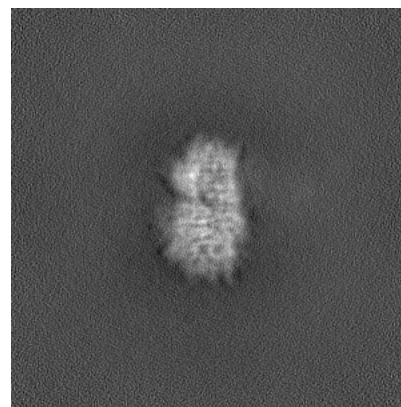
#### 6.1.2 Raw map



X



Y

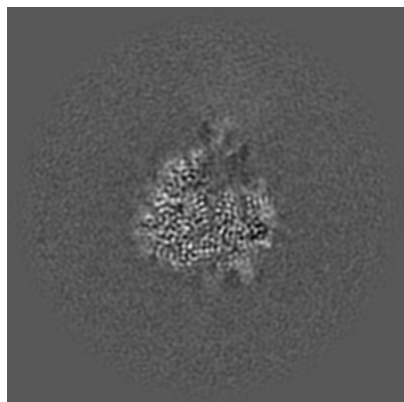


Z

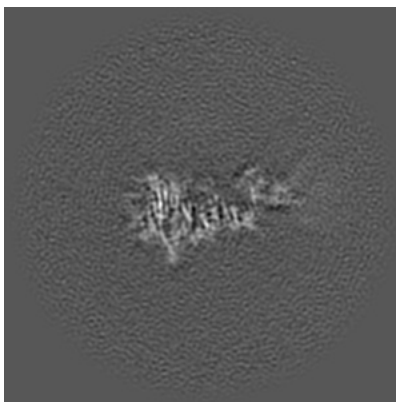
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

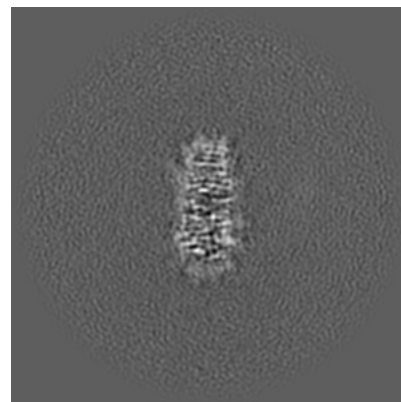
### 6.2.1 Primary map



X Index: 150

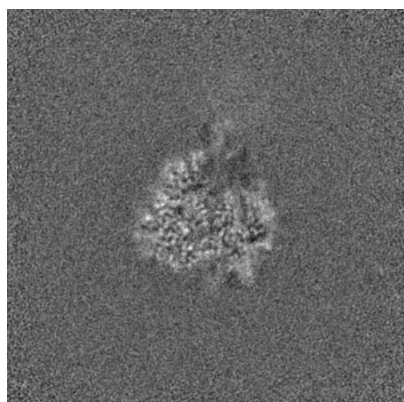


Y Index: 150

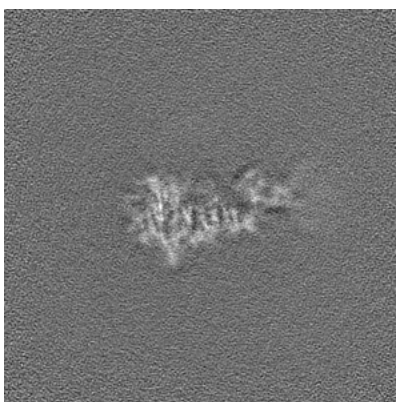


Z Index: 150

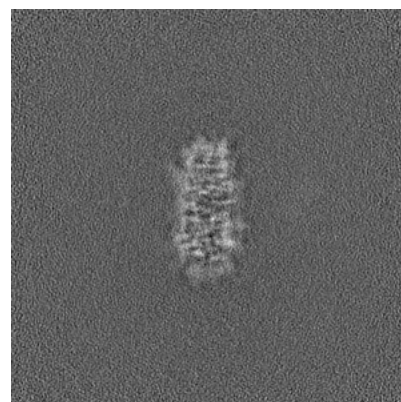
### 6.2.2 Raw map



X Index: 150



Y Index: 150

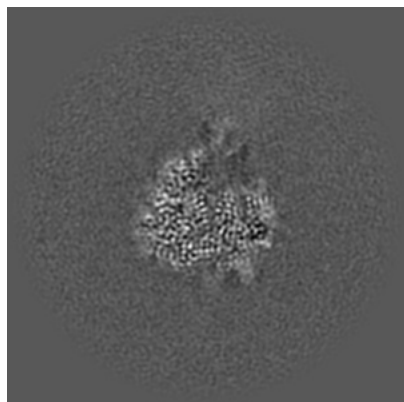


Z Index: 150

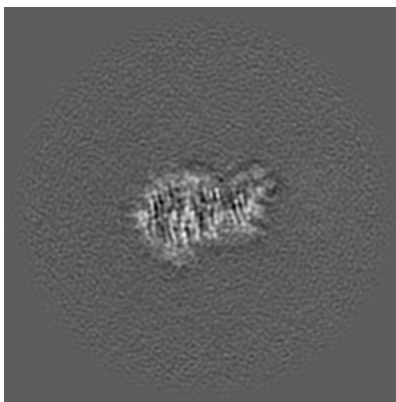
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

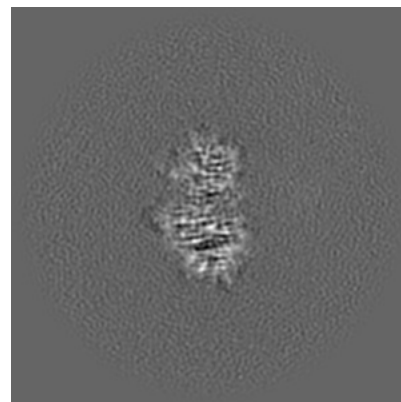
### 6.3.1 Primary map



X Index: 150

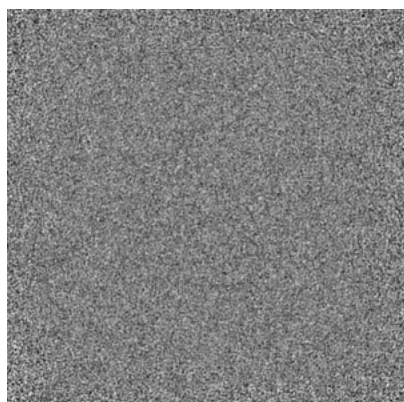


Y Index: 139

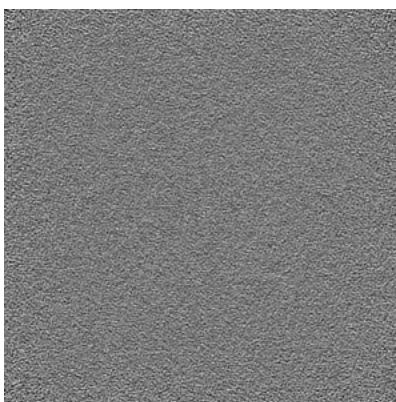


Z Index: 134

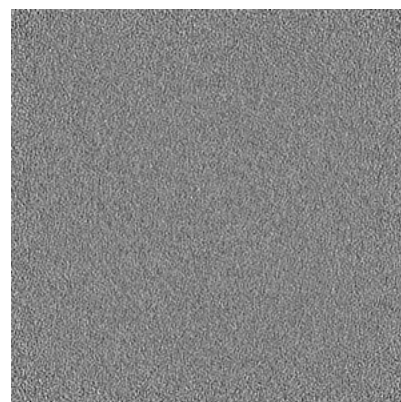
### 6.3.2 Raw map



X Index: 0



Y Index: 0

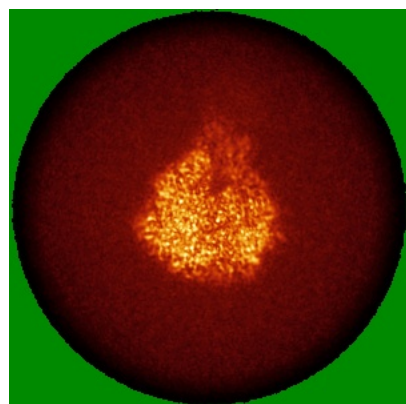


Z Index: 0

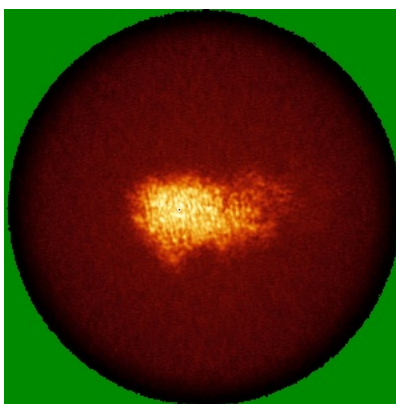
The images above show the largest variance slices of the map in three orthogonal directions.

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

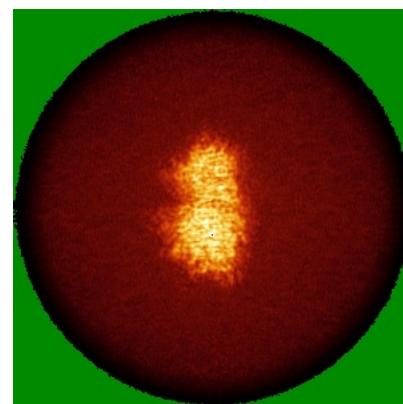
### 6.4.1 Primary map



X

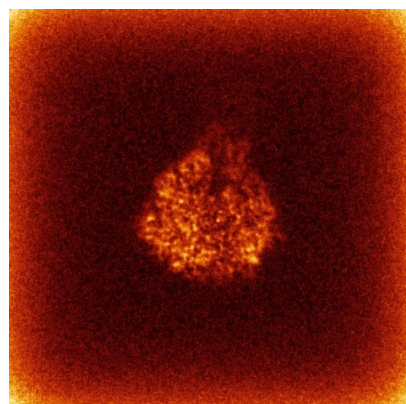


Y

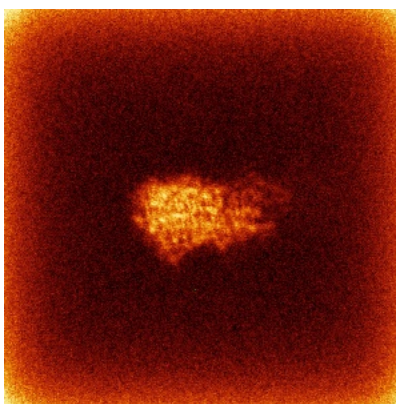


Z

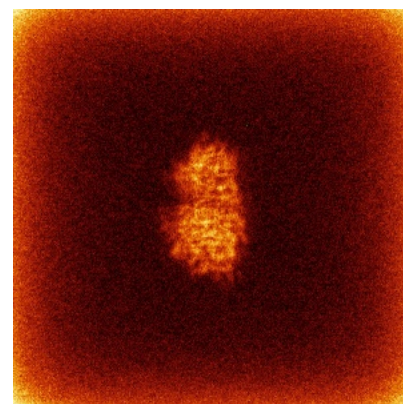
### 6.4.2 Raw map



X



Y

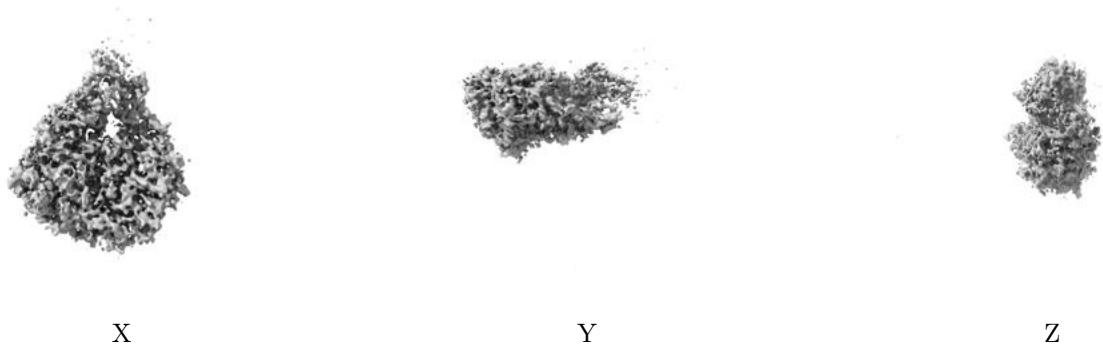


Z

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

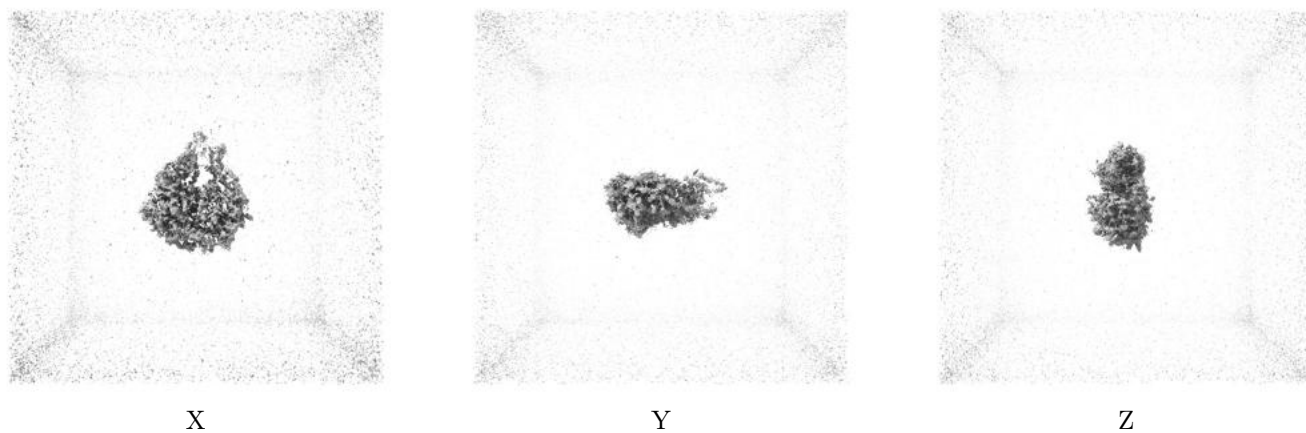
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.34. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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

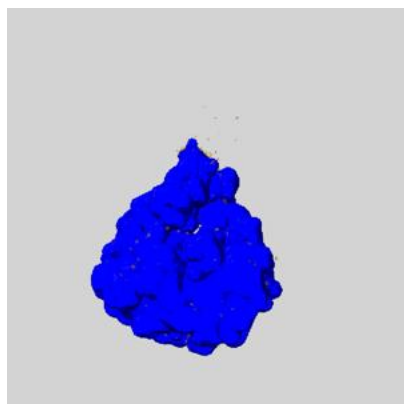
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

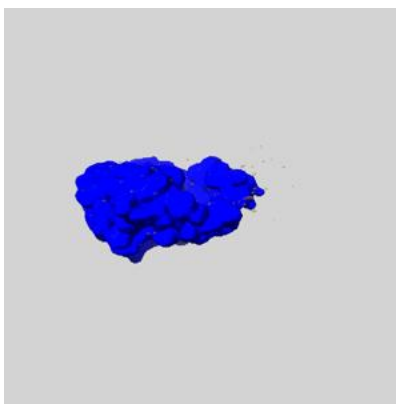
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

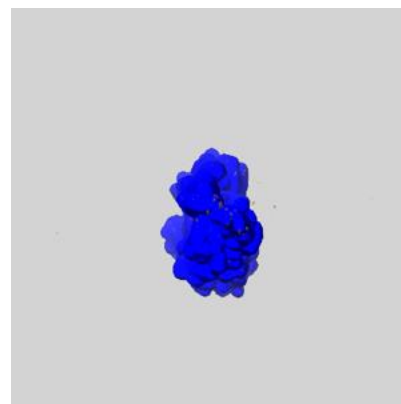
### 6.6.1 emd\_17588\_msk\_1.map [i](#)



X



Y



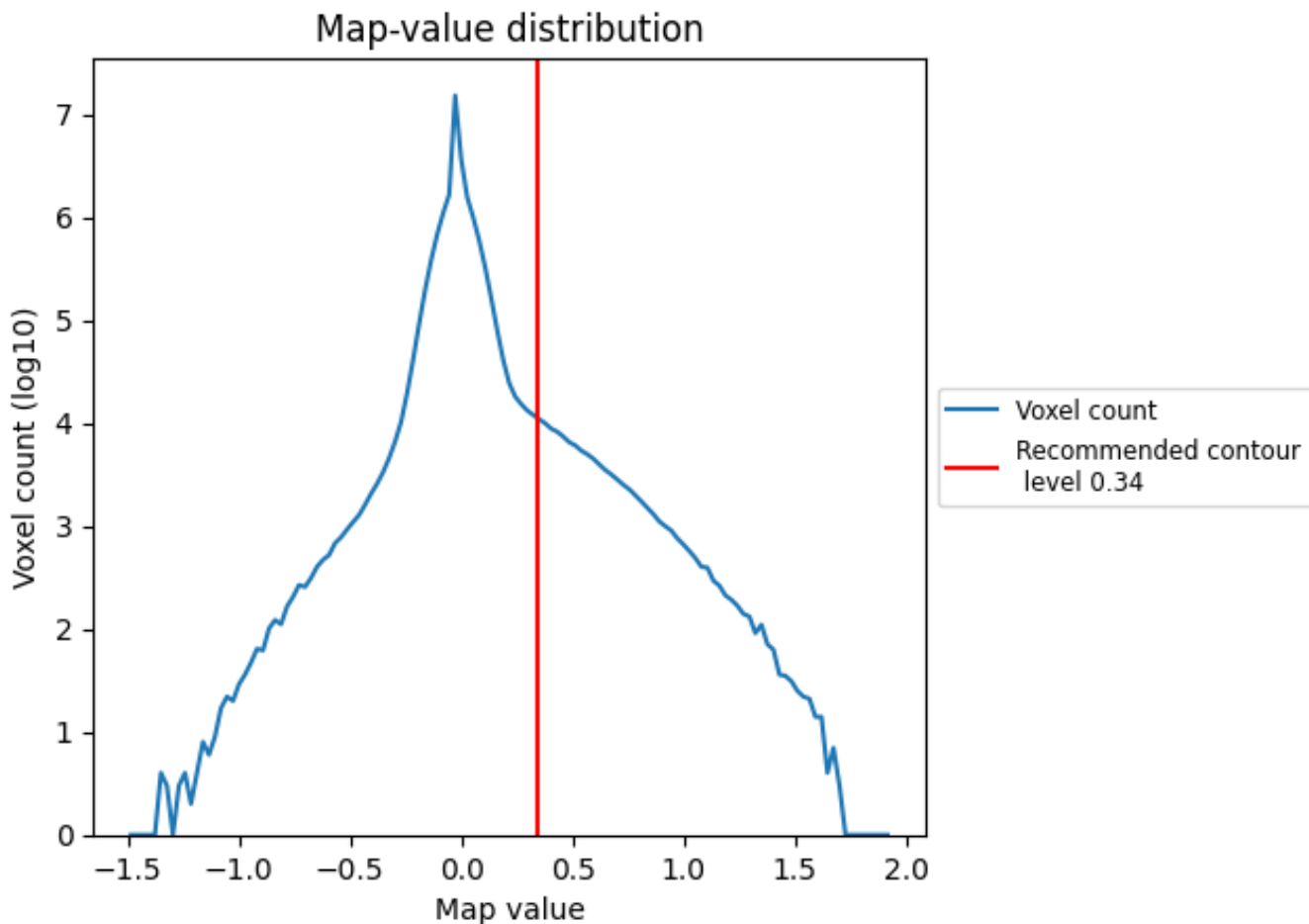
Z



## 7 Map analysis [i](#)

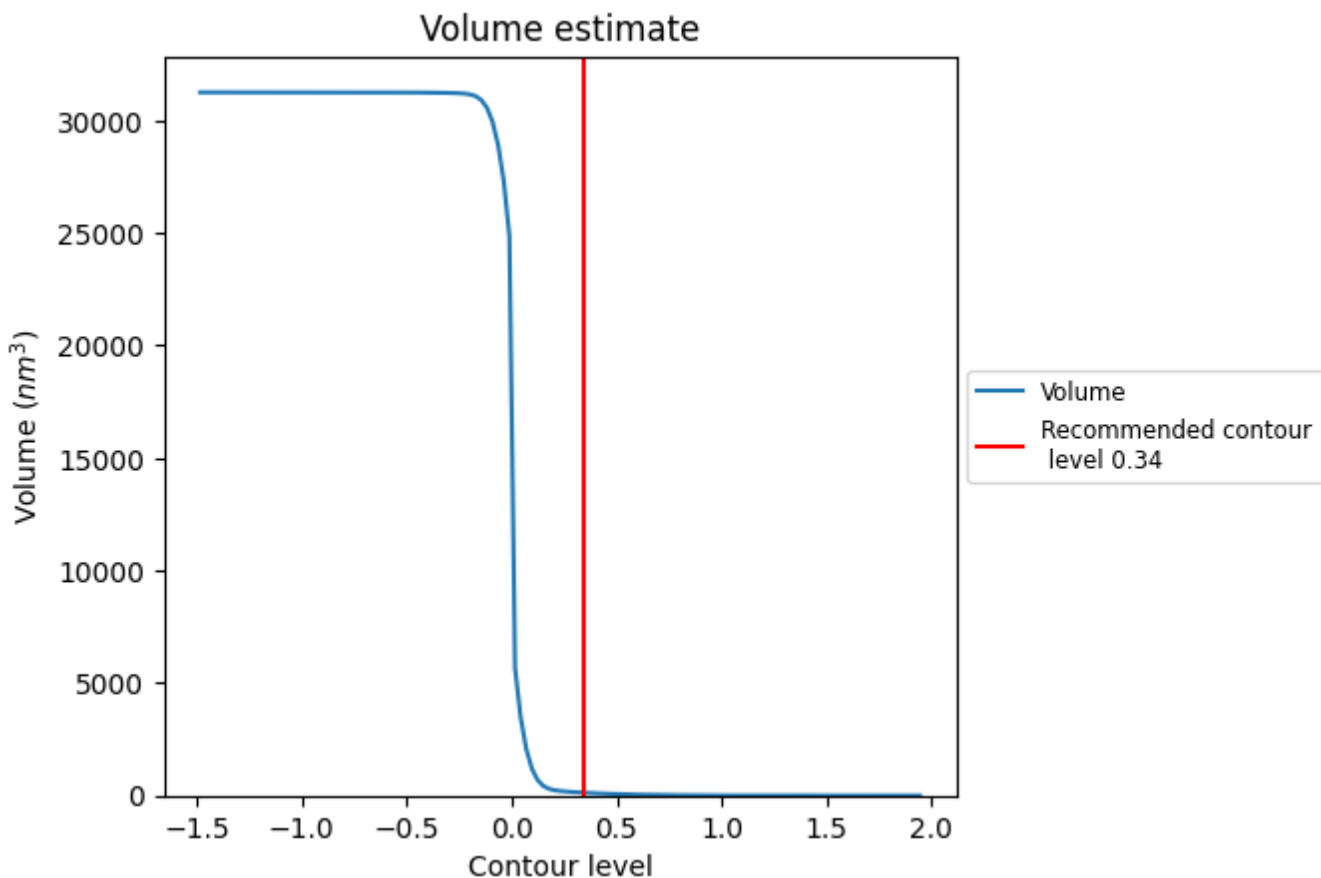
This section contains the results of statistical analysis of the map.

### 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.

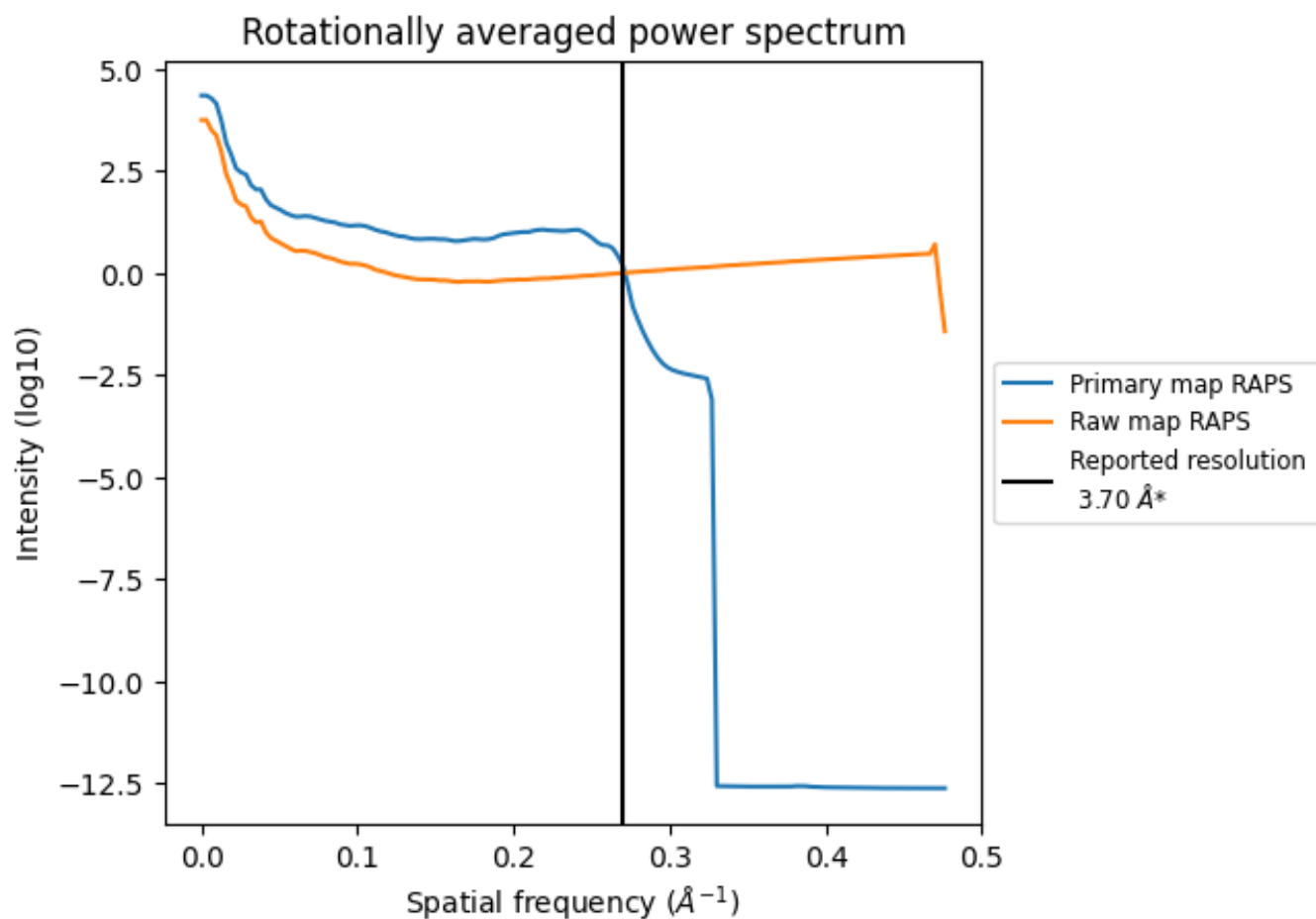
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 128  $\text{nm}^3$ ; this corresponds to an approximate mass of 116 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](#)

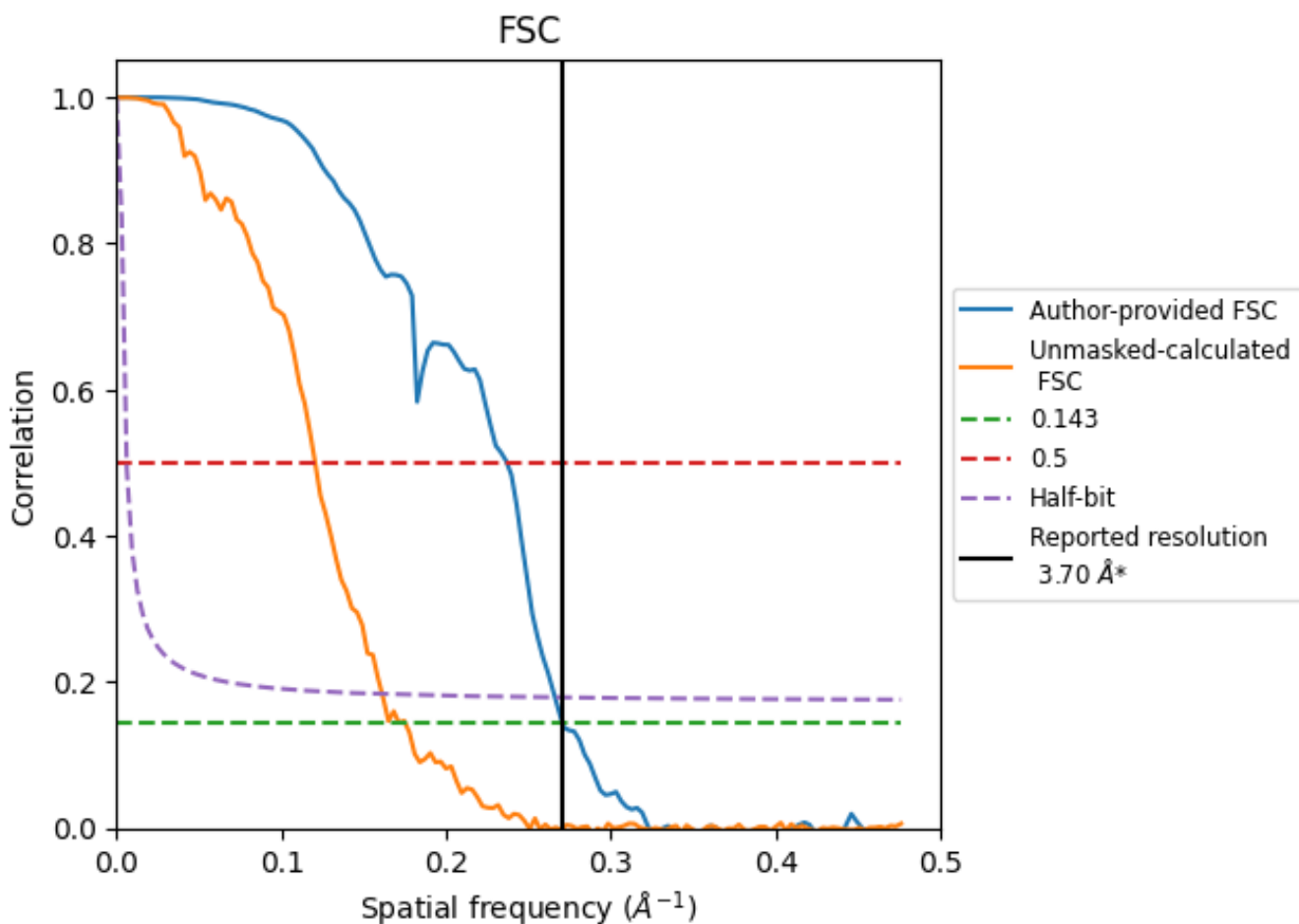


\*Reported resolution corresponds to spatial frequency of 0.270 Å<sup>-1</sup>

## 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 0.270 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

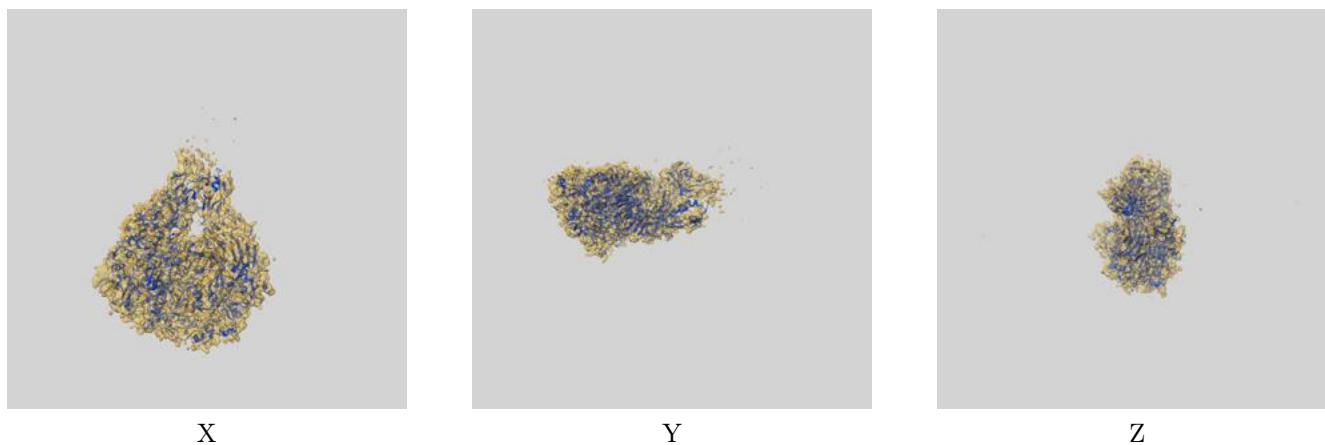
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.70	-	-
Author-provided FSC curve	3.69	4.22	3.76
Unmasked-calculated*	5.70	8.29	6.20

\*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 5.70 differs from the reported value 3.7 by more than 10 %

## 9 Map-model fit [i](#)

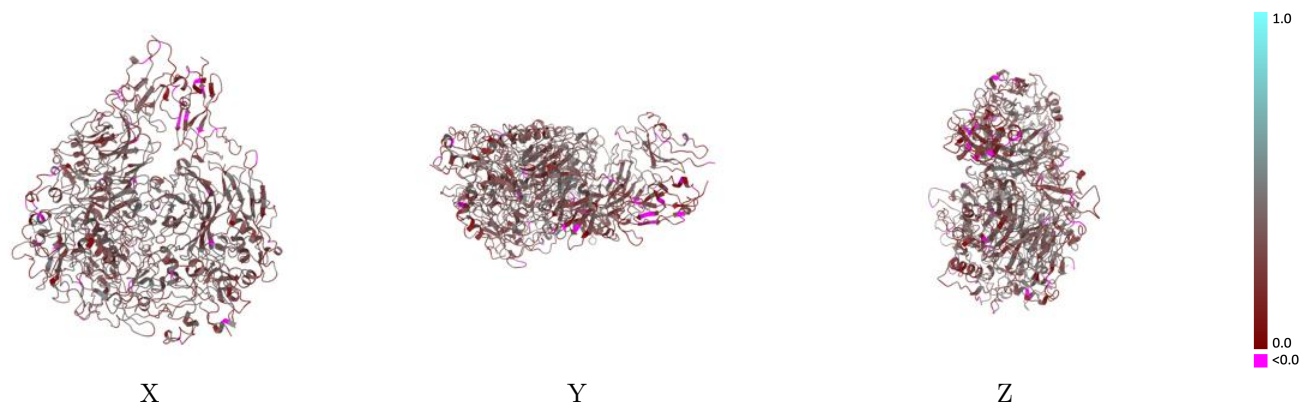
This section contains information regarding the fit between EMDB map EMD-17588 and PDB model 8PBV. Per-residue inclusion information can be found in section 3 on page 4.

### 9.1 Map-model overlay [i](#)



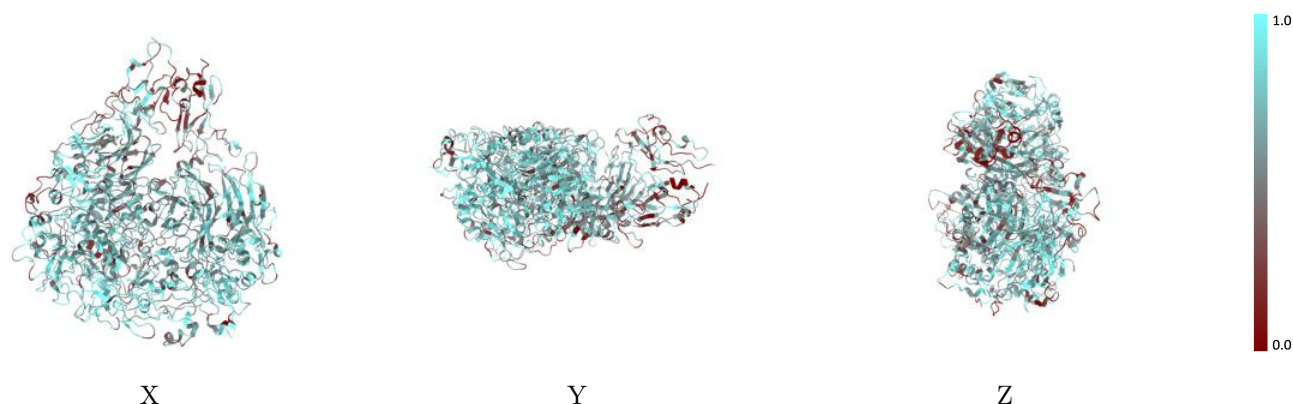
The images above show the 3D surface view of the map at the recommended contour level 0.34 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



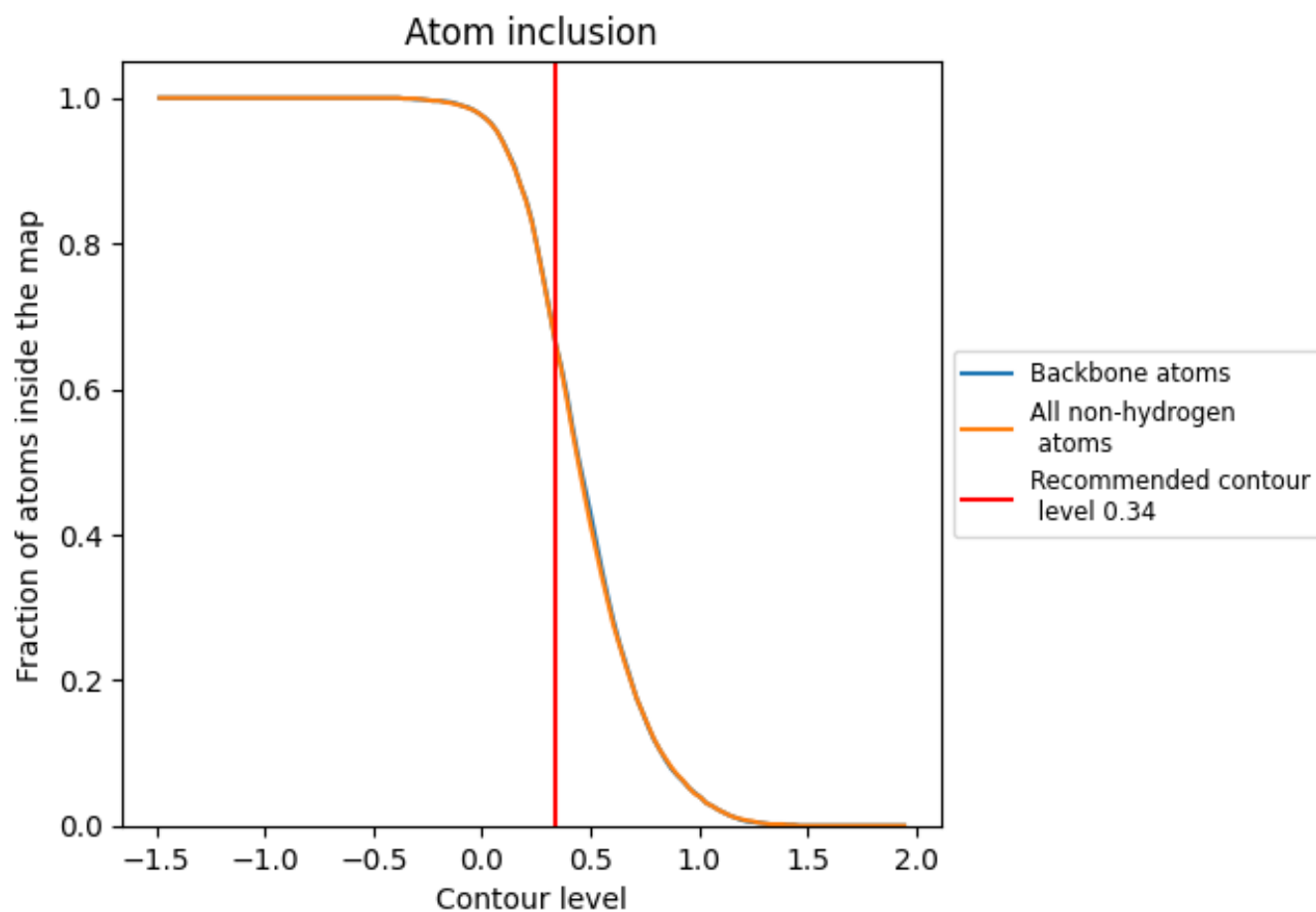
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.34).

## 9.4 Atom inclusion [i](#)









At the recommended contour level, 66% of all backbone atoms, 66% of all non-hydrogen atoms, are inside the map.



## 9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.34) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6610	 0.3200
A	 0.6610	 0.3130
B	 0.6650	 0.3240

