Full wwPDB EM Validation Report ⓘ

Nov 27, 2022 – 03:25 AM EST

PDB ID	:	6BYO
EMDB ID	:	EMD-9513
Title	:	Residue assignment correction to the voltage gated calcium Cav1.1 rabbit alpha 1 subunit PDB entries 3JBR & 5GJV
Authors	:	Cardozo, T.J.; Martinez-Ortiz, W.
Deposited on	:	2017-12-21
Resolution	:	3.60 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:

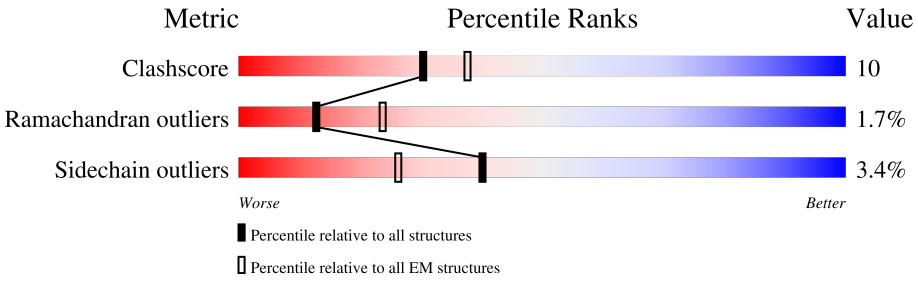
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.60 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1357	70% 64% 17% · 17%

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 18470 atoms, of which 9312 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 Voltage-dependent L-type calcium channel subunit alpha-1S.

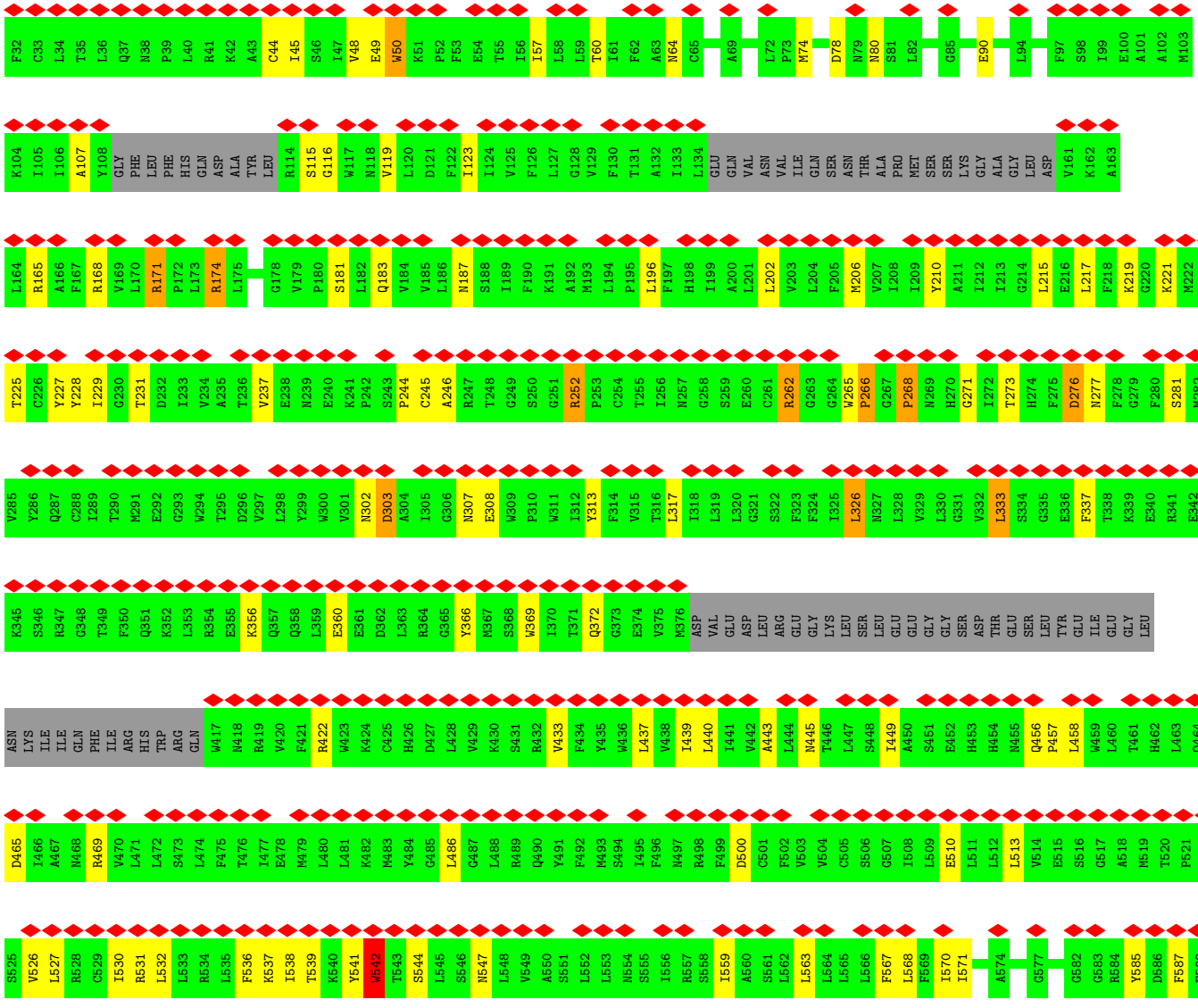
Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	A	1129	18470	6056	9312	1471	1565	66	0	0

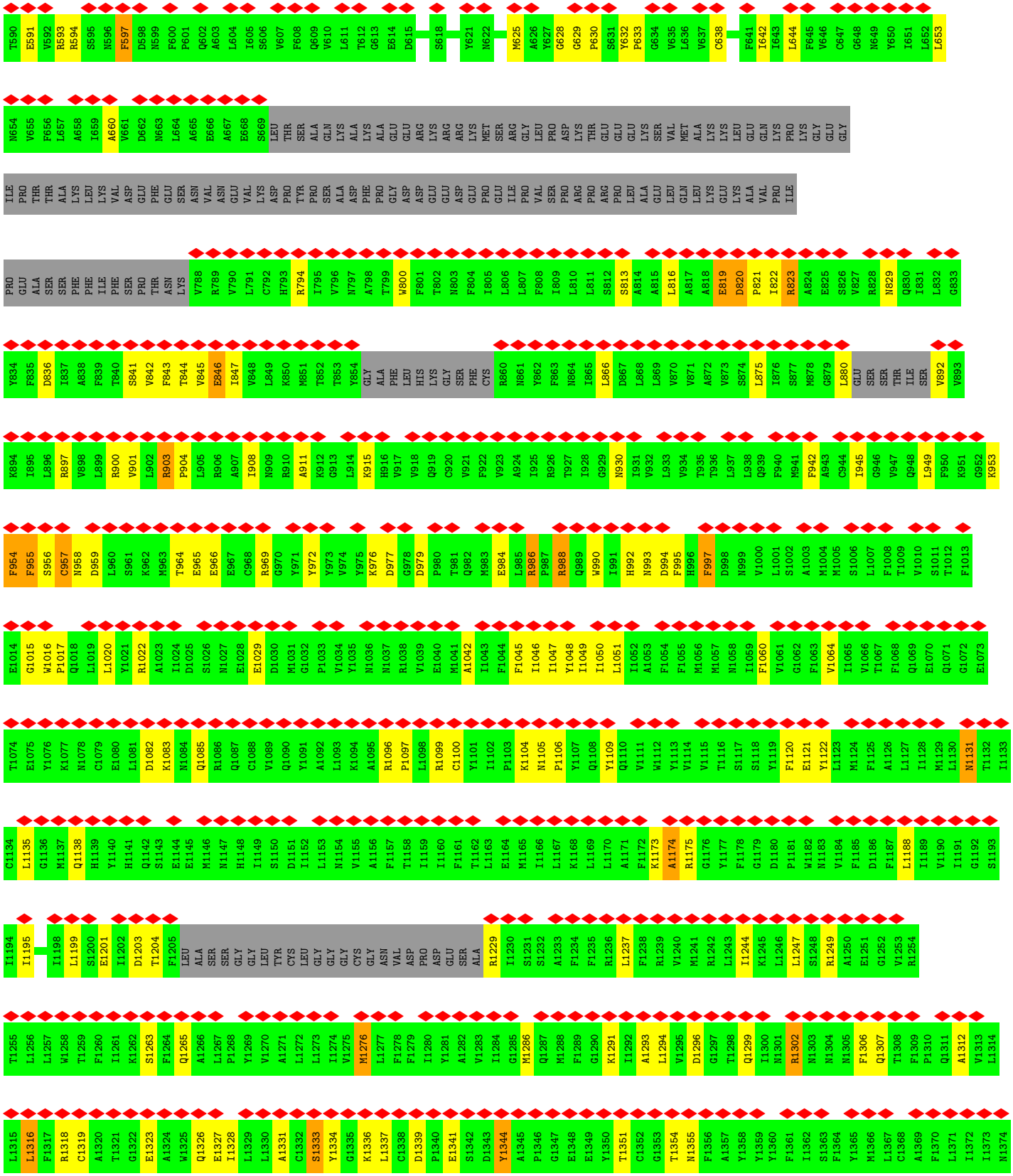
3 Residue-property plots (i)

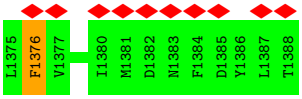
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: Voltage-dependent L-type calcium channel subunit alpha-1S

Chain A:




T590 E591 V592 R593 R594 S595 N596 F597 D598 N599 F600 P601 Q602 A603 L604 I605 S606 V607 F608 Q609 V610 L611 T612 G613 E614 D615 S618 Y621 N622 M625 A626 Y627 G628 G629 P630 S631 Y632 P633 G634 V635 L636 V637 C638 F641 I642 I643 L644 F645 V646 C647 G648 N649 Y650 I651 L652 L653
N654 V655 F656 L657 A658 I659 A660 V661 D662 N663 L664 A665 E666 A667 E668 S669 LEU THR SER ALA GLN LYS ALA LYS ALA GLU GLU ARG LYS ARG ARG LYS MET SER ARG GLY LEU PRO ASP LYS THR GLU GLU GLU LYS SER VAL MET ALA LYS LYS LEU GLU GLN LYS PRO LYS GLY GLU GLY
ILE PRO THR THR ALA LYS LEU LYS VAL ASP GLU PHE GLU SER ASN VAL ASN GLU VAL LYS ASP PRO TYR PRO SER ALA ASP PHE PRO GLY ASP ASP GLU GLU ASP GLU PRO GLU ILE PRO VAL LEU SER PRO ARG PRO LEU ALA GLU LEU GLN LEU LYS GLU LYS ALA VAL PRO ILE
PRO GLU ALA SER SER PHE PHE ILE PHE SER PRO THR ASN LYS V788 R789 V790 L791 C792 H793 R794 I795 V796 N797 A798 T799 W800 F801 T802 N803 F804 I805 L806 L807 F808 I809 L810 L811 S812 S813 A814 A815 L816 A817 A818 E819 D820 P821 I822 R823 A824 E825 S826 V827 R828 N829 Q830 I831 L832 G833
Y834 F835 D836 I837 A838 F839 T840 S841 V842 F843 T844 V845 E846 I847 V848 L849 K850 M851 T852 T853 Y854 GLY ALA PHE LEU HIS LYS GLY SER PHE CYS R860 N861 Y862 F863 N864 I865 L866 D867 L868 L869 V870 V871 A872 V873 S874 L875 I876 S877 M878 G879 L880 GLU SER SER THR ILE SER V892 V893
K894 I895 L896 R897 V898 L899 R900 V901 L902 R903 P904 L905 R906 A907 I908 N909 R910 A911 K912 G913 L914 K915 H916 V917 V918 Q919 C920 V921 F922 V923 A924 I925 R926 T927 I928 G929 N930 I931 V932 L933 V934 T935 T936 L937 L938 Q939 F940 M941 F942 A943 C944 I945 G946 V947 Q948 L949 F950 K951 G952 K953
F954 F955 S956 C957 N958 D959 L960 S961 K962 M963 T964 E965 E966 E967 C968 R969 G970 Y971 Y972 Y973 V974 Y975 K976 D977 G978 D979 P980 T981 Q982 M983 E984 L985 R986 P987 R988 Q989 W990 I991 H992 N993 D994 F995 H996 F997 D998 N999 V1000 L1001 S1002 A1003 M1004 M1005 S1006 L1007 F1008 T1009 V1010 S1011 T1012 F1013
E1014 G1015 W1016 P1017 Q1018 L1019 L1020 Y1021 R1022 A1023 I1024 D1025 S1026 N1027 E1028 E1029 D1030 M1031 G1032 P1033 V1034 Y1035 N1036 N1037 R1038 V1039 E1040 M1041 A1042 I1043 F1044 F1045 I1046 I1047 Y1048 I1049 I1050 L1051 I1052 A1053 F1054 F1055 M1056 M1057 N1058 I1059 F1060 V1061 G1062 F1063 V1064 I1065 V1066 T1067 F1068 Q1069 E1070 Q1071 G1072 E1073
T1074 E1075 Y1076 K1077 N1078 C1079 E1080 L1081 D1082 K1083 N1084 Q1085 R1086 Q1087 C1088 V1089 Q1090 Y1091 A1092 L1093 K1094 A1095 R1096 P1097 L1098 R1099 C1100 Y1101 I1102 P1103 K1104 N1105 P1106 Y1107 Q1108 Y1109 Q1110 V1111 W1112 Y1113 V1114 V1115 T1116 S1117 S1118 Y1119 F1120 E1121 Y1122 L1123 M1124 F1125 A1126 L1127 I1128 M1129 L1130 N1131 T1132 I1133
C1134 L1135 G1136 M1137 Q1138 H1139 Y1140 H1141 Q1142 S1143 E1144 E1145 M1146 N1147 H1148 I1149 S1150 D1151 I1152 L1153 N1154 V1155 A1156 F1157 T1158 I1159 I1160 F1161 T1162 L1163 E1164 M1165 I1166 L1167 K1168 L1169 L1170 A1171 F1172 K1173 A1174 R1175 G1176 Y1177 F1178 G1179 D1180 P1181 W1182 N1183 V1184 F1185 D1186 F1187 L1188 I1189 V1190 I1191 G1192 S1193
I1194 I1195 T1198 L1199 S1200 E1201 I1202 D1203 T1204 F1205 LEU ALA SER SER GLY GLY LEU TYR CYS GLY GLY GLY CYS GLY ASN VAL ASP PRO ASP GLU SER ALA R1229 I1230 S1231 S1232 A1233 F1234 F1235 R1236 L1237 F1238 R1239 V1240 M1241 R1242 L1243 I1244 K1245 L1246 L1247 S1248 R1249 A1250 E1251 G1252 V1253 R1254
T1255 L1256 L1257 W1258 T1259 F1260 I1261 K1262 S1263 F1264 Q1265 A1266 L1267 P1268 Y1269 V1270 A1271 L1272 L1273 I1274 V1275 M1276 L1277 F1278 F1279 I1280 Y1281 A1282 V1283 I1284 G1285 M1286 Q1287 M1288 F1289 G1290 K1291 I1292 A1293 L1294 V1295 D1296 G1297 T1298 Q1299 I1300 N1301 R1302 N1303 N1304 N1305 F1306 Q1307 T1308 F1309 P1310 Q1311 A1312 V1313 L1314
L1315 L1316 F1317 R1318 C1319 A1320 T1321 G1322 E1323 A1324 W1325 Q1326 E1327 I1328 L1329 L1330 A1331 C1332 S1333 Y1334 G1335 K1336 L1337 C1338 D1339 P1340 E1341 S1342 D1343 Y1344 A1345 P1346 G1347 E1348 E1349 Y1350 T1351 C1352 G1353 T1354 N1355 F1356 A1357 Y1358 Y1359 Y1360 F1361 I1362 S1363 F1364 Y1365 M1366 L1367 C1368 A1369 F1370 L1371 I1372 I1373 N1374


L1375
F1376
V1377
I1380
M1381
D1382
N1383
F1384
D1385
Y1386
L1387
T1388

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	527833	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50.0	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.294	Depositor
Minimum map value	-0.187	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.044	Depositor
Map size (Å)	337.92, 337.92, 337.92	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.32, 1.32, 1.32	Depositor

5 Model quality

5.1 Standard geometry

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	0.59	1/9380 (0.0%)	0.75	21/12722 (0.2%)

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
1	A	0	9

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	171	ARG	C-O	13.19	1.48	1.23

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1174	ALA	CB-CA-C	-8.28	97.68	110.10
1	A	957	CYS	CB-CA-C	-7.37	95.66	110.40
1	A	181	SER	CB-CA-C	7.33	124.03	110.10
1	A	333	LEU	CA-CB-CG	7.24	131.94	115.30
1	A	949	LEU	CA-CB-CG	7.08	131.59	115.30
1	A	281	SER	CB-CA-C	6.36	122.18	110.10
1	A	954	PHE	CB-CG-CD1	6.32	125.23	120.80
1	A	326	LEU	CA-CB-CG	6.04	129.18	115.30
1	A	440	LEU	CB-CA-C	6.01	121.63	110.20
1	A	458	LEU	CA-CB-CG	5.96	129.01	115.30
1	A	644	LEU	CB-CG-CD2	-5.72	101.28	111.00
1	A	954	PHE	CB-CG-CD2	-5.70	116.81	120.80
1	A	443	ALA	CB-CA-C	5.63	118.54	110.10
1	A	997	PHE	CB-CG-CD1	5.58	124.70	120.80
1	A	1316	LEU	CB-CG-CD2	-5.51	101.64	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	196	LEU	CA-CB-CG	5.50	127.95	115.30
1	A	1188	LEU	CA-CB-CG	5.31	127.52	115.30
1	A	597	PHE	CB-CG-CD1	5.30	124.51	120.80
1	A	1337	LEU	CA-CB-CG	5.16	127.16	115.30
1	A	333	LEU	CB-CG-CD2	-5.16	102.23	111.00
1	A	653	LEU	CA-CB-CG	5.03	126.87	115.30

There are no chirality outliers.

All (9) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1344	TYR	Peptide
1	A	228	TYR	Peptide
1	A	229	ILE	Peptide
1	A	237	VAL	Peptide
1	A	266	PRO	Peptide
1	A	268	PRO	Peptide
1	A	456	GLN	Peptide
1	A	628	GLY	Peptide
1	A	629	GLY	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	9158	9312	9304	180	0
All	All	9158	9312	9304	180	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 10.

All (180) 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:1296:ASP:OD2	1:A:1302:ARG:NH2	1.72	1.23

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:224:LYS:O	1:A:266:PRO:HG3	1.44	1.17
1:A:984:GLU:OE1	1:A:986:ARG:NH1	1.81	1.11
1:A:1203:ASP:OD2	1:A:1229:ARG:HD2	1.56	1.03
1:A:959:ASP:OD2	1:A:988:ARG:NH1	1.96	0.98
1:A:956:SER:HB3	1:A:1022:ARG:HH11	1.28	0.95
1:A:820:ASP:HB2	1:A:821:PRO:HA	1.52	0.91
1:A:955:PHE:CE1	1:A:992:HIS:CD2	2.61	0.89
1:A:231:THR:O	1:A:262:ARG:NH2	2.06	0.88
1:A:356:LYS:NZ	1:A:360:GLU:OE2	2.06	0.88
1:A:956:SER:HB3	1:A:1022:ARG:NH1	1.90	0.86
1:A:245:CYS:SG	1:A:246:ALA:N	2.48	0.86
1:A:538:ILE:O	1:A:541:TYR:HD1	1.59	0.86
1:A:500:ASP:OD1	1:A:537:LYS:NZ	2.09	0.85
1:A:955:PHE:CE1	1:A:992:HIS:NE2	2.43	0.85
1:A:215:LEU:O	1:A:219:LYS:HG3	1.77	0.84
1:A:820:ASP:HB2	1:A:821:PRO:CA	2.09	0.81
1:A:955:PHE:CZ	1:A:992:HIS:CD2	2.68	0.81
1:A:439:ILE:HG12	1:A:541:TYR:OH	1.80	0.81
1:A:966:GLU:OE2	1:A:969:ARG:NH1	2.14	0.80
1:A:903:ARG:HB2	1:A:904:PRO:HD3	1.61	0.80
1:A:942:PHE:CD2	1:A:1048:TYR:HD1	1.99	0.79
1:A:90:GLU:OE1	1:A:168:ARG:NH2	2.16	0.79
1:A:942:PHE:HD2	1:A:1048:TYR:HD1	1.28	0.79
1:A:821:PRO:HG3	1:A:1286:MET:HG2	1.66	0.76
1:A:820:ASP:H	1:A:821:PRO:HA	1.50	0.75
1:A:224:LYS:O	1:A:266:PRO:CG	2.32	0.75
1:A:1046:ILE:O	1:A:1049:ILE:HG22	1.87	0.75
1:A:544:SER:OG	1:A:547:ASN:HB3	1.87	0.74
1:A:908:ILE:HD11	1:A:1276:MET:HG2	1.68	0.74
1:A:841:SER:O	1:A:845:VAL:HG23	1.89	0.72
1:A:171:ARG:O	1:A:174:ARG:HB2	1.89	0.72
1:A:268:PRO:HB2	1:A:273:THR:HB	1.71	0.71
1:A:632:TYR:HB3	1:A:633:PRO:HD3	1.70	0.71
1:A:591:GLU:OE2	1:A:593:ARG:NH1	2.24	0.70
1:A:820:ASP:CB	1:A:821:PRO:CA	2.68	0.70
1:A:591:GLU:OE2	1:A:593:ARG:NH2	2.25	0.70
1:A:955:PHE:CZ	1:A:992:HIS:HD2	2.10	0.69
1:A:1016:TRP:CZ3	1:A:1020:LEU:HD22	2.29	0.68
1:A:976:LYS:NZ	1:A:984:GLU:OE2	2.19	0.67
1:A:538:ILE:O	1:A:541:TYR:CD1	2.45	0.67
1:A:942:PHE:HD2	1:A:1048:TYR:CD1	2.11	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:372:GLN:NE2	1:A:486:LEU:O	2.29	0.66
1:A:836:ASP:OD2	1:A:900:ARG:NH1	2.29	0.65
1:A:820:ASP:HB2	1:A:821:PRO:C	2.18	0.65
1:A:333:LEU:HD11	1:A:1064:VAL:HG11	1.77	0.64
1:A:836:ASP:CG	1:A:900:ARG:HH12	2.00	0.64
1:A:302:ASN:OD1	1:A:307:ASN:HB3	1.98	0.64
1:A:836:ASP:OD2	1:A:900:ARG:NH2	2.30	0.64
1:A:568:LEU:O	1:A:568:LEU:HD23	1.98	0.63
1:A:276:ASP:O	1:A:277:ASN:HB3	1.99	0.62
1:A:957:CYS:SG	1:A:958:ASN:N	2.72	0.62
1:A:115:SER:O	1:A:119:VAL:HG13	2.00	0.62
1:A:942:PHE:CD2	1:A:1048:TYR:CD1	2.87	0.62
1:A:820:ASP:N	1:A:821:PRO:HA	2.11	0.61
1:A:541:TYR:O	1:A:542:TRP:HB2	2.00	0.61
1:A:823:ARG:NH2	1:A:1341:GLU:OE2	2.33	0.60
1:A:439:ILE:CG1	1:A:541:TYR:OH	2.50	0.59
1:A:819:GLU:HG2	1:A:897:ARG:HH21	1.67	0.59
1:A:1016:TRP:HZ3	1:A:1020:LEU:HD22	1.67	0.59
1:A:1099:ARG:O	1:A:1100:CYS:SG	2.60	0.59
1:A:822:ILE:HG21	1:A:1291:LYS:H	1.68	0.59
1:A:1016:TRP:CD1	1:A:1017:PRO:HD3	2.38	0.58
1:A:846:GLU:HG3	1:A:847:ILE:N	2.19	0.58
1:A:591:GLU:OE2	1:A:593:ARG:CZ	2.52	0.58
1:A:369:TRP:O	1:A:369:TRP:HD1	1.87	0.57
1:A:45:ILE:HG12	1:A:107:ALA:HA	1.86	0.57
1:A:542:TRP:N	1:A:542:TRP:HE3	2.02	0.57
1:A:183:GLN:O	1:A:187:ASN:OD1	2.22	0.57
1:A:206:MET:HE2	1:A:317:LEU:HD12	1.87	0.57
1:A:820:ASP:CB	1:A:821:PRO:HA	2.19	0.56
1:A:911:ALA:O	1:A:915:LYS:HE2	2.05	0.56
1:A:1016:TRP:O	1:A:1020:LEU:N	2.28	0.56
1:A:74:MET:HB3	1:A:78:ASP:HB3	1.87	0.56
1:A:1339:ASP:O	1:A:1341:GLU:N	2.34	0.56
1:A:265:TRP:HZ2	1:A:271:GLY:HA2	1.70	0.55
1:A:844:THR:O	1:A:847:ILE:HG13	2.06	0.55
1:A:225:THR:HG23	1:A:266:PRO:HB3	1.89	0.55
1:A:307:ASN:O	1:A:308:GLU:HG2	2.07	0.55
1:A:1016:TRP:CG	1:A:1017:PRO:HD3	2.43	0.54
1:A:1173:LYS:O	1:A:1175:ARG:N	2.40	0.54
1:A:820:ASP:OD2	1:A:829:ASN:ND2	2.41	0.54
1:A:836:ASP:CG	1:A:900:ARG:NH1	2.62	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:510:GLU:OE2	1:A:531:ARG:CG	2.57	0.53
1:A:843:PHE:O	1:A:846:GLU:HG2	2.07	0.53
1:A:303:ASP:OD2	1:A:1302:ARG:NH1	2.41	0.53
1:A:965:GLU:CD	1:A:990:TRP:HE1	2.11	0.53
1:A:1299:GLN:HG2	1:A:1327:GLU:HB3	1.91	0.52
1:A:1333:SER:OG	1:A:1334:TYR:N	2.42	0.52
1:A:1203:ASP:CG	1:A:1229:ARG:HD2	2.29	0.52
1:A:632:TYR:HB3	1:A:633:PRO:CD	2.38	0.52
1:A:366:TYR:O	1:A:369:TRP:HB3	2.09	0.52
1:A:542:TRP:N	1:A:542:TRP:CE3	2.77	0.51
1:A:589:ASP:OD2	1:A:593:ARG:NH2	2.43	0.51
1:A:836:ASP:OD1	1:A:900:ARG:NH1	2.42	0.51
1:A:819:GLU:CG	1:A:897:ARG:HH21	2.22	0.51
1:A:1042:ALA:O	1:A:1046:ILE:HG13	2.11	0.51
1:A:225:THR:HA	1:A:266:PRO:HB3	1.92	0.51
1:A:276:ASP:O	1:A:277:ASN:CB	2.57	0.51
1:A:1016:TRP:N	1:A:1017:PRO:CD	2.73	0.51
1:A:1015:GLY:HA3	1:A:1326:GLN:OE1	2.10	0.50
1:A:1082:ASP:HB3	1:A:1085:GLN:HG2	1.92	0.50
1:A:842:VAL:O	1:A:845:VAL:HB	2.11	0.50
1:A:964:THR:OG1	1:A:965:GLU:N	2.44	0.50
1:A:536:PHE:O	1:A:539:THR:OG1	2.27	0.49
1:A:1263:SER:O	1:A:1265:GLN:N	2.41	0.49
1:A:1312:ALA:O	1:A:1316:LEU:HD13	2.13	0.49
1:A:567:PHE:O	1:A:571:ILE:HG12	2.13	0.49
1:A:965:GLU:HA	1:A:990:TRP:CZ2	2.48	0.49
1:A:1293:ALA:HB2	1:A:1339:ASP:H	1.77	0.49
1:A:49:GLU:O	1:A:50:TRP:O	2.31	0.48
1:A:816:LEU:HD21	1:A:901:VAL:HG12	1.95	0.48
1:A:1106:PRO:HA	1:A:1109:TYR:HB3	1.95	0.48
1:A:1318:ARG:HH21	1:A:1328:ILE:HD11	1.77	0.48
1:A:836:ASP:OD2	1:A:900:ARG:CZ	2.60	0.48
1:A:942:PHE:HA	1:A:945:ILE:HG22	1.95	0.48
1:A:1131:ASN:O	1:A:1135:LEU:HD13	2.14	0.48
1:A:44:CYS:O	1:A:48:VAL:HG23	2.14	0.48
1:A:165:ARG:O	1:A:168:ARG:HG2	2.14	0.48
1:A:433:VAL:O	1:A:437:LEU:N	2.44	0.48
1:A:965:GLU:OE1	1:A:990:TRP:NE1	2.44	0.48
1:A:1334:TYR:CZ	1:A:1351:THR:HG23	2.48	0.48
1:A:1047:ILE:O	1:A:1051:LEU:HG	2.14	0.48
1:A:206:MET:CE	1:A:317:LEU:HD12	2.43	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:638:CYS:O	1:A:642:ILE:HG12	2.14	0.47
1:A:1082:ASP:OD1	1:A:1083:LYS:N	2.46	0.47
1:A:513:LEU:HD23	1:A:527:LEU:HD11	1.97	0.47
1:A:227:TYR:HD2	1:A:262:ARG:HG2	1.80	0.47
1:A:539:THR:C	1:A:541:TYR:N	2.68	0.47
1:A:993:ASN:O	1:A:995:PHE:N	2.40	0.47
1:A:1319:CYS:SG	1:A:1328:ILE:HD12	2.55	0.47
1:A:202:LEU:HD23	1:A:202:LEU:O	2.14	0.47
1:A:217:LEU:HD11	1:A:1237:LEU:HD11	1.96	0.46
1:A:244:PRO:O	1:A:252:ARG:HD3	2.16	0.46
1:A:1201:GLU:O	1:A:1204:THR:OG1	2.32	0.46
1:A:465:ASP:O	1:A:469:ARG:HG3	2.16	0.46
1:A:542:TRP:HE3	1:A:542:TRP:H	1.61	0.46
1:A:843:PHE:O	1:A:846:GLU:CG	2.63	0.46
1:A:1060:PHE:HZ	1:A:1376:PHE:CE1	2.35	0.46
1:A:225:THR:HG21	1:A:227:TYR:CZ	2.52	0.45
1:A:813:SER:HA	1:A:816:LEU:HB3	1.98	0.45
1:A:820:ASP:N	1:A:821:PRO:CA	2.79	0.45
1:A:1244:ILE:HG23	1:A:1247:LEU:HD21	1.99	0.45
1:A:959:ASP:HB3	1:A:972:TYR:CE2	2.52	0.45
1:A:1045:PHE:O	1:A:1049:ILE:HB	2.16	0.45
1:A:823:ARG:HH21	1:A:823:ARG:CG	2.30	0.45
1:A:953:LYS:NZ	1:A:1029:GLU:OE2	2.49	0.45
1:A:979:ASP:OD1	1:A:979:ASP:N	2.48	0.45
1:A:820:ASP:CB	1:A:821:PRO:C	2.83	0.44
1:A:252:ARG:HD2	1:A:1302:ARG:HH11	1.82	0.44
1:A:823:ARG:HH21	1:A:823:ARG:HG2	1.82	0.44
1:A:587:PHE:HE2	1:A:625:MET:HE2	1.83	0.44
1:A:956:SER:CB	1:A:1022:ARG:HH11	2.13	0.44
1:A:1104:LYS:HG3	1:A:1105:ASN:H	1.83	0.43
1:A:1096:ARG:HB3	1:A:1097:PRO:HD2	2.00	0.43
1:A:587:PHE:HE2	1:A:625:MET:CE	2.32	0.43
1:A:1331:ALA:O	1:A:1336:LYS:HG3	2.18	0.43
1:A:210:TYR:O	1:A:313:TYR:OH	2.37	0.43
1:A:217:LEU:HD23	1:A:217:LEU:HA	1.86	0.43
1:A:1307:GLN:NE2	1:A:1339:ASP:OD2	2.51	0.43
1:A:1334:TYR:O	1:A:1334:TYR:CG	2.72	0.43
1:A:1049:ILE:CG2	1:A:1050:ILE:N	2.81	0.43
1:A:965:GLU:HA	1:A:990:TRP:HZ2	1.83	0.42
1:A:559:ILE:HG22	1:A:563:LEU:HB2	2.01	0.42
1:A:819:GLU:HG2	1:A:897:ARG:NH2	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:116:GLY:HA2	1:A:119:VAL:CG1	2.50	0.42
1:A:326:LEU:HD23	1:A:326:LEU:O	2.19	0.42
1:A:632:TYR:CB	1:A:633:PRO:CD	2.98	0.41
1:A:594:ARG:HA	1:A:594:ARG:HD2	1.93	0.41
1:A:526:VAL:O	1:A:530:ILE:HG13	2.20	0.41
1:A:337:PHE:HZ	1:A:660:ALA:HB1	1.84	0.41
1:A:449:ILE:HG12	1:A:532:LEU:HD23	2.03	0.41
1:A:570:ILE:HD13	1:A:570:ILE:HG21	1.82	0.41
1:A:116:GLY:HA2	1:A:119:VAL:HG13	2.03	0.41
1:A:585:TYR:HA	1:A:587:PHE:CE1	2.55	0.41
1:A:57:ILE:HA	1:A:60:THR:HG22	2.03	0.40
1:A:903:ARG:HB2	1:A:904:PRO:CD	2.42	0.40
1:A:955:PHE:CD1	1:A:992:HIS:NE2	2.86	0.40
1:A:1195:ILE:HD12	1:A:1195:ILE:HA	1.96	0.40
1:A:844:THR:HG21	1:A:875:LEU:HB2	2.03	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	1113/1357 (82%)	978 (88%)	116 (10%)	19 (2%)	9 45

All (19) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	50	TRP
1	A	977	ASP
1	A	1174	ALA
1	A	80	ASN
1	A	819	GLU
1	A	1344	TYR

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Mol	Chain	Res	Type
1	A	1354	THR
1	A	994	ASP
1	A	1138	GLN
1	A	1333	SER
1	A	1355	ASN
1	A	820	ASP
1	A	903	ARG
1	A	1323	GLU
1	A	542	TRP
1	A	1294	LEU
1	A	457	PRO
1	A	252	ARG
1	A	630	PRO

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	1002/1196 (84%)	968 (97%)	34 (3%)	37 69

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	64	ASN
1	A	123	ILE
1	A	174	ARG
1	A	221	LYS
1	A	262	ARG
1	A	276	ASP
1	A	303	ASP
1	A	422	ARG
1	A	445	ASN
1	A	542	TRP
1	A	597	PHE
1	A	794	ARG
1	A	800	TRP

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Mol	Chain	Res	Type
1	A	823	ARG
1	A	846	GLU
1	A	866	LEU
1	A	880	LEU
1	A	892	VAL
1	A	930	ASN
1	A	954	PHE
1	A	955	PHE
1	A	986	ARG
1	A	988	ARG
1	A	997	PHE
1	A	1120	PHE
1	A	1121	GLU
1	A	1122	TYR
1	A	1131	ASN
1	A	1199	LEU
1	A	1249	ARG
1	A	1276	MET
1	A	1302	ARG
1	A	1306	PHE
1	A	1376	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	327	ASN
1	A	455	ASN
1	A	579	GLN
1	A	992	HIS
1	A	1148	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

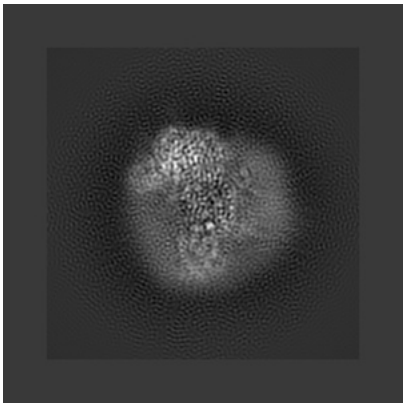
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-9513. These allow visual inspection of the internal detail of the map and identification of artifacts.

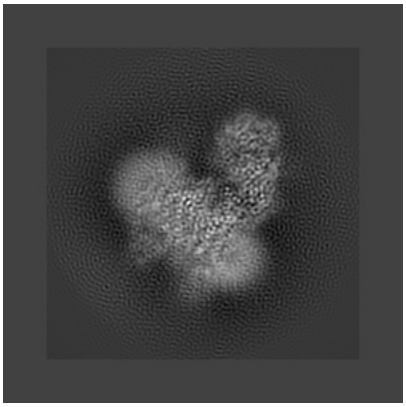
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

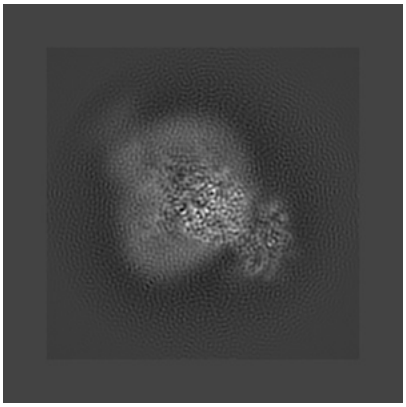
6.1.1 Primary map



X



Y

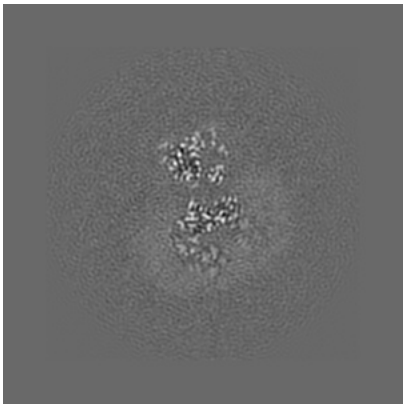


Z

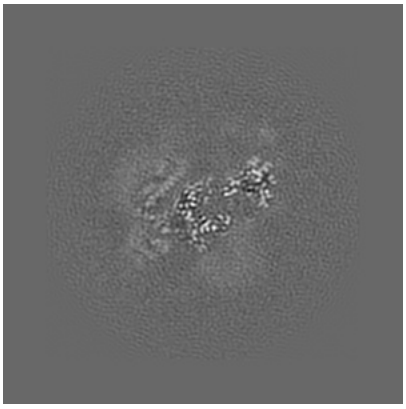
The images above show the map projected in three orthogonal directions.

6.2 Central slices

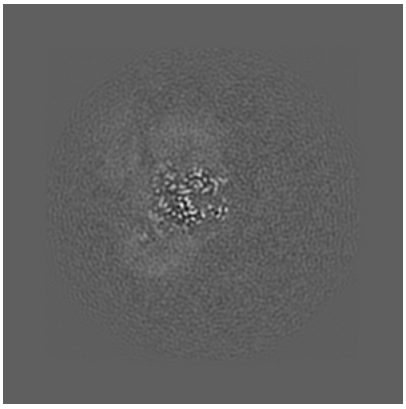
6.2.1 Primary map



X Index: 128



Y Index: 128

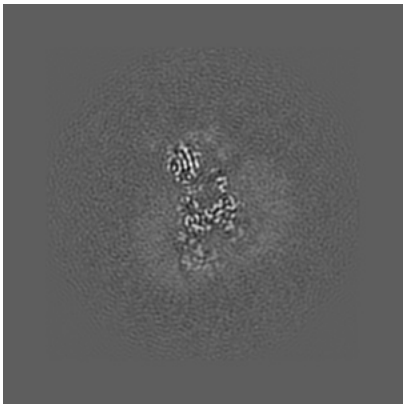


Z Index: 128

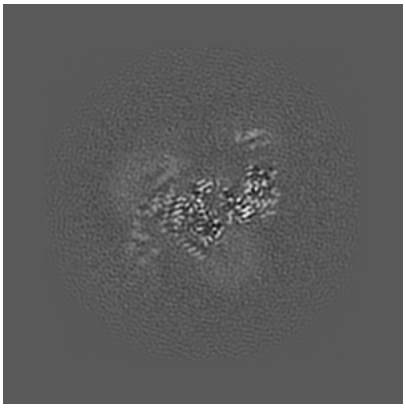
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

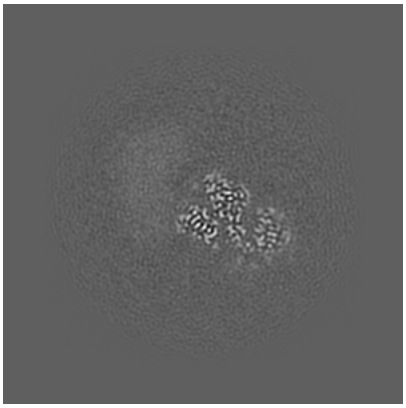
6.3.1 Primary map



X Index: 123



Y Index: 123



Z Index: 159

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X

Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.044. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

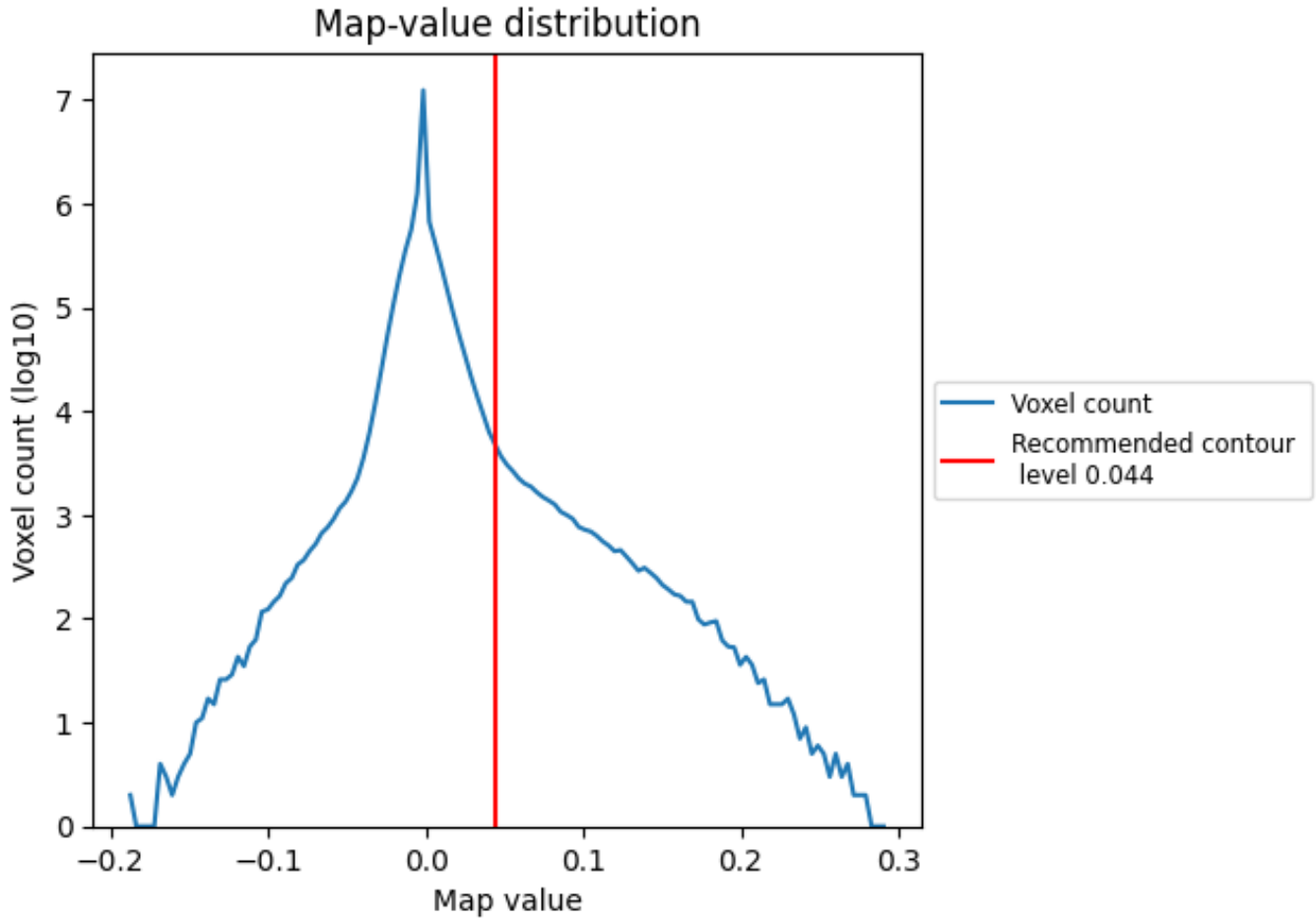
6.5 Mask visualisation (i)

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

7 Map analysis

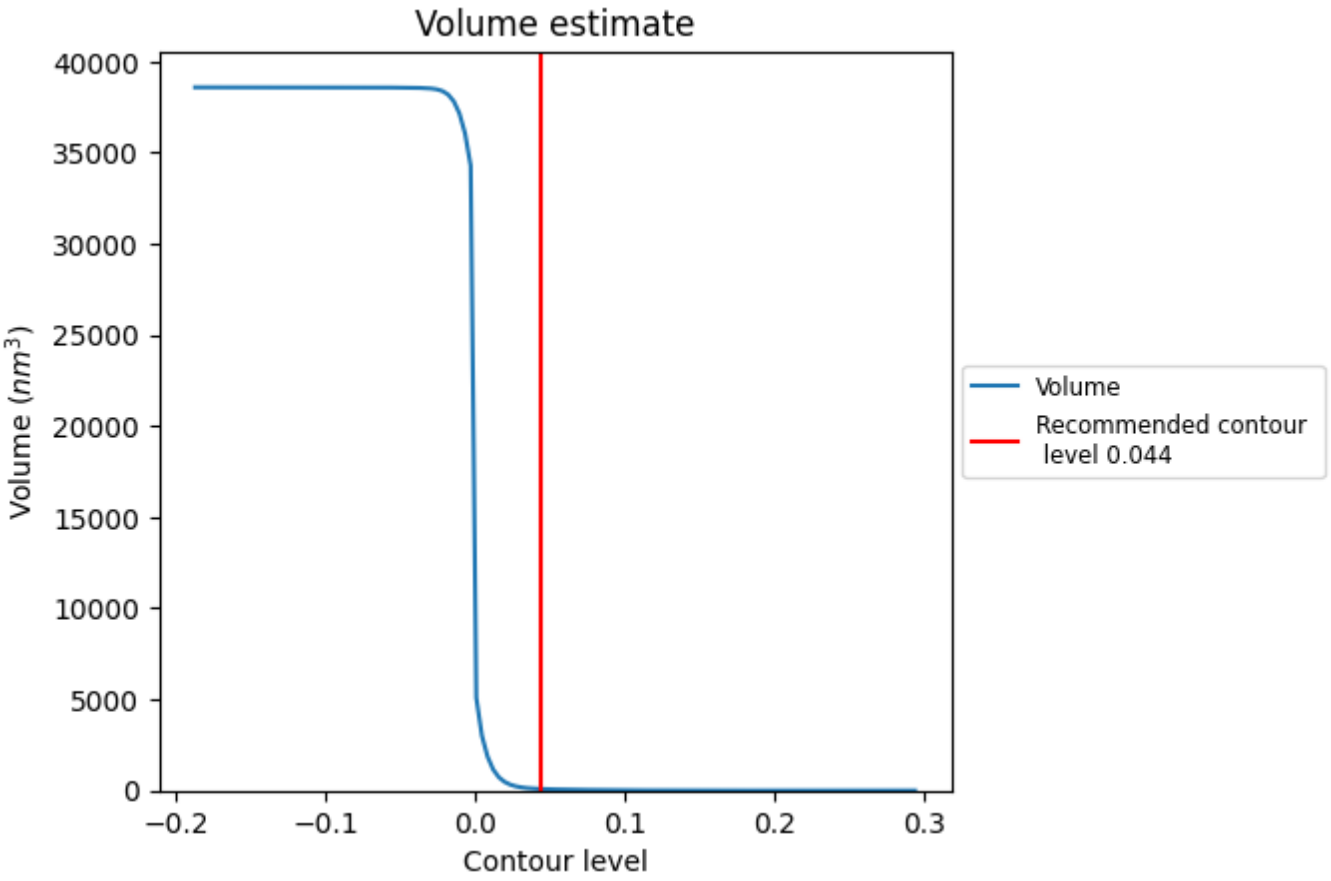
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

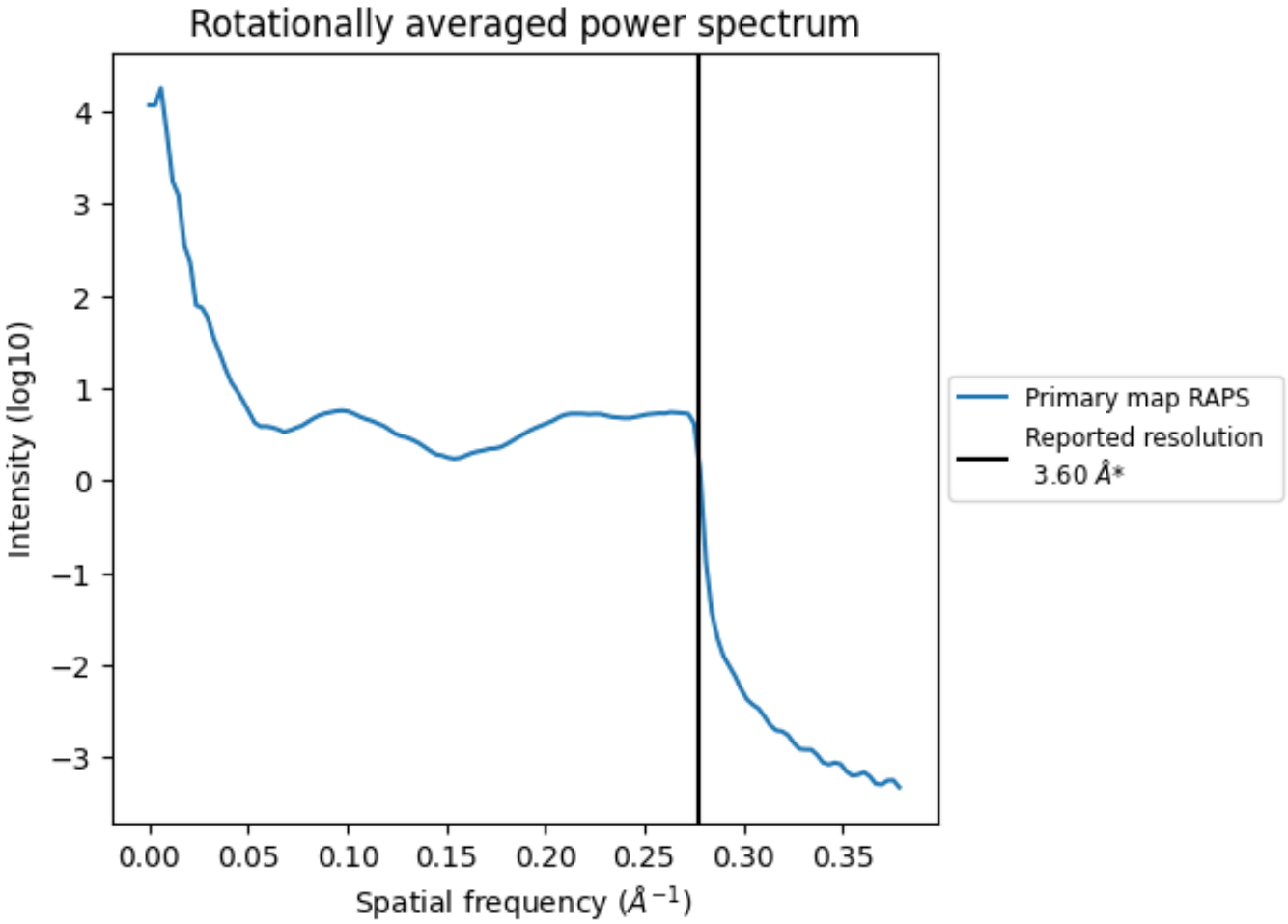
7.2 Volume estimate



The volume at the recommended contour level is 87 nm^3; this corresponds to an approximate mass of 79 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 0.278 Å^{-1}

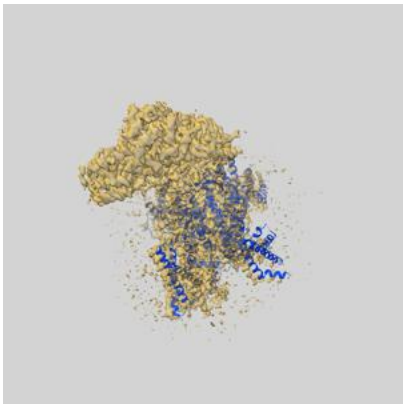
8 Fourier-Shell correlation (i)

This section was not generated. No FSC curve or half-maps provided.

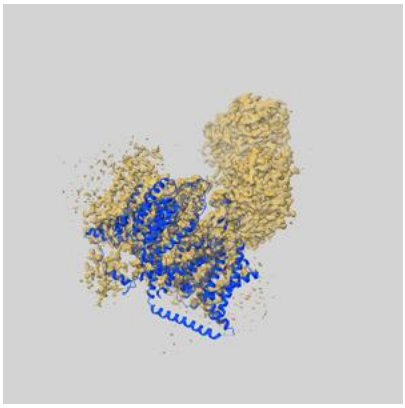
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-9513 and PDB model 6BYO. Per-residue inclusion information can be found in section 3 on page 4.

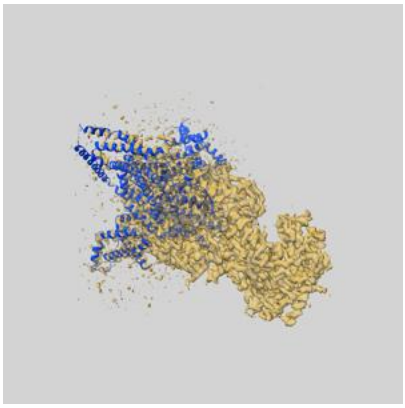
9.1 Map-model overlay



X



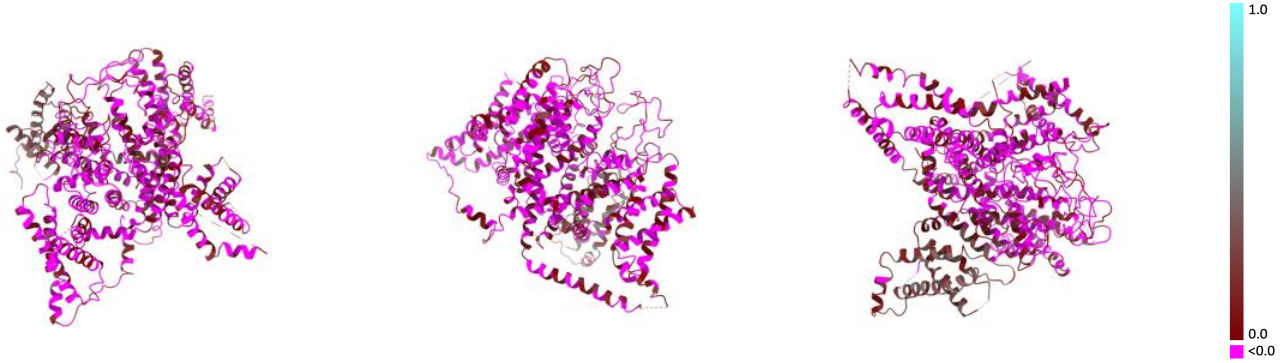
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.044 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

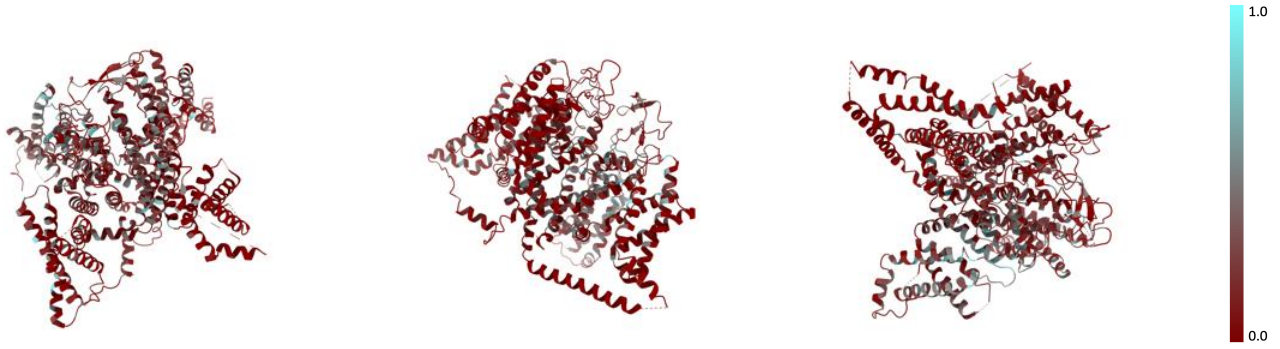
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

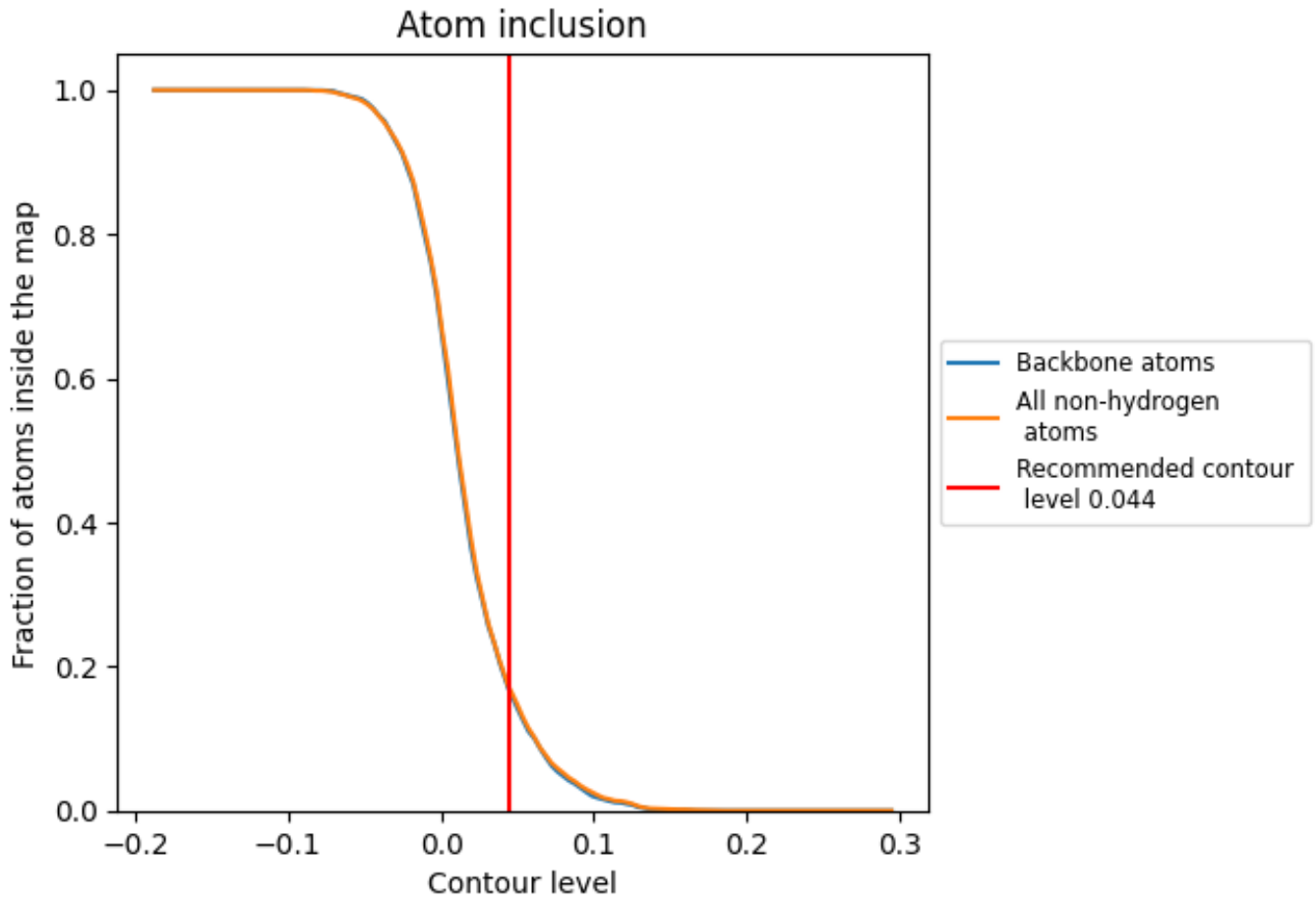
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.044).

9.4 Atom inclusion (i)



At the recommended contour level, 17% of all backbone atoms, 17% 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 (0.044) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.1729	-0.0110
A	0.1700	-0.0110