



## Full wwPDB EM Validation Report ⓘ

Mar 20, 2023 – 05:24 PM EDT

PDB ID : 8FIX  
EMDB ID : EMD-29212  
Title : Cryo-EM structure of E. coli RNA polymerase backtracked elongation complex harboring a terminal mismatch  
Authors : Florez Ariza, A.; Wee, L.; Tong, A.; Canari, C.; Grob, P.; Nogales, E.; Bustamante, C.  
Deposited on : 2022-12-17  
Resolution : 3.90 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](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:

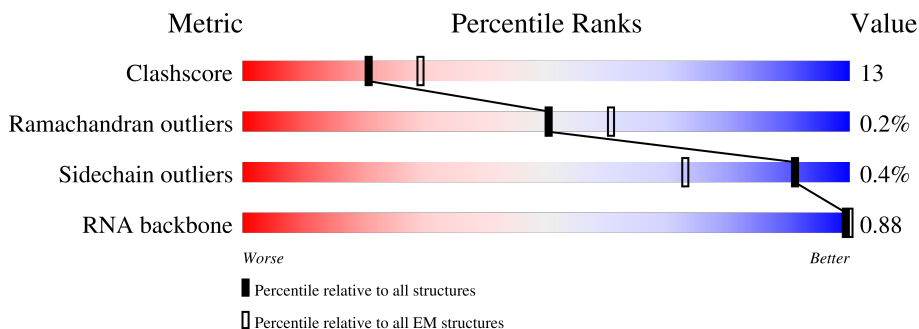
EMDB validation analysis : 0.0.1.dev43  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.32.1

# 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 3.90 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
RNA backbone	4643	859

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	N	15	
2	T	23	
3	A	329	
3	B	329	
4	C	1342	
5	D	1407	
6	R	11	

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Mol	Chain	Length	Quality of chain
7	E	91	 <p>A horizontal bar chart showing the quality distribution of chain E. The bar is divided into four segments: a red segment (27%), a green segment (53%), a yellow segment (26%), and a grey segment (20%). The segments are stacked from left to right in the order: red, green, yellow, grey.</p>

## 2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 25943 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 DNA chain called Non-template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	N	15	304	144	60	85	15	0	0

- Molecule 2 is a DNA chain called Template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	T	23	478	227	85	143	23	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	A	228	1768	1102	312	348	6	0	0
3	B	229	1772	1104	313	349	6	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	C	1319	10407	6530	1814	2020	43	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	D	1336	10397	6533	1854	1960	50	0	0

- Molecule 6 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	R	11	232	104	40	77	11	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	E	73	582	355	111	115	1	0	0

- Molecule 8 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
8	D	2	2	2	0

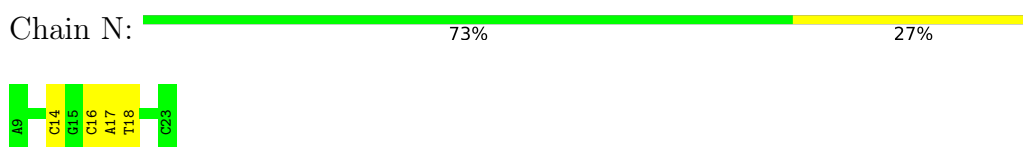
- Molecule 9 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
9	D	1	1	1	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.

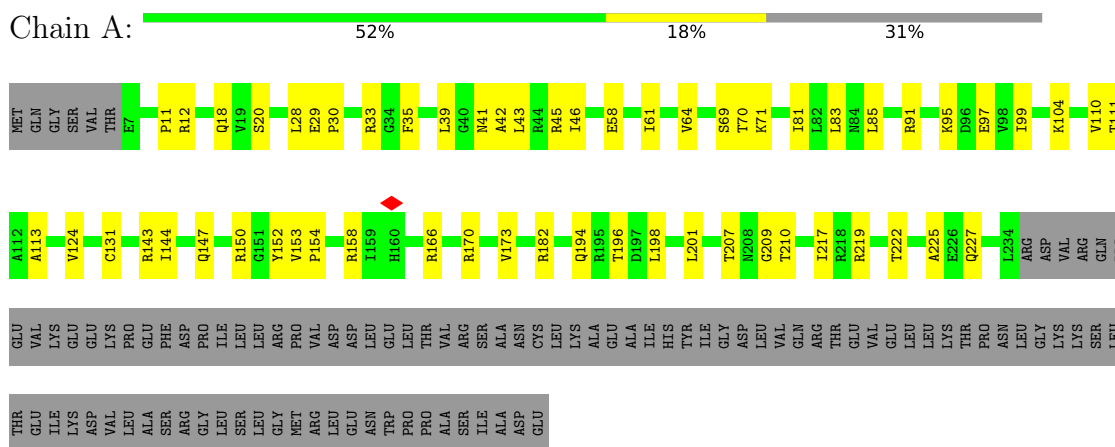
- Molecule 1: Non-template DNA



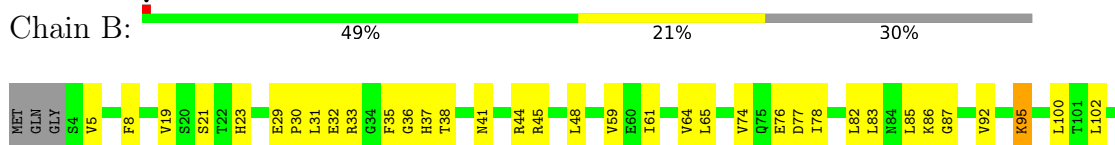
- Molecule 2: Template DNA

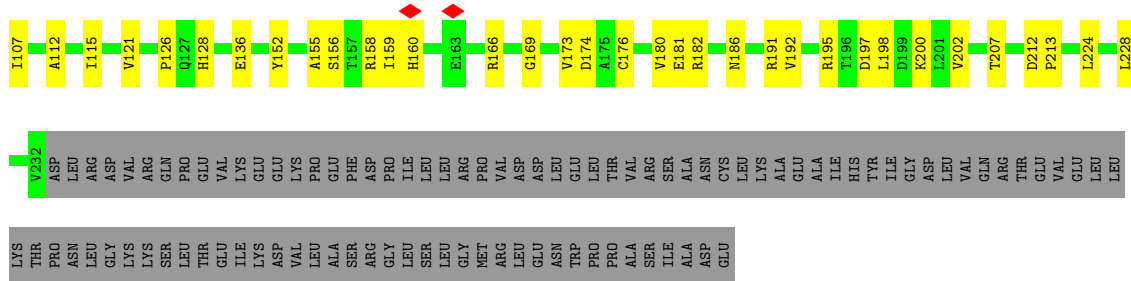


- Molecule 3: DNA-directed RNA polymerase subunit alpha

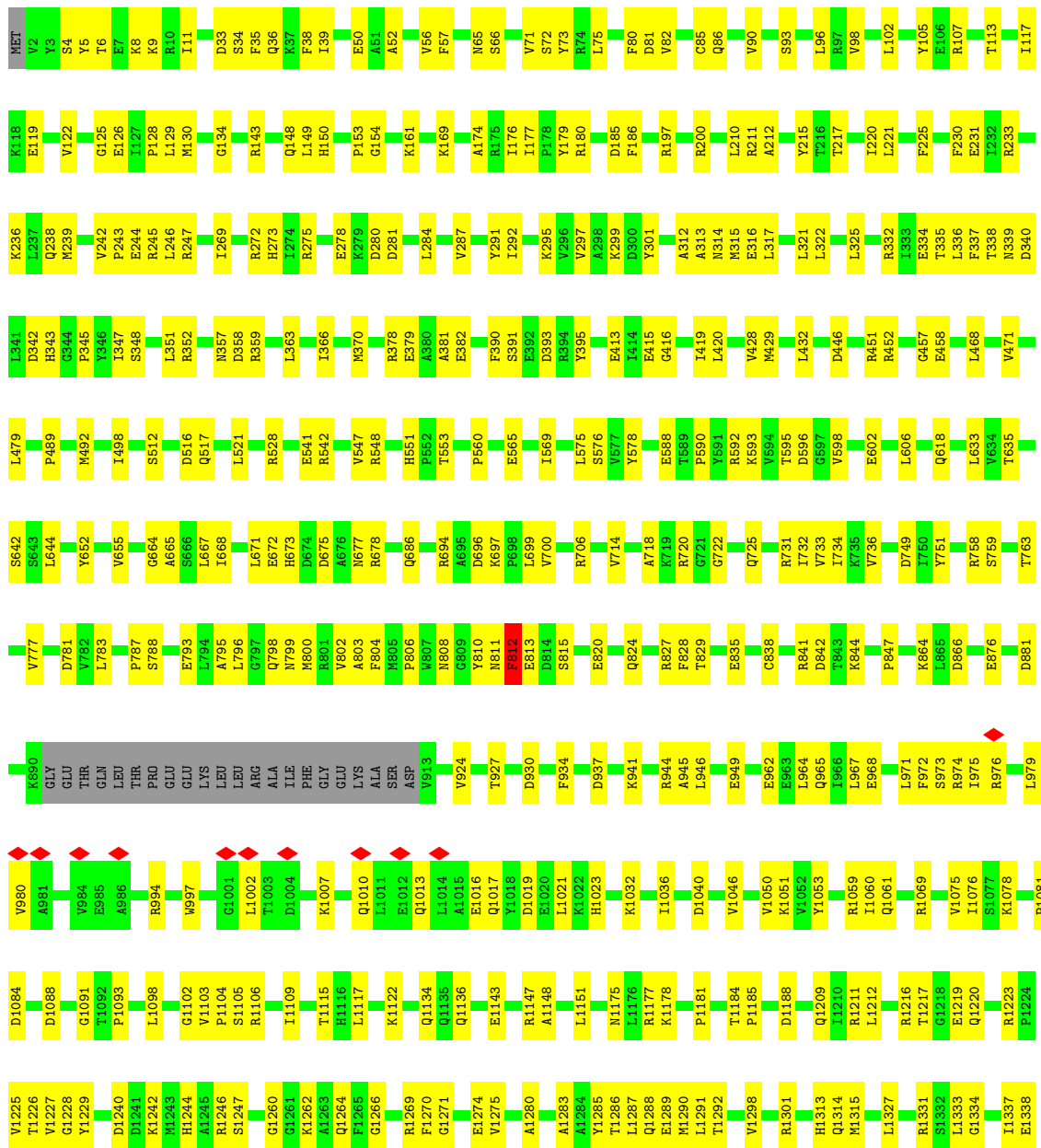


- Molecule 3: DNA-directed RNA polymerase subunit alpha





• Molecule 4: DNA-directed RNA polymerase subunit beta



L1339  
E1342

• Molecule 5: DNA-directed RNA polymerase subunit beta'

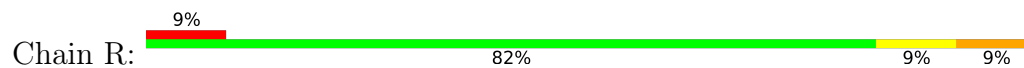


MET	LYS	ASP	LEU	LEU	LYS	PHE	LEU	LYS	ALA	GLN	THR	LYS	THR	GLU	E16	F17	D18	A19	I22	A23	L24	A25	S26	M29	I30	W33	G36	E42	F49	K50	P51	E52	R53	D54	G55	L56	F57	R60	I61	F62	V65	K66	D67	Y68	E69	C70	L71	K74	Y75	K76
R77	L78	K79	H80	V83	I84	C85	E86	K87	E89	E91	V92	T93	V97	R98	H99	E100	R101	M102	A112	H113	I114	V115	F116	L120	P121	I124	R133	Y144	V145	V146	I147	E148	L154	E155	R156	Q157	Q158	I159	L160	T161	E162	V289	D167	L285	E170	D304	R311	I185	L188	
L189	M192	Q196	S326	E197	C198	E199	Q200	L201	E204	S210	E211	T212	K213	R214	K215	K216	L217	M102	A112	H113	I114	V115	F116	L120	P121	I124	R133	Y144	V145	V146	I147	E148	L154	E155	R156	Q157	Q158	I159	L160	T161	E162	V289	D167	L285	E170	D304	R311	I185	L188	
L189	M192	Q196	S326	E197	C198	E199	Q200	L201	E204	S210	E211	T212	K213	R214	K215	K216	L217	M102	A112	H113	I114	V115	F116	L120	P121	I124	R133	Y144	V145	V146	I147	E148	L154	E155	R156	Q157	Q158	I159	L160	T161	E162	V289	D167	L285	E170	D304	R311	I185	L188	
S319	N320	K325	S326	L327	M330	I331	K332	L332	G336	R337	L342	E343	R345	K346	V347	D348	Y349	R352	L355	T356	V357	L224	N232	L232	E235	T238	V244	L245	P246	P247	D248	L249	L252	V253	P254	R259	F260	L387	L390	D264	K398	V401	L285	E170	D304	R311	I185	L188		
L412	D413	I416	R417	E418	V421	L422	L423	N424	R425	A426	P427	T428	L429	H430	R431	V347	E438	P439	V440	L441	I442	I447	Q448	L449	H450	P451	D460	F461	Q465	M466	A467	V468	H469	V470	L474	E475	A476	Q477	E479	A480	R481	A482	L483	I490	E404	P493	M495	W409	D410	I499
Q504	V507	L510	T514	V518	T528	G529	P530	K531	E532	E533	A534	R535	L536	Y537	R538	R539	R551	I552	T553	L563	L569	D684	I685	W686	A577	I578	L579	W580	M581	I582	V583	P584	L587	I591	Q594	A595	L596	K599	A600	I601	Y609	L612	G613	L614	K615	P616				
T617	D622	Q623	A633	G636	S652	M644	K650	T653	E663	E666	V673	T674	A675	G676	E677	R678	Y679	W680	K681	D684	I685	W686	A577	I578	L579	W580	M581	I582	V583	P584	L587	I591	Q594	A595	L596	K599	A600	I601	Y609	L612	G613	L614	K615	P616						
R744	M747	Q748	K749	D751	G752	I754	I755	E756	T757	P758	I759	R764	E765	G766	L767	L770	Q771	Y772	T776	L783	G794	L800	A804	Q805	D812	D813	C814	G815	T816	H817	T823	P824	V825	I826	A730	R731	G732	S733	A734	A735	V839	L840	G841	R842	W843	T844				
A845	L849	K850	P851	G852	D855	L863	L864	H865	R866	Q867	L872	V880	K881	R882	R883	S884	V885	W886	S887	C888	F892	V893	H897	C898	Y899	G900	R901	E993	S994	Y995	I908	I909	N910	I918	E925	P926	L930	F935	HIS	ILE	GLY	GLY	ALA	ALA	ARG	ALA				
ALA	ALA	GLU	S948	S949	Q951	K955	G956	S957	K964	V967	N968	K972	L973	Y974	R975	T976	S977	R978	N979	T980	F981	K983	L984	I985	D986	R990	T991	K992	E993	S994	Y995	I908	I909	N910	I918	E925	P926	L930	F935	HIS	ILE	GLY	GLY	ALA	ALA	ARG	ALA			
Q1044	T1045	E1052	L1056	S1057	S1058	R1067	T1068	A1069	G1070	K1071	N1072	D1073	L1074	R1075	A1083	Q1084	V1085	Y1086	D1087	E1088	M1089	R1194	E1200	R1206	A1216	D1219	T1220	L1221	R1222	L1223	V1229	T1230	I1233	Y1241	R1242	I1243	Q1244	G1245	K1247	H1252	I1256	V1257	L1138	P1139	R1140					
D1143	L1144	F1145	R1148	K1151	E1152	P1153	G1161	V1162	V1163	S1164	I1177	T1178	P1179	W1180	D1181	D1184	A1312	S1313	L1314	Y1186	E1187	E1188	M1189	R1194	E1200	R1206	A1216	D1219	T1220	L1221	R1222	L1223	V1229	T1230	I1233	Y1241	R1242	I1243	Q1244	G1245	K1247	H1252	I1256	V1257	L1138	P1139	R1140			
Q1259	M1260	L1261	R1262	K1263	S1271	R1284	V1285	K1286	N1289	G1296	K1297	V1298	T1309	T1310	K1311	A1312	S1313	L1314	Y1186	E1187	E1188	M1189	R1194	E1200	R1206	A1216	D1219	T1220	L1221	R1222	L1223	V1229	T1230	I1233	Y1241	R1242	I1243	Q1244	G1245	K1247	H1252	I1256	V1257	L1138	P1139	R1140				
Q1259	M1260	L1261	R1262	K1263	S1271	R1284	V1285	K1286	N1289	G1296	K1297	V1298	T1309	T1310	K1311	A1312	S1313	L1314	Y1186	E1187	E1188	M1189	R1194	E1200	R1206	A1216	D1219	T1220	L1221	R1222	L1223	V1229	T1230	I1233	Y1241	R1242	I1243	Q1244	G1245	K1247	H1252	I1256	V1257	L1138	P1139	R1140				
Q1259	M1260	L1261	R1262	K1263	S1271	R1284	V1285	K1286	N1289	G1296	K1297	V1298	T1309	T1310	K1311	A1312	S1313	L1314	Y1186	E1187	E1188	M1189	R1194	E1200	R1206	A1216	D1219	T1220	L1221	R1222	L1223	V1229	T1230	I1233	Y1241	R1242	I1243	Q1244	G1245	K1247	H1252	I1256	V1257	L1138	P1139	R1140				



ALA  
ALA  
PRO  
GLN  
VAL  
THR  
ALA  
GLU  
ASP  
SER  
ALA  
SER  
SER  
LEU  
ALA  
GLU  
LEU  
LEU  
ASN  
ALA  
GLY  
LEU  
GLY  
GLY  
SER  
SER  
ASP  
ASN  
GLU

• Molecule 6: RNA



C1  
U11

• Molecule 7: DNA-directed RNA polymerase subunit omega



MET  
K2  
V10  
E11  
H15  
R16  
L21  
R26  
A27  
R28  
Q29  
K30  
Q31  
V32  
G33  
G34  
K35  
D36  
P37  
L38  
V39  
P40  
E41  
E42  
M43  
D44  
K45  
T46  
T47  
V48  
I49  
A50  
L51  
R52  
F53  
I54  
E55  
E56  
N61  
Q62  
L63  
L64  
D65  
V66  
R67  
E68  
R69  
Q70  
E71  
Q72  
R73  
E74  
GLN  
GLU  
ALA

ALA  
GLU  
LEU  
GLN  
ALA  
VAL  
THR  
ALA  
ILE  
ALA  
GLU  
GLY  
ARG  
ARG

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	118450	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.748	Depositor
Minimum map value	-0.393	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.018	Depositor
Recommended contour level	0.06	Depositor
Map size (Å)	347.28, 347.28, 347.28	wwPDB
Map dimensions	240, 240, 240	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.447, 1.447, 1.447	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

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	N	0.45	0/341	0.74	0/522
2	T	0.46	0/535	0.90	0/826
3	A	0.24	0/1790	0.55	0/2426
3	B	0.25	0/1794	0.59	0/2432
4	C	0.25	0/10573	0.54	0/14265
5	D	0.25	0/10554	0.56	0/14248
6	R	0.11	0/258	0.65	0/399
7	E	0.24	0/584	0.61	0/786
All	All	0.26	0/26429	0.57	0/35904

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	N	304	0	167	5	0
2	T	478	0	262	9	0
3	A	1768	0	1793	43	0
3	B	1772	0	1799	66	0
4	C	10407	0	10420	284	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	D	10397	0	10619	350	0
6	R	232	0	119	3	0
7	E	582	0	593	24	0
8	D	2	0	0	0	0
9	D	1	0	0	0	0
All	All	25943	0	25772	693	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 13.

All (693) 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)
4:C:812:PHE:CE2	5:D:451:PRO:HB3	1.56	1.40
4:C:812:PHE:CE2	5:D:451:PRO:CB	2.04	1.38
4:C:812:PHE:HE2	5:D:451:PRO:CA	1.64	1.10
4:C:812:PHE:CD2	5:D:451:PRO:HB3	1.91	1.05
5:D:1313:SER:OG	5:D:1325:PHE:CE2	2.16	0.98
4:C:812:PHE:HE2	5:D:451:PRO:CB	1.59	0.96
5:D:356:THR:O	5:D:461:PHE:CE1	2.21	0.94
4:C:812:PHE:CE2	5:D:451:PRO:HB2	2.05	0.91
3:B:182:ARG:HG3	5:D:531:LYS:HG3	1.51	0.90
5:D:1313:SER:OG	5:D:1325:PHE:HE2	1.56	0.86
5:D:583:VAL:HG22	5:D:587:LEU:HD13	1.59	0.83
5:D:93:THR:HB	5:D:97:VAL:HG21	1.60	0.83
4:C:297:VAL:HA	4:C:335:THR:HG22	1.60	0.82
4:C:1075:VAL:CG2	5:D:461:PHE:O	2.29	0.80
5:D:416:ILE:HD11	5:D:439:PRO:HB2	1.63	0.80
4:C:221:LEU:HB3	4:C:336:LEU:HD21	1.65	0.78
4:C:812:PHE:HE2	5:D:451:PRO:HA	1.48	0.78
4:C:1260:GLY:O	4:C:1264:GLN:NE2	2.16	0.78
5:D:365:GLN:HA	5:D:438:GLU:H	1.49	0.77
5:D:514:THR:HG21	5:D:596:LEU:HD12	1.67	0.77
5:D:708:ASN:OD1	5:D:709:ARG:N	2.17	0.76
3:B:83:LEU:HD11	5:D:528:THR:HA	1.66	0.76
3:A:207:THR:HG22	3:A:209:GLY:H	1.49	0.75
3:A:227:GLN:HE22	3:B:35:PHE:HB3	1.51	0.75
5:D:1313:SER:HG	5:D:1325:PHE:HE2	0.81	0.75
3:A:158:ARG:NH2	3:A:173:VAL:O	2.20	0.75
5:D:490:ILE:HD13	5:D:614:LEU:HD11	1.69	0.74
5:D:930:LEU:HD13	5:D:1244:GLN:HG3	1.69	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:850:LYS:HD2	5:D:852:GLY:H	1.52	0.74
3:A:41:ASN:ND2	4:C:1217:THR:O	2.20	0.73
4:C:677:ASN:HB3	5:D:783:LEU:HD11	1.70	0.73
4:C:812:PHE:CE2	5:D:451:PRO:CA	2.54	0.72
4:C:808:ASN:H	5:D:633:ALA:HB2	1.53	0.72
5:D:370:LYS:HE2	5:D:441:LEU:HB3	1.71	0.72
3:B:41:ASN:HB2	4:C:1216:ARG:HH22	1.55	0.72
4:C:1075:VAL:HG23	5:D:461:PHE:O	1.90	0.72
5:D:1027:VAL:HB	5:D:1122:ALA:HB3	1.71	0.71
4:C:759:SER:HG	4:C:763:THR:HG1	1.30	0.71
5:D:425:ARG:HG2	5:D:427:PRO:HD2	1.73	0.70
5:D:477:GLN:O	5:D:481:ARG:HG3	1.91	0.70
4:C:81:ASP:O	4:C:85:CYS:HB2	1.91	0.69
5:D:910:ASN:OD1	7:E:16:ARG:NH2	2.25	0.69
3:B:191:ARG:HH12	5:D:409:TRP:HB3	1.57	0.69
4:C:332:ARG:NH1	4:C:334:GLU:HG3	2.08	0.69
5:D:97:VAL:HA	5:D:100:GLU:HG3	1.74	0.68
3:B:176:CYS:SG	5:D:535:ARG:NH2	2.67	0.68
4:C:1269:ARG:HA	5:D:346:ARG:HA	1.76	0.68
5:D:1313:SER:HB2	5:D:1325:PHE:CD2	2.29	0.67
3:A:30:PRO:HB3	3:A:198:LEU:HB3	1.76	0.67
5:D:836:ARG:O	5:D:840:LEU:HB2	1.94	0.67
4:C:799:ASN:O	4:C:800:MET:HE2	1.95	0.67
4:C:1115:THR:HG23	4:C:1228:GLY:HA3	1.76	0.66
5:D:146:VAL:O	5:D:156:ARG:NH2	2.28	0.66
4:C:280:ASP:OD1	4:C:281:ASP:N	2.28	0.66
3:B:100:LEU:HD11	3:B:121:VAL:HG21	1.77	0.66
4:C:1314:GLN:OE1	7:E:28:ARG:NH1	2.29	0.66
4:C:65:ASN:HD21	4:C:107:ARG:HH21	1.42	0.66
4:C:1013:GLN:OE1	4:C:1017:GLN:NE2	2.29	0.66
2:T:11:DT:OP1	5:D:332:LYS:NZ	2.28	0.66
3:B:33:ARG:HH21	4:C:1081:PRO:HG3	1.61	0.66
5:D:431:ARG:HE	5:D:493:PRO:HG3	1.61	0.66
5:D:154:LEU:HD12	5:D:158:GLN:HB2	1.78	0.65
5:D:356:THR:O	5:D:461:PHE:CZ	2.49	0.65
5:D:984:LEU:HD23	5:D:992:LYS:HB2	1.77	0.65
3:A:166:ARG:HG3	3:A:170:ARG:NH1	2.11	0.65
4:C:806:PRO:HD2	5:D:636:GLY:HA2	1.78	0.65
3:B:35:PHE:O	3:B:38:THR:OG1	2.11	0.65
5:D:1106:ILE:HB	5:D:1123:ARG:HB2	1.79	0.65
4:C:71:VAL:HG13	4:C:72:SER:H	1.62	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:812:PHE:CZ	5:D:451:PRO:HB2	2.32	0.65
4:C:1017:GLN:O	4:C:1021:LEU:HG	1.97	0.65
3:B:41:ASN:HB2	4:C:1216:ARG:NH2	2.12	0.64
5:D:210:SER:HB2	5:D:213:LYS:HB2	1.78	0.64
1:N:18:DT:H4'	5:D:133:ARG:HH12	1.60	0.64
4:C:700:VAL:HG13	4:C:1117:LEU:HD23	1.79	0.64
7:E:67:ARG:NH1	7:E:68:GLU:HG3	2.13	0.64
4:C:1289:GLU:OE1	4:C:1315:MET:HE3	1.97	0.64
3:B:44:ARG:CZ	5:D:538:ARG:HE	2.09	0.64
4:C:471:VAL:HG11	4:C:498:ILE:HD11	1.79	0.64
4:C:811:ASN:ND2	4:C:1098:LEU:O	2.31	0.64
4:C:39:ILE:HD11	4:C:75:LEU:HD11	1.80	0.63
3:B:8:PHE:CD1	3:B:35:PHE:HE2	2.16	0.63
4:C:231:GLU:OE1	4:C:238:GLN:NE2	2.31	0.63
4:C:105:TYR:HA	4:C:113:THR:HA	1.80	0.63
4:C:811:ASN:HA	4:C:815:SER:HB3	1.80	0.63
5:D:968:ASN:HD21	5:D:972:LYS:HB2	1.63	0.63
4:C:1338:GLU:HG2	4:C:1339:LEU:H	1.63	0.63
5:D:872:LEU:HD11	5:D:880:VAL:HG21	1.78	0.63
5:D:755:ILE:HG22	5:D:757:THR:H	1.64	0.63
5:D:826:ILE:HB	5:D:994:SER:HB2	1.80	0.63
5:D:804:ALA:HA	5:D:1259:GLN:HG2	1.81	0.63
5:D:814:CYS:SG	5:D:883:ARG:NH2	2.72	0.62
5:D:518:VAL:HB	5:D:709:ARG:HD3	1.79	0.62
4:C:212:ALA:HA	4:C:359:ARG:HG3	1.79	0.62
5:D:1313:SER:CB	5:D:1325:PHE:CD2	2.82	0.62
5:D:218:THR:HA	5:D:221:ILE:HG12	1.80	0.62
4:C:1185:PRO:HB2	4:C:1188:ASP:OD1	2.00	0.62
5:D:80:HIS:CD2	5:D:83:VAL:HG11	2.35	0.62
5:D:26:SER:HB3	5:D:29:MET:HG3	1.80	0.62
5:D:85:CYS:SG	5:D:86:GLU:N	2.73	0.62
3:B:33:ARG:NH2	4:C:1081:PRO:HG3	2.15	0.62
5:D:955:LYS:HE3	5:D:1010:GLN:HE21	1.64	0.62
5:D:342:LEU:HD12	5:D:1352:ILE:HG23	1.81	0.62
5:D:533:ALA:HB1	5:D:574:VAL:HG13	1.81	0.62
4:C:521:LEU:HD11	4:C:664:GLY:HA2	1.81	0.61
3:B:195:ARG:HD3	3:B:198:LEU:HD13	1.82	0.61
4:C:841:ARG:HG2	4:C:1046:VAL:HG12	1.81	0.61
5:D:957:SER:N	5:D:985:ILE:O	2.26	0.61
5:D:974:VAL:HG11	5:D:1118:GLY:HA3	1.82	0.61
4:C:1075:VAL:HG21	5:D:461:PHE:O	1.98	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:81:ASP:O	4:C:85:CYS:CB	2.48	0.61
5:D:1028:ILE:HG21	5:D:1118:GLY:HA2	1.83	0.61
3:A:124:VAL:HG21	3:A:209:GLY:HA3	1.82	0.61
1:N:14:DC:OP1	5:D:1151:LYS:NZ	2.33	0.61
3:A:91:ARG:HE	3:A:210:THR:HA	1.66	0.60
4:C:1032:LYS:O	4:C:1036:ILE:HG12	2.01	0.60
2:T:11:DT:OP1	5:D:311:ARG:NH2	2.34	0.60
3:A:152:TYR:CE2	3:A:154:PRO:HG3	2.35	0.60
4:C:593:LYS:HB3	4:C:602:GLU:HG3	1.82	0.60
5:D:1058:SER:OG	5:D:1108:GLN:OE1	2.18	0.60
4:C:722:GLY:HA3	4:C:736:VAL:HA	1.83	0.60
5:D:841:GLY:HA3	5:D:901:ARG:HG2	1.82	0.60
3:B:107:ILE:HG13	3:B:136:GLU:HG2	1.83	0.60
4:C:233:ARG:NH2	4:C:236:LYS:O	2.35	0.60
5:D:54:ASP:HB3	5:D:60:ARG:HH22	1.66	0.60
4:C:292:ILE:HG21	4:C:322:LEU:HD21	1.83	0.60
5:D:355:ILE:HG22	5:D:447:ILE:HB	1.82	0.60
5:D:367:GLY:HA3	5:D:448:GLN:HB2	1.82	0.60
3:A:45:ARG:NH2	4:C:1084:ASP:OD1	2.33	0.60
3:A:153:VAL:O	3:A:158:ARG:NH1	2.35	0.60
5:D:356:THR:O	5:D:461:PHE:HE1	1.83	0.60
4:C:391:SER:OG	4:C:393:ASP:OD1	2.20	0.59
4:C:758:ARG:NH1	4:C:759:SER:O	2.35	0.59
4:C:1290:MET:HG3	5:D:347:VAL:HG11	1.83	0.59
5:D:390:LEU:HD22	5:D:407:VAL:HG11	1.84	0.59
4:C:52:ALA:O	4:C:56:VAL:HG22	2.01	0.59
4:C:972:PHE:HA	4:C:975:ILE:HG12	1.83	0.59
4:C:1081:PRO:HD2	4:C:1084:ASP:HB2	1.84	0.59
3:A:166:ARG:HG3	3:A:170:ARG:HH12	1.67	0.59
5:D:51:PRO:HD2	5:D:71:LEU:HD11	1.84	0.59
5:D:805:GLN:HE22	5:D:1348:LYS:HB2	1.67	0.59
4:C:1122:LYS:HG2	4:C:1229:TYR:CZ	2.38	0.59
5:D:144:TYR:HB2	5:D:160:LEU:HB3	1.85	0.59
4:C:838:CYS:HB3	4:C:1050:VAL:HB	1.85	0.58
4:C:1211:ARG:NE	4:C:1220:GLN:OE1	2.36	0.58
5:D:384:LYS:HD3	5:D:387:LEU:HD21	1.85	0.58
3:B:59:VAL:HG21	3:B:85:LEU:HD13	1.85	0.58
4:C:672:GLU:OE2	5:D:767:LEU:N	2.23	0.58
4:C:8:LYS:HA	4:C:11:ILE:HD11	1.85	0.58
4:C:243:PRO:HA	4:C:246:LEU:HG	1.84	0.58
5:D:367:GLY:N	5:D:448:GLN:O	2.34	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:534:GLU:HB3	5:D:578:ILE:HG12	1.85	0.58
7:E:31:GLN:HG2	7:E:46:THR:HG21	1.86	0.58
4:C:180:ARG:NH2	4:C:393:ASP:O	2.36	0.58
5:D:404:GLU:HA	5:D:408:VAL:HG21	1.84	0.58
5:D:412:LEU:HG	5:D:441:LEU:HD11	1.85	0.58
4:C:722:GLY:H	4:C:777:VAL:HG23	1.69	0.58
4:C:844:LYS:HE2	5:D:49:PHE:HE2	1.68	0.58
3:A:42:ALA:O	3:A:46:ILE:HG12	2.03	0.57
3:B:19:VAL:HG12	3:B:21:SER:H	1.69	0.57
4:C:866:ASP:OD2	4:C:944:ARG:NH1	2.36	0.57
4:C:366:ILE:O	4:C:370:MET:HG3	2.05	0.57
4:C:1271:GLY:N	4:C:1274:GLU:OE1	2.36	0.57
5:D:245:LEU:HD12	5:D:246:PRO:HD2	1.86	0.57
5:D:1153:PRO:O	5:D:1194:ARG:NH1	2.37	0.57
3:B:192:VAL:HG23	3:B:195:ARG:HH21	1.69	0.57
5:D:584:PRO:HG2	5:D:587:LEU:HD11	1.86	0.57
4:C:1313:HIS:HD2	5:D:474:LEU:HB2	1.69	0.57
2:T:3:DG:N3	2:T:4:DT:N3	2.52	0.57
4:C:38:PHE:HB2	4:C:457:GLY:HA2	1.86	0.57
4:C:803:ALA:HB2	4:C:1227:VAL:HG23	1.87	0.57
5:D:147:ILE:HA	5:D:156:ARG:HH22	1.68	0.57
4:C:301:TYR:HH	4:C:334:GLU:H	1.51	0.57
4:C:1246:ARG:HH11	4:C:1266:GLY:HA2	1.69	0.57
5:D:213:LYS:O	5:D:217:LEU:HG	2.05	0.57
2:T:18:DG:H3'	2:T:19:DT:H5''	1.87	0.57
5:D:245:LEU:HD11	5:D:249:LEU:HD23	1.87	0.57
5:D:885:VAL:HG13	5:D:894:VAL:HG11	1.85	0.57
5:D:823:THR:O	5:D:838:ARG:NH1	2.37	0.57
3:B:61:ILE:HB	3:B:64:VAL:HB	1.87	0.56
4:C:1240:ASP:O	4:C:1262:LYS:NZ	2.37	0.56
5:D:1178:THR:HA	5:D:1184:ASP:HB3	1.85	0.56
5:D:1252:HIS:O	5:D:1256:ILE:HG12	2.04	0.56
3:A:104:LYS:HG2	3:A:110:VAL:HG22	1.86	0.56
3:B:181:GLU:HB3	5:D:531:LYS:HD3	1.87	0.56
4:C:1331:ARG:HG3	5:D:33:TRP:CZ3	2.40	0.56
5:D:264:ASP:OD2	5:D:325:LYS:NZ	2.29	0.56
5:D:850:LYS:HD2	5:D:852:GLY:N	2.19	0.56
5:D:686:TRP:CG	5:D:758:PRO:HG2	2.40	0.56
5:D:737:ILE:HD13	5:D:740:LEU:HD12	1.86	0.56
5:D:986:ASP:OD1	5:D:990:ARG:N	2.39	0.56
5:D:114:ILE:HD11	5:D:304:ASP:HA	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:357:VAL:HG22	5:D:461:PHE:CE2	2.40	0.56
5:D:481:ARG:HH22	7:E:45:LYS:HZ1	1.52	0.56
5:D:972:LYS:HB3	5:D:1002:VAL:HG13	1.88	0.56
3:B:74:VAL:HG12	3:B:76:GLU:H	1.70	0.56
5:D:686:TRP:CD2	5:D:758:PRO:HG2	2.41	0.56
4:C:66:SER:HB2	4:C:479:LEU:HD11	1.88	0.56
4:C:731:ARG:NH2	4:C:962:GLU:OE2	2.38	0.56
5:D:66:LYS:HG3	5:D:69:GLU:HB2	1.87	0.56
5:D:80:HIS:NE2	5:D:83:VAL:HG11	2.21	0.56
5:D:1313:SER:CB	5:D:1325:PHE:CE2	2.89	0.56
4:C:245:ARG:HB3	4:C:337:PHE:CZ	2.41	0.55
4:C:798:GLN:NE2	4:C:827:ARG:O	2.39	0.55
3:B:65:LEU:HA	3:B:169:GLY:HA2	1.88	0.55
4:C:230:PHE:CE2	4:C:335:THR:HG21	2.40	0.55
5:D:609:TYR:HB2	5:D:617:THR:HG21	1.88	0.55
5:D:699:ASP:OD1	5:D:702:GLN:NE2	2.37	0.55
4:C:317:LEU:HA	4:C:321:LEU:HD12	1.88	0.55
3:B:37:HIS:O	4:C:1216:ARG:NH2	2.39	0.55
4:C:413:GLU:HG3	4:C:415:GLU:H	1.70	0.55
4:C:964:LEU:HA	4:C:967:LEU:HG	1.88	0.55
4:C:672:GLU:CD	5:D:767:LEU:H	2.08	0.55
4:C:1291:LEU:HA	5:D:345:LYS:HD2	1.88	0.55
3:B:37:HIS:CE1	4:C:1216:ARG:HE	2.25	0.55
3:B:174:ASP:OD1	3:B:174:ASP:N	2.40	0.55
4:C:174:ALA:HB2	4:C:432:LEU:HD13	1.89	0.55
5:D:91:GLU:OE1	5:D:101:ARG:NH2	2.37	0.55
5:D:1263:LYS:NZ	5:D:1315:ALA:O	2.33	0.55
4:C:521:LEU:HD23	4:C:686:GLN:HG2	1.89	0.55
5:D:481:ARG:HH12	7:E:45:LYS:HZ1	1.54	0.55
4:C:802:VAL:HG23	4:C:1098:LEU:HD13	1.88	0.55
5:D:424:ASN:N	5:D:467:ALA:O	2.36	0.55
5:D:697:MET:HE1	5:D:738:ARG:HA	1.89	0.55
5:D:975:ILE:HD13	5:D:980:THR:HG21	1.89	0.55
7:E:44:ASP:HB3	7:E:48:VAL:HB	1.88	0.55
4:C:93:SER:HA	4:C:128:PRO:HA	1.89	0.54
5:D:1028:ILE:HD13	5:D:1118:GLY:HA2	1.88	0.54
5:D:1206:ARG:HH21	5:D:1223:LEU:HD23	1.71	0.54
5:D:842:ARG:HB3	5:D:882:VAL:HG21	1.89	0.54
4:C:272:ARG:O	4:C:275:ARG:HG3	2.07	0.54
5:D:69:GLU:OE1	5:D:76:LYS:HG3	2.06	0.54
4:C:93:SER:OG	4:C:126:GLU:HG2	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:510:LEU:HD22	5:D:601:ILE:HD12	1.89	0.54
4:C:143:ARG:NH2	4:C:512:SER:O	2.41	0.54
5:D:74:LYS:HE3	5:D:86:GLU:HG3	1.90	0.54
3:B:8:PHE:CG	3:B:35:PHE:HE2	2.26	0.54
4:C:1275:VAL:HG13	4:C:1287:LEU:HD11	1.89	0.54
5:D:1313:SER:OG	5:D:1325:PHE:CD2	2.52	0.54
5:D:812:ASP:O	5:D:897:HIS:ND1	2.40	0.54
7:E:65:ASP:OD1	7:E:69:ARG:NH2	2.34	0.54
4:C:33:ASP:OD1	4:C:34:SER:N	2.40	0.54
4:C:1002:LEU:HD21	4:C:1007:LYS:HG3	1.90	0.54
5:D:429:LEU:HD11	5:D:925:GLU:HA	1.90	0.54
3:B:212:ASP:OD1	3:B:213:PRO:HD2	2.08	0.53
5:D:211:GLU:O	5:D:215:LYS:HE2	2.09	0.53
5:D:615:LYS:HB2	5:D:616:PRO:HD3	1.90	0.53
5:D:591:ILE:O	5:D:594:GLN:NE2	2.42	0.53
5:D:733:SER:H	5:D:736:GLN:HB3	1.73	0.53
5:D:863:LEU:HD13	5:D:908:ILE:HG13	1.91	0.53
5:D:978:ARG:HG2	5:D:999:TYR:HB2	1.91	0.53
4:C:1102:GLY:HA2	4:C:1106:ARG:HH21	1.74	0.53
5:D:368:LEU:HD22	5:D:373:ALA:HB2	1.91	0.53
5:D:481:ARG:NH2	7:E:45:LYS:HZ1	2.07	0.53
5:D:967:VAL:HG22	5:D:973:LEU:HD21	1.89	0.53
2:T:22:DG:O6	6:R:1:C:N4	2.39	0.53
4:C:50:GLU:HG2	4:C:73:TYR:HE1	1.74	0.53
4:C:446:ASP:O	4:C:451:ARG:NH2	2.42	0.53
4:C:820:GLU:O	4:C:824:GLN:HG2	2.09	0.53
5:D:416:ILE:CD1	5:D:439:PRO:HB2	2.36	0.53
5:D:663:GLU:O	5:D:666:GLU:HG3	2.08	0.53
7:E:61:ASN:OD1	7:E:62:GLN:N	2.41	0.53
4:C:732:ILE:HG21	4:C:783:LEU:HD23	1.91	0.53
5:D:885:VAL:HG12	5:D:1258:ARG:HD2	1.90	0.52
4:C:71:VAL:HG13	4:C:72:SER:N	2.24	0.52
5:D:211:GLU:HG2	5:D:215:LYS:NZ	2.25	0.52
5:D:679:TYR:OH	5:D:754:ILE:O	2.23	0.52
5:D:1163:VAL:HG22	5:D:1177:ILE:HG12	1.92	0.52
4:C:517:GLN:HG3	4:C:759:SER:HB2	1.90	0.52
3:B:37:HIS:CD2	4:C:1216:ARG:HH21	2.27	0.52
5:D:413:ASP:O	5:D:416:ILE:HG22	2.09	0.52
5:D:582:ILE:O	5:D:582:ILE:HG13	2.09	0.52
4:C:211:ARG:NH2	4:C:217:THR:OG1	2.36	0.52
4:C:378:ARG:NH2	4:C:379:GLU:OE2	2.43	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:802:VAL:O	4:C:1228:GLY:N	2.41	0.52
4:C:876:GLU:OE1	4:C:927:THR:OG1	2.26	0.52
4:C:976:ARG:HA	4:C:979:LEU:HG	1.92	0.52
5:D:675:ALA:HA	5:D:678:ARG:HG2	1.91	0.52
3:A:182:ARG:HB2	4:C:1091:GLY:O	2.10	0.52
4:C:864:LYS:NZ	4:C:881:ASP:OD2	2.43	0.52
4:C:1242:LYS:HG2	5:D:465:GLN:HE21	1.75	0.52
4:C:1313:HIS:CD2	5:D:474:LEU:HB2	2.45	0.52
5:D:644:MET:O	5:D:764:ARG:NH1	2.43	0.52
5:D:1361:THR:HG23	7:E:21:LEU:HD21	1.91	0.52
7:E:64:LEU:O	7:E:67:ARG:NH1	2.43	0.52
3:A:225:ALA:HB2	3:B:228:LEU:HB3	1.91	0.52
5:D:1322:ALA:HB1	5:D:1331:VAL:HG11	1.91	0.52
3:B:87:GLY:O	3:B:128:HIS:NE2	2.43	0.51
4:C:971:LEU:HD22	4:C:974:ARG:NH1	2.25	0.51
4:C:1288:GLN:NE2	4:C:1292:THR:OG1	2.42	0.51
3:B:86:LYS:NZ	3:B:174:ASP:OD2	2.42	0.51
4:C:930:ASP:OD1	4:C:1053:TYR:HB2	2.09	0.51
5:D:65:VAL:HG12	5:D:98:ARG:NH1	2.25	0.51
5:D:1137:GLY:H	5:D:1140:ARG:HB3	1.74	0.51
3:B:8:PHE:CD1	3:B:35:PHE:CE2	2.97	0.51
4:C:102:LEU:HD23	4:C:117:ILE:HD11	1.92	0.51
5:D:1067:ARG:HH11	5:D:1072:LYS:HE2	1.76	0.51
4:C:9:LYS:O	4:C:1175:ASN:ND2	2.44	0.51
5:D:481:ARG:NH1	7:E:45:LYS:HZ1	2.09	0.51
4:C:34:SER:HG	4:C:457:GLY:H	1.59	0.51
5:D:1145:PHE:HB3	5:D:1309:ILE:HD11	1.93	0.51
4:C:33:ASP:O	4:C:36:GLN:HG3	2.10	0.51
5:D:826:ILE:HG21	5:D:993:GLU:HA	1.93	0.51
4:C:358:ASP:N	4:C:358:ASP:OD1	2.44	0.51
4:C:588:GLU:OE2	4:C:606:LEU:N	2.44	0.51
4:C:595:THR:OG1	4:C:598:VAL:O	2.23	0.51
4:C:812:PHE:CE2	5:D:451:PRO:HA	2.37	0.51
4:C:1148:ALA:HA	4:C:1151:LEU:HD23	1.92	0.51
3:B:77:ASP:OD1	3:B:78:ILE:N	2.39	0.50
4:C:225:PHE:CE2	4:C:347:ILE:HB	2.47	0.50
4:C:633:LEU:HD11	4:C:644:LEU:HD13	1.93	0.50
4:C:697:LYS:HD2	4:C:1181:PRO:HG3	1.92	0.50
5:D:530:PRO:HB2	5:D:581:MET:HE3	1.94	0.50
4:C:976:ARG:O	4:C:980:VAL:HG23	2.12	0.50
4:C:1134:GLN:NE2	4:C:1136:GLN:HB2	2.26	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:E:64:LEU:O	7:E:67:ARG:HD3	2.11	0.50
3:A:227:GLN:NE2	3:B:35:PHE:HB3	2.23	0.50
3:B:191:ARG:HA	3:B:195:ARG:HD2	1.92	0.50
4:C:592:ARG:HG3	4:C:655:VAL:HG22	1.93	0.50
5:D:530:PRO:HB3	5:D:577:ALA:HB1	1.93	0.50
4:C:971:LEU:HD22	4:C:974:ARG:HH12	1.77	0.50
4:C:1143:GLU:OE1	4:C:1147:ARG:NH1	2.44	0.50
4:C:1283:ALA:HB1	4:C:1286:THR:HG22	1.94	0.50
5:D:474:LEU:HD21	7:E:27:ALA:HB1	1.94	0.49
2:T:23:DG:N2	6:R:1:C:O2	2.44	0.49
7:E:45:LYS:HE3	7:E:47:THR:HB	1.94	0.49
5:D:1221:LEU:HD13	5:D:1229:VAL:HG11	1.94	0.49
3:A:45:ARG:NH2	4:C:1216:ARG:HA	2.28	0.49
4:C:844:LYS:HE2	5:D:49:PHE:CE2	2.47	0.49
4:C:1298:VAL:O	4:C:1301:ARG:HG2	2.12	0.49
5:D:964:LYS:HD2	5:D:977:SER:HB3	1.94	0.49
5:D:749:LYS:HD3	5:D:753:SER:HB2	1.95	0.49
3:A:43:LEU:HD13	3:A:217:ILE:HD11	1.95	0.49
4:C:239:MET:HG3	4:C:287:VAL:HG11	1.95	0.49
5:D:612:LEU:HD21	5:D:616:PRO:HG2	1.94	0.49
5:D:1286:LYS:HA	5:D:1289:ASN:HD21	1.78	0.49
4:C:452:ARG:NH2	4:C:458:GLU:OE1	2.46	0.49
4:C:618:GLN:OE1	4:C:635:THR:OG1	2.30	0.49
5:D:188:LEU:O	5:D:192:MET:HE2	2.13	0.49
5:D:217:LEU:O	5:D:221:ILE:HG23	2.13	0.49
3:A:33:ARG:HH22	3:A:196:THR:HB	1.77	0.49
4:C:338:THR:HG22	4:C:345:PRO:HB3	1.94	0.49
5:D:86:GLU:OE2	5:D:87:LYS:HG3	2.13	0.49
4:C:247:ARG:NH2	4:C:342:ASP:OD1	2.46	0.48
5:D:413:ASP:HA	5:D:416:ILE:HG22	1.94	0.48
5:D:54:ASP:H	5:D:60:ARG:HH12	1.60	0.48
4:C:225:PHE:HB2	4:C:336:LEU:HD22	1.95	0.48
4:C:804:PHE:HE1	4:C:1098:LEU:HD22	1.78	0.48
4:C:946:LEU:O	4:C:949:GLU:HG2	2.12	0.48
5:D:317:THR:HG22	5:D:319:SER:H	1.78	0.48
5:D:552:ILE:HG22	5:D:553:THR:N	2.28	0.48
5:D:1373:ARG:HG2	5:D:1373:ARG:HH11	1.78	0.48
5:D:951:GLN:O	5:D:995:TYR:OH	2.25	0.48
5:D:1189:MET:HG3	5:D:1189:MET:O	2.13	0.48
5:D:844:THR:HA	5:D:882:VAL:HA	1.94	0.48
5:D:850:LYS:N	5:D:855:ASP:O	2.40	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:345:PRO:HB2	4:C:348:SER:HB3	1.95	0.48
4:C:521:LEU:HD22	4:C:667:LEU:HD22	1.95	0.48
4:C:528:ARG:NH2	4:C:575:LEU:O	2.47	0.48
3:B:197:ASP:OD1	3:B:197:ASP:N	2.42	0.48
4:C:1217:THR:OG1	4:C:1219:GLU:OE1	2.25	0.48
4:C:1223:ARG:NH2	5:D:721:SER:OG	2.46	0.48
4:C:314:ASN:HD22	4:C:351:LEU:HB3	1.78	0.48
5:D:886:VAL:HA	5:D:1258:ARG:HG3	1.96	0.48
4:C:154:GLY:N	4:C:177:ILE:O	2.47	0.48
5:D:22:ILE:O	5:D:1339:GLY:HA2	2.14	0.48
3:A:111:THR:HG23	3:A:113:ALA:H	1.79	0.48
3:B:92:VAL:HG13	3:B:95:LYS:HG3	1.96	0.48
4:C:1019:ASP:O	4:C:1023:HIS:ND1	2.47	0.48
5:D:68:TYR:HE1	5:D:93:THR:O	1.96	0.48
5:D:759:ILE:HD12	5:D:771:GLN:HB3	1.95	0.48
4:C:339:ASN:HB3	4:C:343:HIS:H	1.79	0.47
5:D:23:ALA:HB1	5:D:232:ASN:HD21	1.78	0.47
5:D:423:LEU:HA	5:D:468:VAL:HA	1.95	0.47
5:D:816:THR:OG1	5:D:883:ARG:NH2	2.43	0.47
3:B:29:GLU:HB2	3:B:30:PRO:HD3	1.95	0.47
5:D:42:GLU:HB2	5:D:52:GLU:HG2	1.96	0.47
5:D:650:LYS:O	5:D:653:ILE:HG22	2.14	0.47
5:D:805:GLN:OE1	5:D:1348:LYS:N	2.40	0.47
7:E:45:LYS:O	7:E:49:ILE:HD12	2.14	0.47
3:B:45:ARG:HG2	5:D:538:ARG:HH22	1.80	0.47
4:C:390:PHE:HA	4:C:419:ILE:HD12	1.96	0.47
4:C:802:VAL:N	4:C:1228:GLY:O	2.40	0.47
5:D:528:THR:OG1	5:D:532:GLU:HG3	2.15	0.47
5:D:563:LEU:HD23	5:D:563:LEU:H	1.79	0.47
4:C:275:ARG:O	4:C:278:GLU:HG3	2.14	0.47
5:D:254:PRO:HA	5:D:260:PHE:HA	1.96	0.47
3:B:83:LEU:HD12	5:D:528:THR:HG22	1.96	0.47
3:B:112:ALA:HB3	3:B:126:PRO:HA	1.96	0.47
4:C:185:ASP:OD2	4:C:200:ARG:NE	2.48	0.47
5:D:409:TRP:HA	5:D:409:TRP:CE3	2.48	0.47
5:D:993:GLU:HB3	5:D:995:TYR:HE1	1.79	0.47
5:D:25:ALA:HB1	5:D:30:ILE:HD11	1.96	0.47
5:D:220:ARG:O	5:D:224:LEU:HD23	2.14	0.47
5:D:744:ARG:NH2	5:D:767:LEU:HD11	2.29	0.47
5:D:973:LEU:HB2	5:D:1003:LEU:HB3	1.96	0.47
4:C:6:THR:HG21	4:C:781:ASP:OD2	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:210:LEU:HD21	4:C:429:MET:SD	2.54	0.47
4:C:714:VAL:HB	4:C:787:PRO:HD2	1.97	0.47
4:C:57:PHE:CE1	4:C:468:LEU:HD21	2.49	0.47
4:C:316:GLU:OE2	4:C:352:ARG:NH2	2.48	0.47
4:C:813:GLU:OE2	5:D:460:ASP:HA	2.14	0.47
5:D:892:PHE:HZ	5:D:1284:ARG:HH22	1.63	0.47
4:C:788:SER:HB2	4:C:796:LEU:HA	1.97	0.47
4:C:1244:HIS:NE2	4:C:1266:GLY:O	2.40	0.47
4:C:673:HIS:O	4:C:1109:ILE:HG22	2.15	0.47
3:B:156:SER:HA	3:B:159:ILE:HG22	1.97	0.46
4:C:941:LYS:HB3	4:C:945:ALA:HB3	1.97	0.46
4:C:1010:GLN:O	4:C:1013:GLN:HG3	2.14	0.46
5:D:1230:THR:HA	5:D:1233:ILE:HG22	1.97	0.46
3:A:83:LEU:HD22	4:C:694:ARG:HH22	1.79	0.46
4:C:221:LEU:HD13	4:C:336:LEU:HD11	1.96	0.46
4:C:699:LEU:HD11	4:C:799:ASN:HD22	1.79	0.46
5:D:955:LYS:HD2	5:D:1011:VAL:O	2.15	0.46
3:B:191:ARG:HH22	5:D:409:TRP:HB3	1.80	0.46
5:D:185:ILE:O	5:D:189:LEU:HD23	2.15	0.46
5:D:369:PRO:HD3	5:D:447:ILE:HD13	1.98	0.46
5:D:1327:GLU:OE2	5:D:1330:ARG:NH1	2.49	0.46
3:B:207:THR:HG23	3:B:213:PRO:HG3	1.97	0.46
4:C:119:GLU:HB2	4:C:489:PRO:HG2	1.98	0.46
4:C:415:GLU:HG3	4:C:416:GLY:H	1.81	0.46
5:D:18:ASP:N	5:D:18:ASP:OD1	2.48	0.46
5:D:849:LEU:H	5:D:849:LEU:HD23	1.80	0.46
4:C:1270:PHE:CE1	4:C:1274:GLU:HG2	2.51	0.46
4:C:1082:ILE:HG23	4:C:1093:PRO:HG2	1.98	0.46
4:C:231:GLU:HB2	4:C:238:GLN:HE21	1.79	0.46
4:C:930:ASP:OD1	4:C:930:ASP:N	2.48	0.46
5:D:493:PRO:HA	5:D:903:LEU:HB3	1.98	0.46
5:D:751:ASP:OD1	5:D:752:GLY:N	2.48	0.46
3:A:95:LYS:HD2	3:A:95:LYS:HA	1.73	0.46
3:B:29:GLU:HA	3:B:200:LYS:HG3	1.97	0.46
3:B:102:LEU:HB2	3:B:115:ILE:HG12	1.97	0.46
3:B:152:TYR:CZ	5:D:536:LEU:HD11	2.50	0.46
4:C:93:SER:HB3	4:C:126:GLU:OE1	2.16	0.46
4:C:148:GLN:OE1	4:C:150:HIS:HB3	2.16	0.46
5:D:330:MET:O	5:D:336:GLY:HA2	2.15	0.46
5:D:1109:LEU:HD23	5:D:1113:VAL:HB	1.97	0.46
7:E:67:ARG:HA	7:E:70:GLN:HG2	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:18:GLN:NE2	3:A:20:SER:O	2.48	0.46
4:C:1088:ASP:OD1	4:C:1088:ASP:N	2.49	0.46
4:C:1247:SER:HA	5:D:349:TYR:HA	1.98	0.46
5:D:407:VAL:HA	5:D:410:ASP:OD2	2.16	0.46
2:T:21:DC:H4'	2:T:22:DG:OP1	2.16	0.46
5:D:120:LEU:HD12	5:D:1330:ARG:HH21	1.80	0.46
5:D:259:ARG:HE	5:D:260:PHE:H	1.64	0.46
5:D:735:ALA:HA	5:D:738:ARG:HH11	1.81	0.46
5:D:865:HIS:CE1	5:D:867:GLN:HB3	2.51	0.46
3:A:194:GLN:OE1	3:A:194:GLN:N	2.49	0.45
4:C:593:LYS:HD2	4:C:652:TYR:HE1	1.81	0.45
5:D:201:LEU:HD11	5:D:220:ARG:NH1	2.32	0.45
5:D:285:LEU:HD23	5:D:285:LEU:H	1.80	0.45
5:D:684:ASP:OD1	5:D:685:ILE:N	2.49	0.45
1:N:17:DA:H2	2:T:7:DT:H3	1.62	0.45
3:A:28:LEU:HB2	3:A:201:LEU:HB3	1.97	0.45
3:A:45:ARG:HH21	4:C:1216:ARG:HA	1.79	0.45
4:C:516:ASP:OD1	4:C:516:ASP:N	2.48	0.45
5:D:1164:SER:HA	5:D:1200:GLU:HG2	1.98	0.45
4:C:828:PHE:HB3	4:C:1060:ILE:HD11	1.97	0.45
5:D:580:TRP:O	5:D:583:VAL:HG12	2.16	0.45
7:E:50:ALA:O	7:E:54:ILE:HG12	2.17	0.45
5:D:200:GLN:O	5:D:204:GLU:HG2	2.17	0.45
5:D:772:TYR:O	5:D:776:THR:OG1	2.27	0.45
5:D:1271:SER:OG	5:D:1298:VAL:O	2.30	0.45
4:C:153:PRO:HG2	4:C:179:TYR:HD1	1.82	0.45
4:C:706:ARG:HG3	4:C:793:GLU:HG2	1.99	0.45
4:C:1105:SER:HB2	5:D:731:ARG:HH11	1.82	0.45
3:A:152:TYR:CZ	3:A:154:PRO:HG3	2.52	0.45
4:C:395:TYR:HE2	4:C:420:LEU:H	1.64	0.45
5:D:115:TRP:CZ2	5:D:1329:THR:HG22	2.52	0.45
5:D:1044:GLN:O	5:D:1045:THR:HG22	2.17	0.45
7:E:71:GLU:HA	7:E:74:GLU:HG2	1.99	0.45
3:A:11:PRO:HA	3:A:29:GLU:HB2	1.99	0.45
5:D:370:LYS:HG2	5:D:409:TRP:CZ3	2.51	0.45
3:A:58:GLU:CD	3:A:170:ARG:HH21	2.20	0.45
4:C:1051:LYS:HD3	4:C:1053:TYR:CE1	2.52	0.45
5:D:1285:VAL:O	5:D:1289:ASN:ND2	2.50	0.45
3:B:31:LEU:O	3:B:198:LEU:HD23	2.17	0.45
4:C:82:VAL:O	4:C:86:GLN:HG3	2.17	0.45
5:D:29:MET:SD	5:D:30:ILE:HG13	2.57	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:842:ARG:HA	5:D:900:GLY:HA3	1.99	0.45
3:A:150:ARG:HB2	3:B:5:VAL:HG23	1.97	0.44
3:B:29:GLU:HG2	3:B:200:LYS:HD2	1.99	0.44
4:C:176:ILE:HD11	4:C:428:VAL:HG11	2.00	0.44
4:C:696:ASP:O	4:C:795:ALA:HB1	2.17	0.44
3:B:195:ARG:HB2	3:B:198:LEU:HD13	2.00	0.44
4:C:186:PHE:CE2	4:C:429:MET:HG2	2.52	0.44
4:C:1280:ALA:HB1	5:D:918:ILE:HD13	2.00	0.44
1:N:16:DC:H2''	1:N:17:DA:C8	2.52	0.44
4:C:675:ASP:HB3	4:C:678:ARG:HG2	2.00	0.44
4:C:359:ARG:NH1	4:C:382:GLU:OE1	2.51	0.44
4:C:560:PRO:HB2	5:D:776:THR:HG21	2.00	0.44
4:C:578:TYR:HB3	4:C:590:PRO:HG2	2.00	0.44
4:C:937:ASP:OD1	4:C:937:ASP:N	2.50	0.44
5:D:551:ARG:HG2	5:D:569:LEU:HB3	1.99	0.44
5:D:116:PHE:HB3	5:D:124:ILE:HG13	1.98	0.44
3:A:219:ARG:HA	3:A:222:THR:HG22	1.98	0.44
4:C:642:SER:HB2	5:D:770:LEU:HD11	1.98	0.44
4:C:1331:ARG:HG2	5:D:102:MET:HE1	1.99	0.44
5:D:1350:ASN:HA	5:D:1353:VAL:HG22	2.00	0.44
4:C:803:ALA:HA	4:C:1227:VAL:HA	2.00	0.44
4:C:1270:PHE:HA	4:C:1274:GLU:OE1	2.16	0.44
5:D:319:SER:OG	5:D:320:ASN:N	2.48	0.44
4:C:521:LEU:HD12	4:C:521:LEU:HA	1.85	0.44
3:B:158:ARG:NH1	3:B:173:VAL:O	2.51	0.44
4:C:225:PHE:CZ	4:C:345:PRO:HA	2.53	0.44
4:C:269:ILE:HG23	4:C:273:HIS:HB2	2.00	0.44
4:C:314:ASN:ND2	4:C:351:LEU:HB3	2.33	0.44
5:D:36:GLY:HA3	5:D:61:ILE:HG12	1.99	0.44
5:D:167:ASP:O	5:D:170:GLU:HG3	2.17	0.44
3:A:61:ILE:HB	3:A:64:VAL:HB	2.00	0.43
3:B:156:SER:O	3:B:160:HIS:ND1	2.43	0.43
3:B:191:ARG:NH1	5:D:409:TRP:HB3	2.30	0.43
4:C:65:ASN:ND2	4:C:107:ARG:HH21	2.12	0.43
4:C:565:GLU:HA	4:C:569:ILE:HG12	1.98	0.43
4:C:1333:LEU:HG	4:C:1334:GLY:H	1.83	0.43
5:D:112:ALA:HA	5:D:238:ILE:HD11	2.00	0.43
5:D:673:VAL:HB	5:D:677:GLU:HG3	2.00	0.43
5:D:692:ARG:O	5:D:695:LYS:HG3	2.17	0.43
4:C:291:TYR:HE1	4:C:295:LYS:HE2	1.83	0.43
4:C:994:ARG:HG3	4:C:997:TRP:CH2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:N:18:DT:H4'	5:D:133:ARG:NH1	2.29	0.43
4:C:275:ARG:HA	4:C:278:GLU:HG3	2.00	0.43
5:D:1216:ALA:HB3	5:D:1219:ASP:HB2	2.00	0.43
4:C:829:THR:HG23	4:C:1059:ARG:HG2	2.00	0.43
5:D:449:LEU:H	5:D:449:LEU:HD23	1.83	0.43
3:A:182:ARG:HD2	3:A:182:ARG:O	2.18	0.43
5:D:192:MET:HB2	5:D:197:GLU:OE2	2.19	0.43
5:D:528:THR:OG1	5:D:529:GLY:N	2.51	0.43
3:A:35:PHE:O	3:A:39:LEU:HD23	2.19	0.43
3:B:19:VAL:HB	3:B:23:HIS:HB3	2.01	0.43
3:B:224:LEU:O	3:B:228:LEU:HD23	2.19	0.43
4:C:231:GLU:CB	4:C:238:GLN:HE21	2.31	0.43
4:C:489:PRO:HA	4:C:492:MET:HG3	2.00	0.43
4:C:1184:THR:HG23	4:C:1184:THR:O	2.19	0.43
3:A:12:ARG:H	3:A:29:GLU:HB2	1.84	0.43
5:D:363:LEU:HD23	5:D:622:ASP:HB2	2.00	0.43
5:D:805:GLN:NE2	5:D:1348:LYS:HB2	2.34	0.43
5:D:902:ASP:HB2	5:D:909:ILE:HA	2.01	0.43
3:A:85:LEU:HD21	3:A:144:ILE:HD12	2.00	0.43
4:C:842:ASP:HA	4:C:847:PRO:HA	2.01	0.43
5:D:211:GLU:HG2	5:D:215:LYS:HZ1	1.82	0.43
5:D:235:GLU:HA	5:D:238:ILE:HG22	2.01	0.43
5:D:530:PRO:HB2	5:D:581:MET:CE	2.48	0.43
5:D:986:ASP:HB3	5:D:992:LYS:HD2	2.01	0.43
5:D:1074:LEU:HG	5:D:1075:ARG:H	1.83	0.43
5:D:1138:LEU:HB3	5:D:1139:PRO:HD3	2.01	0.43
5:D:1356:LEU:HD23	5:D:1362:GLY:HA2	2.01	0.43
4:C:339:ASN:OD1	4:C:340:ASP:N	2.51	0.43
4:C:1103:VAL:HB	4:C:1104:PRO:HD3	2.00	0.43
5:D:181:GLY:O	5:D:185:ILE:HG12	2.19	0.43
2:T:14:DA:H1'	5:D:794:GLY:HA3	2.00	0.43
3:B:180:VAL:O	5:D:535:ARG:NH1	2.52	0.43
4:C:547:VAL:HG23	4:C:548:ARG:HD2	2.00	0.43
4:C:734:ILE:HB	4:C:749:ASP:HB2	2.00	0.43
3:B:32:GLU:OE2	3:B:35:PHE:CD2	2.72	0.42
4:C:994:ARG:HA	4:C:997:TRP:CE2	2.54	0.42
4:C:1177:ARG:HG3	4:C:1178:LYS:HG3	2.00	0.42
5:D:50:LYS:NZ	5:D:71:LEU:HG	2.34	0.42
5:D:57:PHE:HD1	5:D:247:PRO:HB3	1.83	0.42
5:D:327:LEU:O	5:D:330:MET:HG3	2.19	0.42
5:D:800:LEU:HD11	5:D:1145:PHE:CD2	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:800:LEU:HD23	5:D:800:LEU:HA	1.81	0.42
5:D:1028:ILE:HD13	5:D:1118:GLY:CA	2.48	0.42
5:D:1328:THR:O	5:D:1332:LEU:HD13	2.18	0.42
3:A:69:SER:OG	3:A:70:THR:N	2.51	0.42
3:B:65:LEU:HD23	3:B:65:LEU:H	1.84	0.42
5:D:355:ILE:HG13	5:D:461:PHE:CD1	2.53	0.42
5:D:1311:LYS:HB3	5:D:1311:LYS:HE3	1.82	0.42
4:C:1109:ILE:HD12	4:C:1109:ILE:HA	1.93	0.42
4:C:299:LYS:HG3	4:C:301:TYR:CE2	2.55	0.42
4:C:1333:LEU:HD21	5:D:115:TRP:CH2	2.55	0.42
5:D:531:LYS:O	5:D:534:GLU:HG3	2.19	0.42
5:D:926:PRO:HB2	5:D:1241:TYR:HE1	1.84	0.42
5:D:1148:ARG:HH12	5:D:1151:LYS:HD2	1.83	0.42
3:A:71:LYS:HB3	3:A:71:LYS:HE2	1.85	0.42
4:C:149:LEU:HD21	4:C:451:ARG:HH11	1.84	0.42
4:C:686:GLN:HE21	4:C:796:LEU:HD13	1.85	0.42
5:D:1108:GLN:HB2	5:D:1123:ARG:NH2	2.35	0.42
3:A:99:ILE:HD11	3:A:143:ARG:HB3	2.01	0.42
4:C:924:VAL:HG13	4:C:924:VAL:O	2.19	0.42
5:D:196:GLN:O	5:D:199:GLU:HG3	2.19	0.42
5:D:377:PHE:O	5:D:381:ILE:HG12	2.19	0.42
5:D:490:ILE:O	5:D:499:ILE:HG22	2.20	0.42
3:A:81:ILE:HG12	3:A:131:CYS:HB3	2.01	0.42
3:B:48:LEU:HD23	5:D:538:ARG:HD2	2.01	0.42
4:C:217:THR:HG21	4:C:313:ALA:HB1	2.02	0.42
4:C:1061:GLN:O	4:C:1076:ILE:HD11	2.19	0.42
5:D:355:ILE:HG21	5:D:466:MET:HG3	2.01	0.42
5:D:1034:PHE:HD2	5:D:1083:ALA:HA	1.84	0.42
4:C:98:VAL:O	4:C:122:VAL:HG12	2.19	0.42
5:D:418:GLU:HG3	7:E:45:LYS:HB3	2.01	0.42
5:D:681:LYS:HA	5:D:684:ASP:OD2	2.20	0.42
5:D:747:MET:SD	5:D:747:MET:N	2.92	0.42
3:A:227:GLN:HE22	3:B:35:PHE:CB	2.26	0.42
4:C:528:ARG:NH1	4:C:576:SER:O	2.47	0.42
4:C:934:PHE:HB3	4:C:1040:ASP:OD2	2.20	0.42
4:C:1109:ILE:HD11	5:D:644:MET:SD	2.60	0.42
5:D:440:VAL:O	5:D:442:ILE:HG12	2.20	0.42
5:D:532:GLU:H	5:D:532:GLU:HG2	1.67	0.42
4:C:80:PHE:CD2	4:C:90:VAL:HG11	2.54	0.42
4:C:551:HIS:CE1	4:C:553:THR:HG23	2.55	0.42
4:C:813:GLU:HA	5:D:504:GLN:NE2	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:888:CYS:HB2	5:D:898:CYS:SG	2.60	0.42
3:A:97:GLU:HB3	3:A:147:GLN:NE2	2.35	0.41
4:C:758:ARG:CD	4:C:835:GLU:HG3	2.50	0.41
5:D:57:PHE:HE2	5:D:252:LEU:HD22	1.85	0.41
5:D:148:GLU:H	5:D:156:ARG:HH12	1.67	0.41
5:D:368:LEU:HD23	5:D:369:PRO:O	2.20	0.41
5:D:817:HIS:HA	5:D:845:ALA:HB1	2.02	0.41
5:D:973:LEU:HD23	5:D:973:LEU:HA	1.92	0.41
4:C:35:PHE:CZ	4:C:129:LEU:HA	2.55	0.41
4:C:718:ALA:HA	4:C:751:TYR:CZ	2.55	0.41
5:D:154:LEU:HD23	5:D:154:LEU:H	1.84	0.41
5:D:993:GLU:HB3	5:D:995:TYR:CE1	2.55	0.41
5:D:1119:ASP:OD1	5:D:1119:ASP:N	2.53	0.41
4:C:810:TYR:HE2	4:C:1078:LYS:HD3	1.85	0.41
5:D:832:LYS:HB3	5:D:1242:ARG:HD2	2.01	0.41
5:D:925:GLU:HB3	5:D:926:PRO:HD3	2.03	0.41
7:E:26:ARG:HB3	7:E:26:ARG:CZ	2.50	0.41
4:C:130:MET:SD	4:C:134:GLY:HA2	2.59	0.41
4:C:725:GLN:NE2	4:C:733:VAL:HG12	2.36	0.41
4:C:1327:LEU:HD22	4:C:1337:ILE:HG21	2.03	0.41
5:D:1030:GLU:HG2	5:D:1099:TYR:OH	2.20	0.41
5:D:1161:GLY:HA3	5:D:1179:PRO:HA	2.02	0.41
5:D:1373:ARG:HG2	5:D:1373:ARG:NH1	2.34	0.41
4:C:161:LYS:HD2	4:C:161:LYS:HA	1.81	0.41
4:C:244:GLU:O	4:C:247:ARG:HG2	2.20	0.41
5:D:56:LEU:HD21	5:D:269:TYR:HB2	2.02	0.41
5:D:114:ILE:HD12	5:D:114:ILE:H	1.85	0.41
5:D:352:ARG:NE	5:D:465:GLN:HB3	2.35	0.41
5:D:460:ASP:OD1	5:D:460:ASP:N	2.53	0.41
4:C:169:LYS:HA	4:C:169:LYS:HD2	1.86	0.41
4:C:835:GLU:HG2	4:C:1053:TYR:HE1	1.85	0.41
5:D:62:PHE:O	5:D:98:ARG:HA	2.20	0.41
5:D:582:ILE:HG12	5:D:623:GLN:HB3	2.01	0.41
5:D:749:LYS:HG3	5:D:751:ASP:OD1	2.21	0.41
5:D:824:PRO:HB3	5:D:835:LEU:HD21	2.02	0.41
5:D:1331:VAL:HG23	5:D:1332:LEU:HD12	2.03	0.41
4:C:211:ARG:NH1	4:C:357:ASN:O	2.53	0.41
4:C:321:LEU:O	4:C:325:LEU:HG	2.21	0.41
4:C:1269:ARG:HB2	5:D:346:ARG:NH1	2.35	0.41
5:D:421:VAL:HG12	5:D:470:VAL:HG12	2.03	0.41
5:D:835:LEU:O	5:D:839:VAL:HG22	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:238:GLN:CD	4:C:284:LEU:HD22	2.41	0.41
4:C:242:VAL:HG12	4:C:244:GLU:H	1.86	0.41
4:C:363:LEU:HB3	4:C:381:ALA:HB1	2.02	0.41
4:C:1209:GLN:HG2	4:C:1226:THR:HG22	2.03	0.41
5:D:950:ILE:HG21	5:D:982:LEU:HD23	2.01	0.41
5:D:957:SER:HA	5:D:1010:GLN:HA	2.03	0.41
5:D:1143:ASP:OD1	5:D:1148:ARG:HB3	2.21	0.41
3:B:31:LEU:HD13	3:B:36:GLY:HA3	2.03	0.41
3:B:82:LEU:O	3:B:86:LYS:HG3	2.20	0.41
3:B:192:VAL:HG23	3:B:195:ARG:NH2	2.34	0.41
4:C:215:TYR:HB3	4:C:220:ILE:HG13	2.03	0.41
4:C:541:GLU:HG2	4:C:542:ARG:HG3	2.03	0.41
4:C:596:ASP:OD1	4:C:596:ASP:N	2.54	0.41
4:C:668:ILE:HG23	4:C:1069:ARG:O	2.21	0.41
4:C:720:ARG:HG3	4:C:736:VAL:HG11	2.03	0.41
4:C:1013:GLN:HA	4:C:1016:GLU:HG2	2.03	0.41
4:C:1212:LEU:HD12	4:C:1225:VAL:HG21	2.03	0.41
5:D:120:LEU:HB2	5:D:121:PRO:HD3	2.03	0.41
5:D:161:THR:OG1	5:D:162:GLU:N	2.54	0.41
5:D:495:ASN:HD21	5:D:1247:LYS:C	2.24	0.41
5:D:1296:GLY:O	5:D:1297:LYS:HG3	2.21	0.41
4:C:4:SER:OG	4:C:5:TYR:N	2.54	0.41
4:C:238:GLN:OE1	4:C:284:LEU:HB3	2.21	0.41
4:C:965:GLN:O	4:C:968:GLU:HG3	2.20	0.41
5:D:1044:GLN:HA	5:D:1071:GLY:HA2	2.03	0.41
5:D:1261:LEU:HD12	5:D:1261:LEU:O	2.20	0.41
4:C:185:ASP:OD1	4:C:197:ARG:HB3	2.20	0.40
4:C:808:ASN:N	5:D:633:ALA:HB2	2.27	0.40
5:D:479:GLU:OE2	5:D:483:LEU:HB2	2.20	0.40
5:D:1181:ASP:OD1	5:D:1181:ASP:N	2.46	0.40
7:E:66:VAL:HA	7:E:69:ARG:HE	1.86	0.40
4:C:1242:LYS:CG	5:D:465:GLN:HE21	2.34	0.40
5:D:744:ARG:HD2	5:D:759:ILE:HG13	2.04	0.40
7:E:26:ARG:HH12	7:E:50:ALA:HB1	1.85	0.40
4:C:973:SER:O	4:C:976:ARG:HG2	2.22	0.40
4:C:1117:LEU:HD12	4:C:1117:LEU:HA	1.81	0.40
4:C:1285:TYR:CG	5:D:475:GLU:HG3	2.57	0.40
3:B:155:ALA:O	3:B:159:ILE:HG22	2.22	0.40
4:C:96:LEU:HB3	4:C:125:GLY:O	2.20	0.40
4:C:312:ALA:HB3	4:C:315:MET:HG2	2.02	0.40
5:D:504:GLN:HA	5:D:507:VAL:HG12	2.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:675:ALA:O	5:D:678:ARG:HG2	2.22	0.40
5:D:1186:TYR:HE2	5:D:1188:GLU:HG3	1.85	0.40
5:D:1344:LEU:HD13	5:D:1350:ASN:OD1	2.21	0.40
3:B:186:ASN:HB3	3:B:202:VAL:HG23	2.04	0.40
4:C:665:ALA:O	4:C:671:LEU:HD11	2.22	0.40
5:D:244:VAL:HG12	5:D:269:TYR:HE2	1.86	0.40
5:D:398:LYS:HA	5:D:401:VAL:HG12	2.02	0.40
5:D:504:GLN:HB2	5:D:730:ALA:HB1	2.03	0.40
6:R:11:U:H3'	6:R:11:U:H6	1.87	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	
3	A	226/329 (69%)	203 (90%)	23 (10%)	0	100	100
3	B	227/329 (69%)	198 (87%)	29 (13%)	0	100	100
4	C	1315/1342 (98%)	1152 (88%)	162 (12%)	1 (0%)	51	84
5	D	1330/1407 (94%)	1146 (86%)	180 (14%)	4 (0%)	41	75
7	E	71/91 (78%)	60 (84%)	11 (16%)	0	100	100
All	All	3169/3498 (91%)	2759 (87%)	405 (13%)	5 (0%)	50	79

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	C	812	PHE
5	D	584	PRO
5	D	765	GLU
5	D	19	ALA
5	D	1245	GLY

### 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	
3	A	196/286 (68%)	196 (100%)	0	100	100
3	B	197/286 (69%)	195 (99%)	2 (1%)	76	86
4	C	1138/1157 (98%)	1137 (100%)	1 (0%)	93	97
5	D	1121/1168 (96%)	1115 (100%)	6 (0%)	88	93
7	E	63/75 (84%)	62 (98%)	1 (2%)	62	79
All	All	2715/2972 (91%)	2705 (100%)	10 (0%)	91	94

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	B	95	LYS
3	B	166	ARG
4	C	812	PHE
5	D	337	ARG
5	D	460	ASP
5	D	599	LYS
5	D	695	LYS
5	D	1123	ARG
5	D	1326	GLN
7	E	67	ARG

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

Mol	Chain	Res	Type
3	A	41	ASN
3	A	227	GLN
4	C	1013	GLN
4	C	1017	GLN
5	D	1010	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
6	R	10/11 (90%)	1 (10%)	0

All (1) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
6	R	11	U

There are no RNA pucker outliers to report.

#### 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](#)

Of 3 ligands modelled in this entry, 3 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

#### 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.

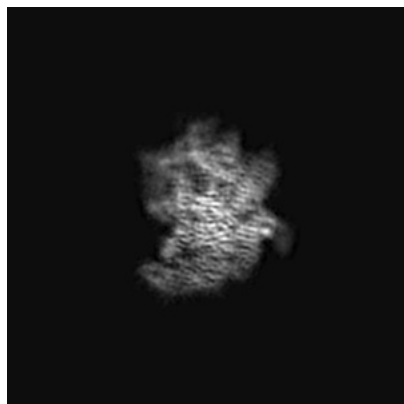
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-29212. These allow visual inspection of the internal detail of the map and identification of artifacts.

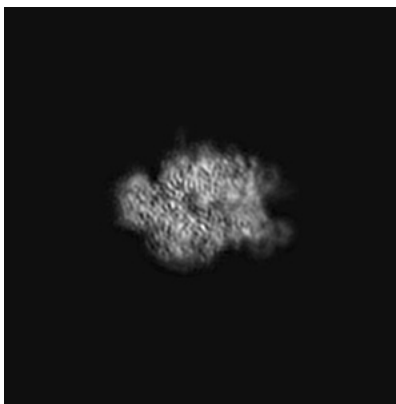
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

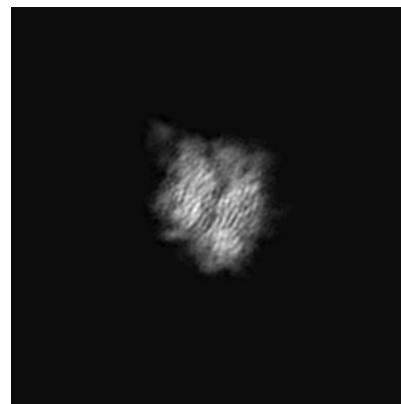
#### 6.1.1 Primary map



X

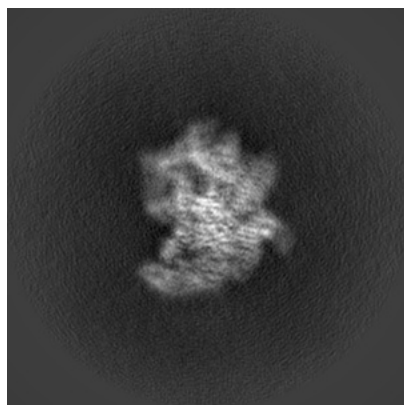


Y

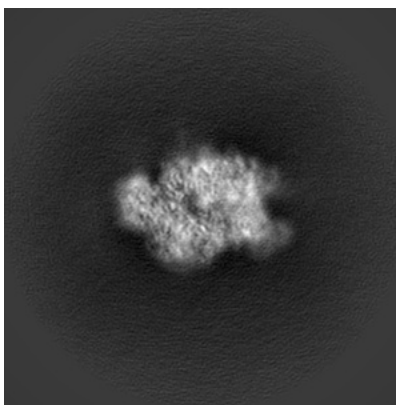


Z

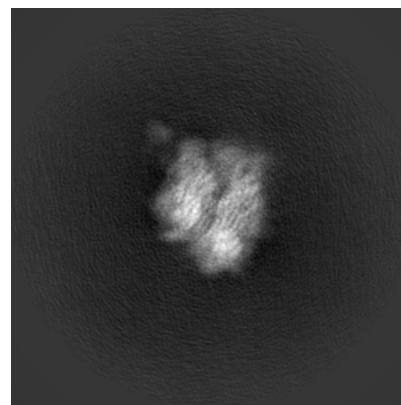
#### 6.1.2 Raw map



X



Y



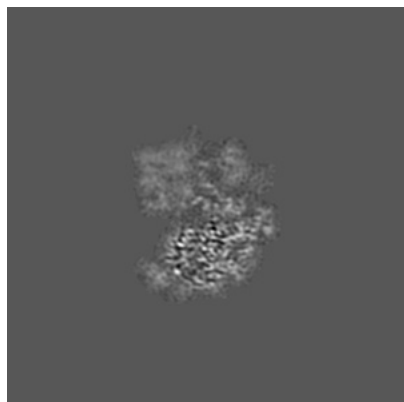
Z

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

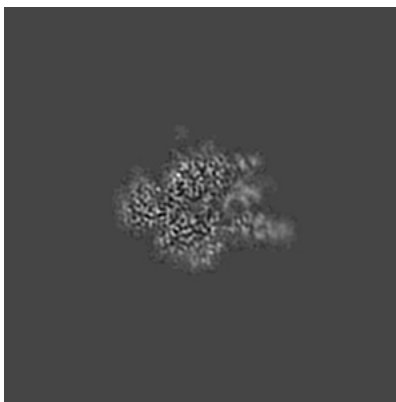


## 6.2 Central slices [i](#)

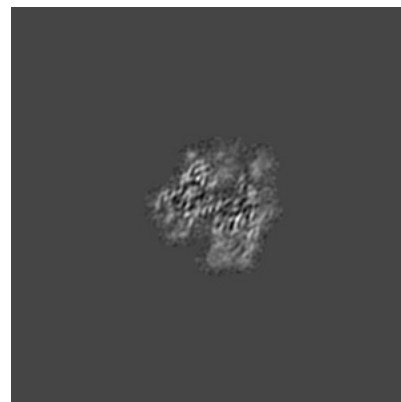
### 6.2.1 Primary map



X Index: 120

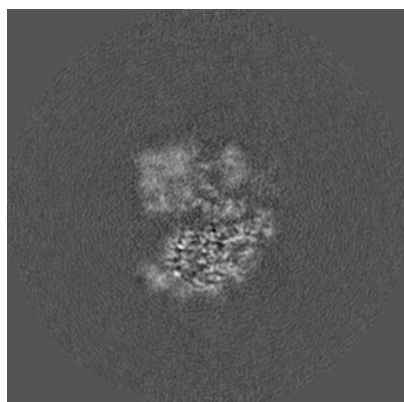


Y Index: 120

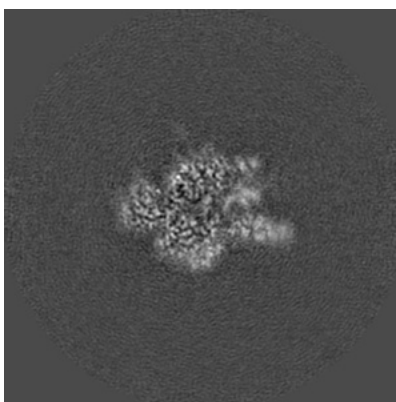


Z Index: 120

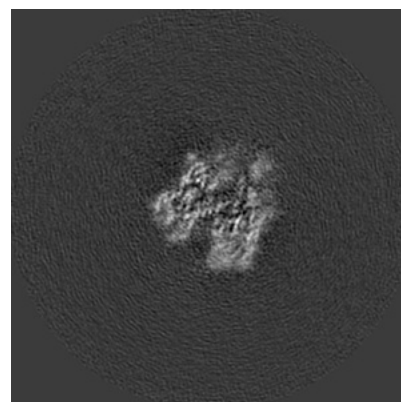
### 6.2.2 Raw map



X Index: 120



Y Index: 120

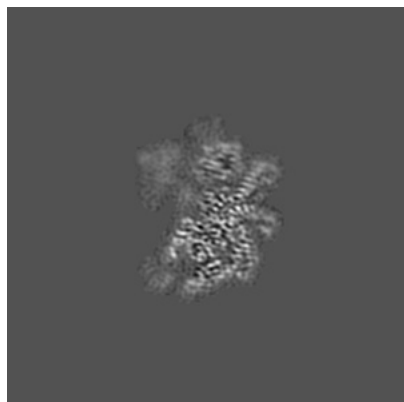


Z Index: 120

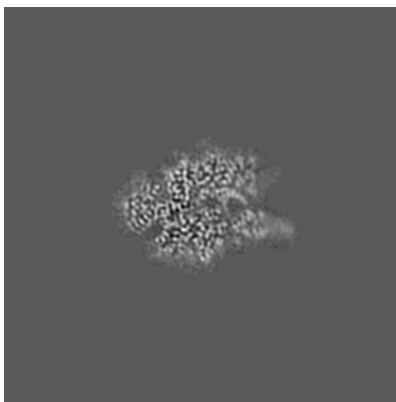
The images above show central slices of the map in three orthogonal directions.

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

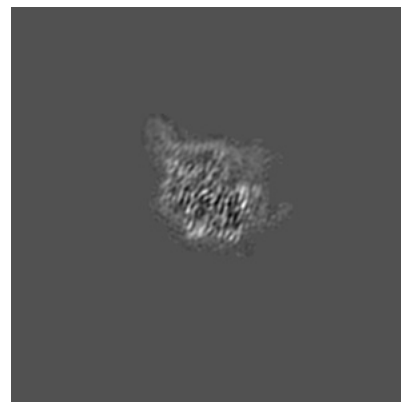
### 6.3.1 Primary map



X Index: 113

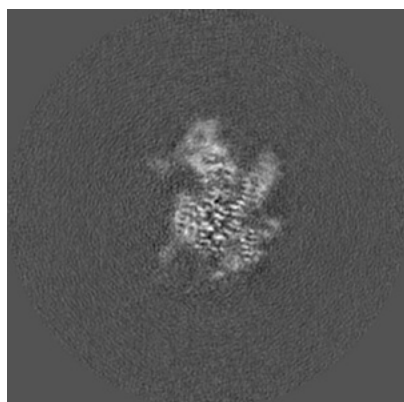


Y Index: 123

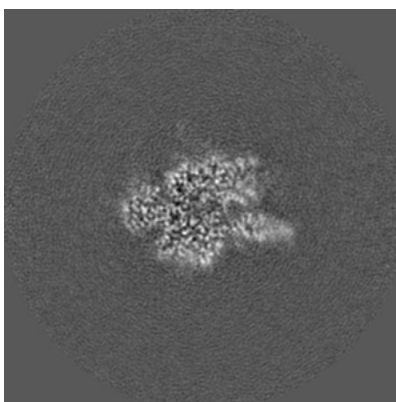


Z Index: 104

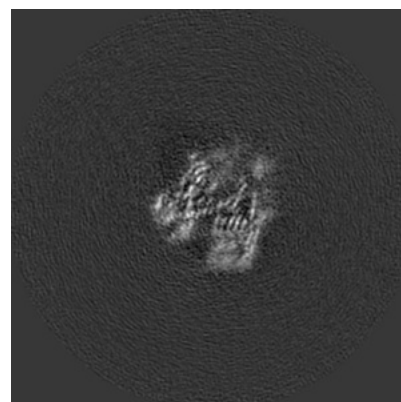
### 6.3.2 Raw map



X Index: 105



Y Index: 122

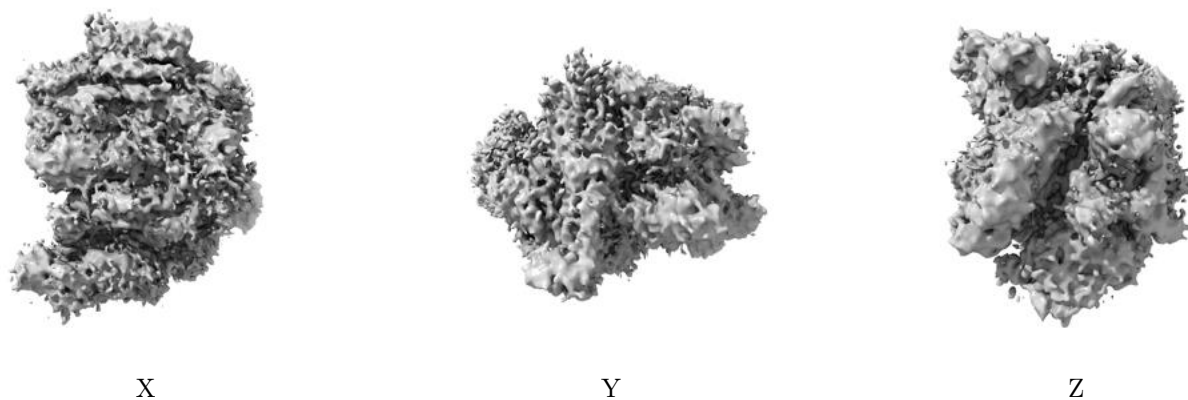


Z Index: 119

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

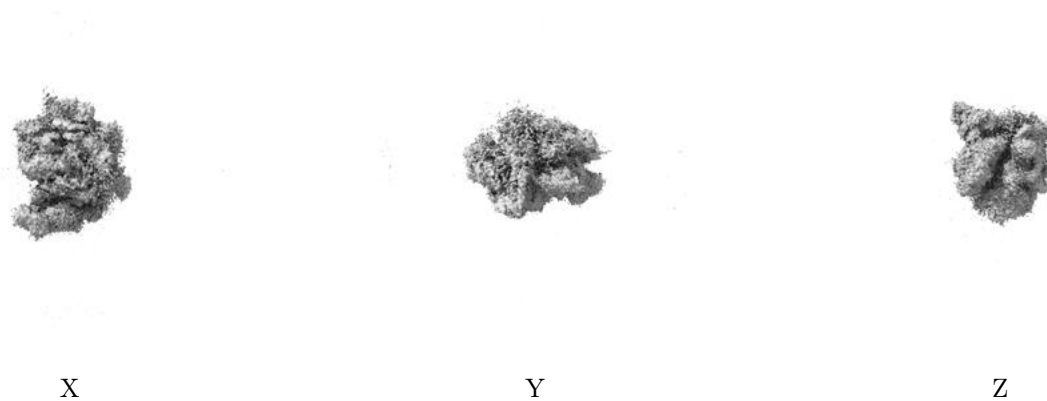
## 6.4 Orthogonal surface views [i](#)

### 6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.06. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.4.2 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.

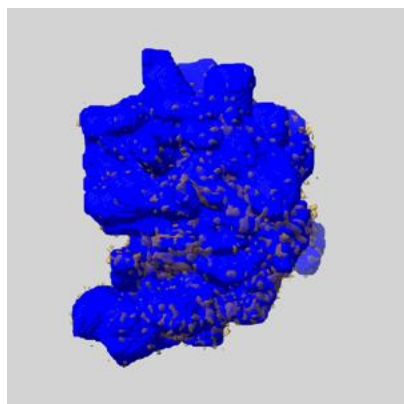
## 6.5 Mask visualisation [i](#)

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

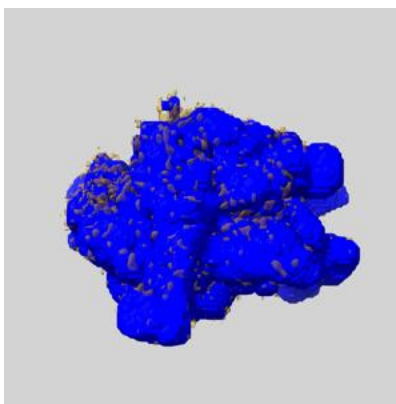
A mask typically either:

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

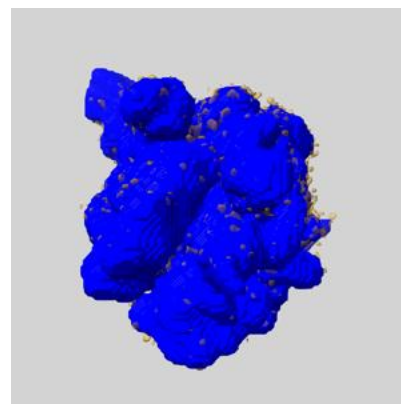
### 6.5.1 emd\_29212\_msk\_1.map [i](#)



X



Y

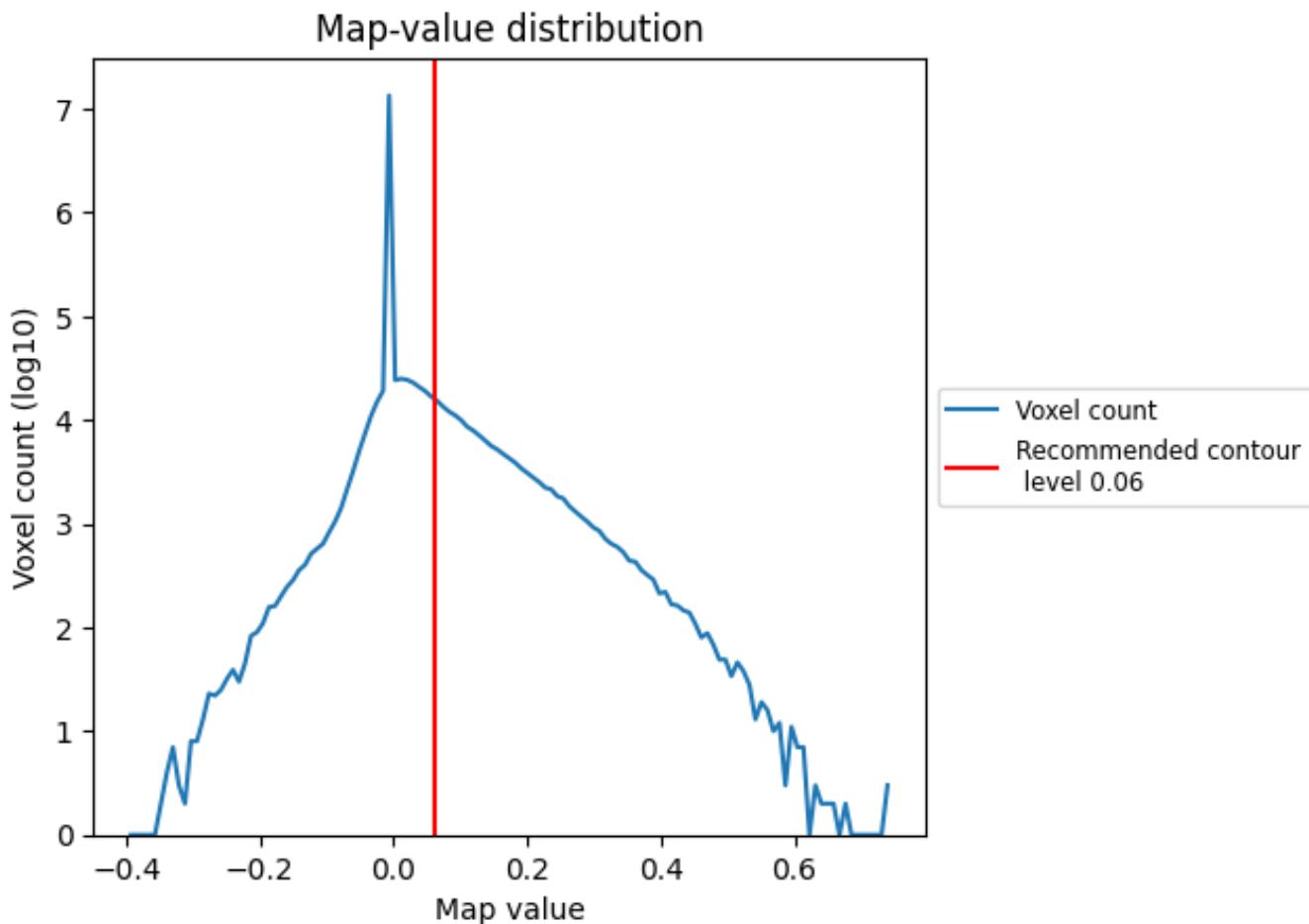


Z

## 7 Map analysis [i](#)

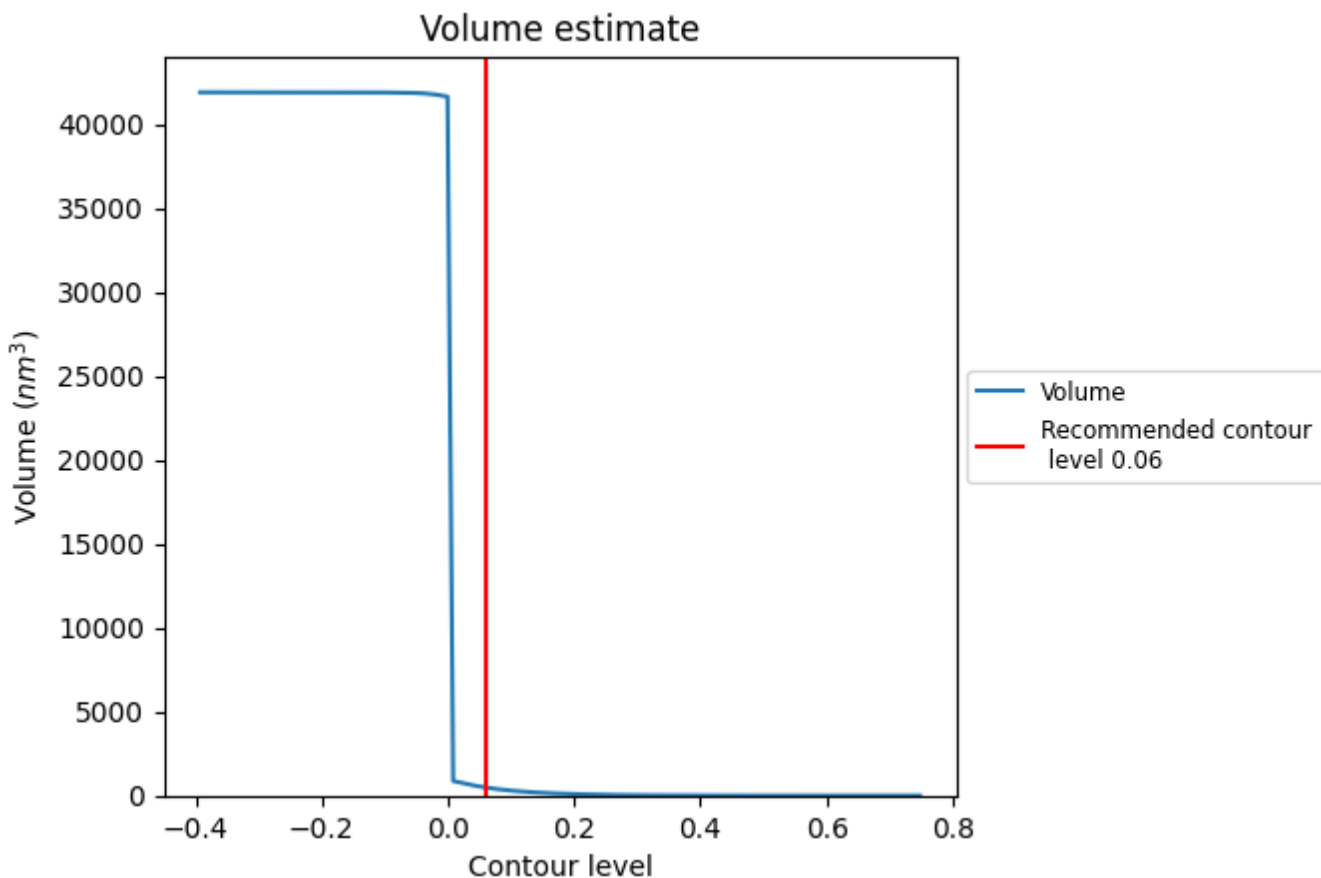
This section contains the results of statistical analysis of the map.

### 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.

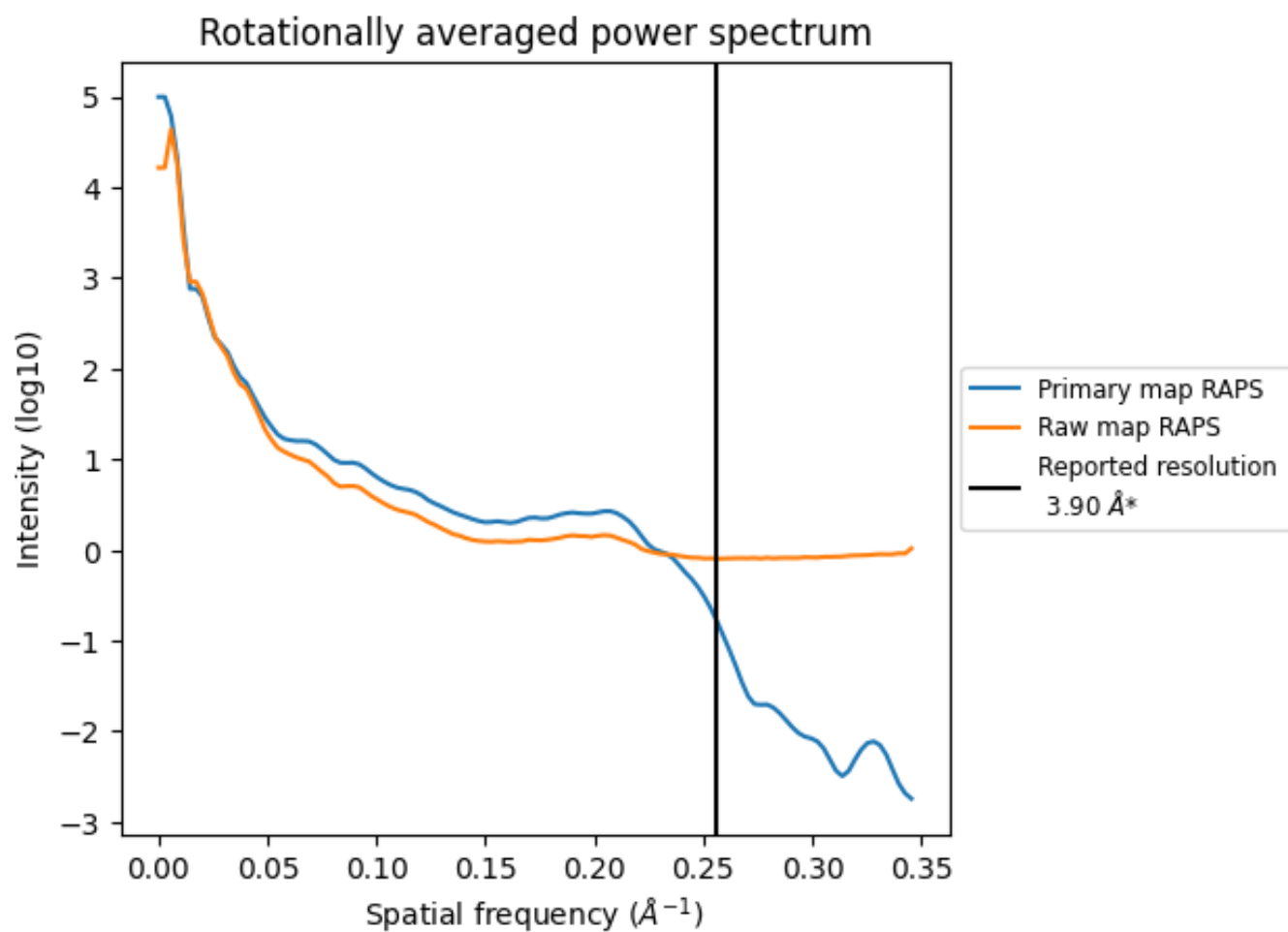
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 479 nm<sup>3</sup>; this corresponds to an approximate mass of 432 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

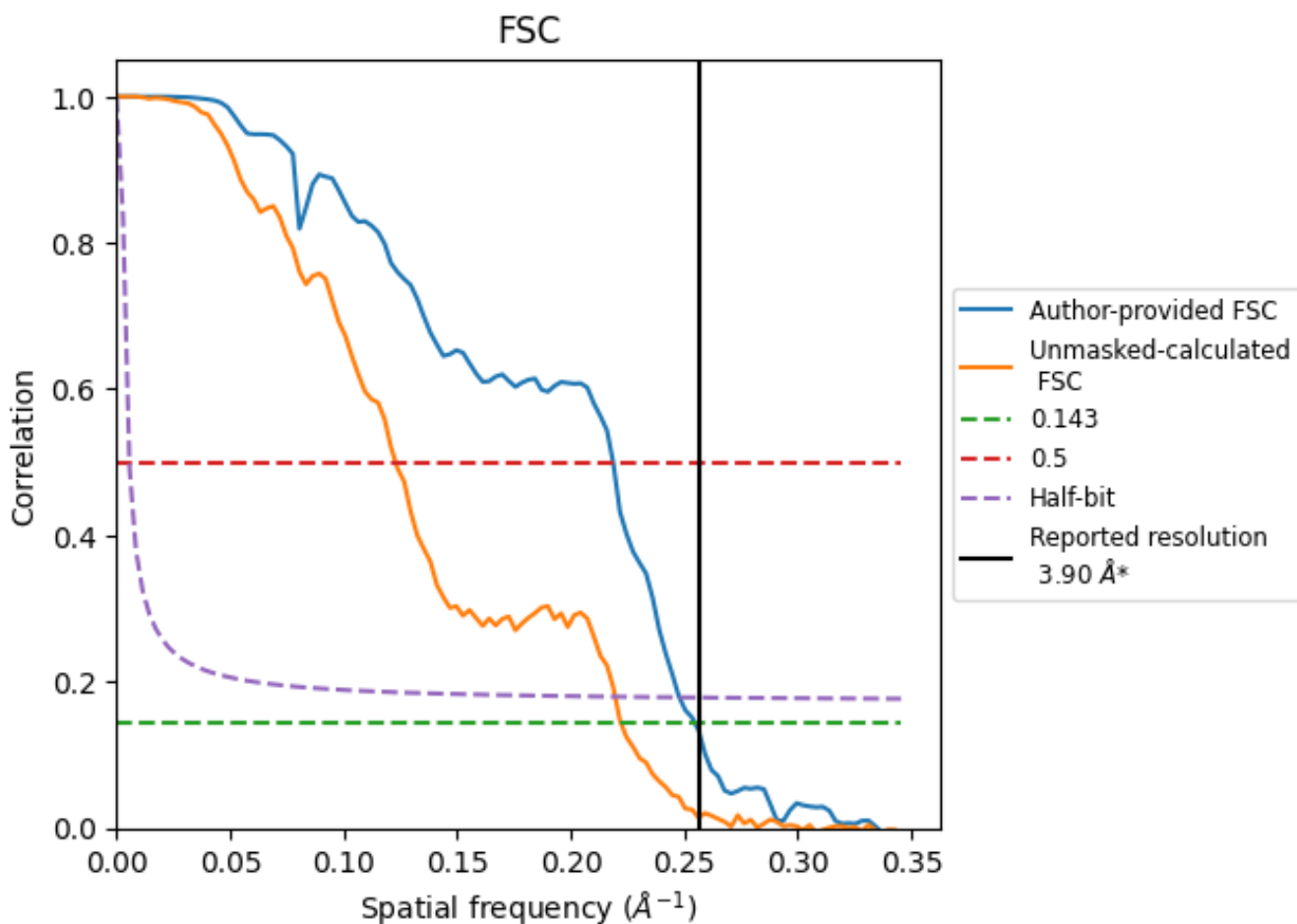


\*Reported resolution corresponds to spatial frequency of 0.256 Å<sup>-1</sup>

## 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 0.256 Å<sup>-1</sup>



## 8.2 Resolution estimates [i](#)

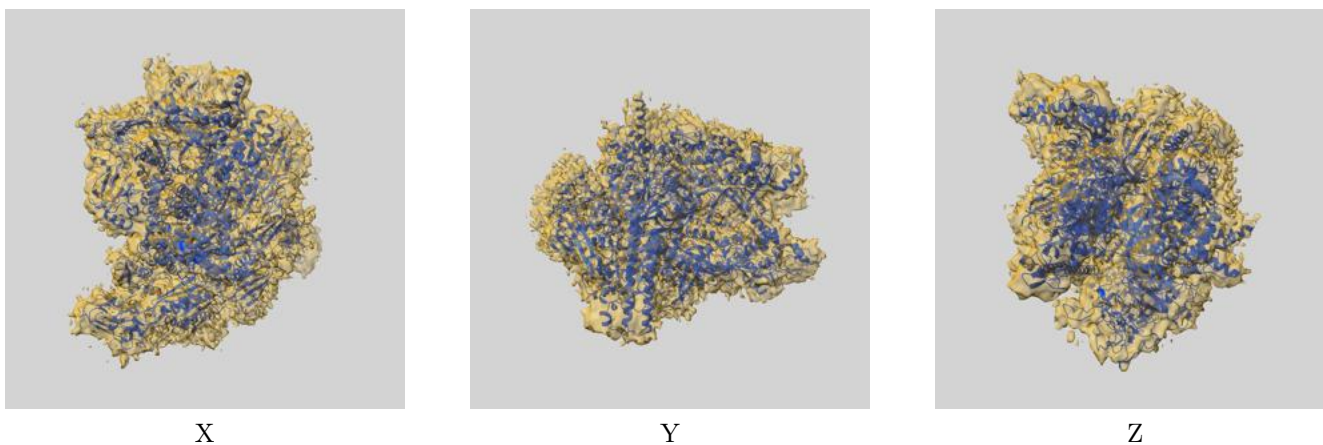
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.90	-	-
Author-provided FSC curve	3.93	4.57	4.03
Unmasked-calculated*	4.50	8.13	4.55

\*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 4.50 differs from the reported value 3.9 by more than 10 %

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

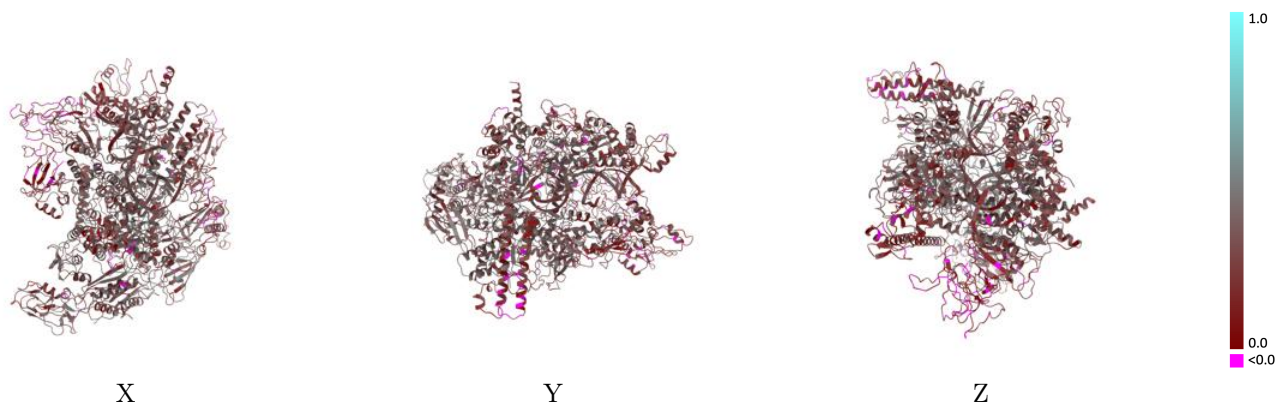
This section contains information regarding the fit between EMDB map EMD-29212 and PDB model 8FIX. Per-residue inclusion information can be found in section 3 on page 6.

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



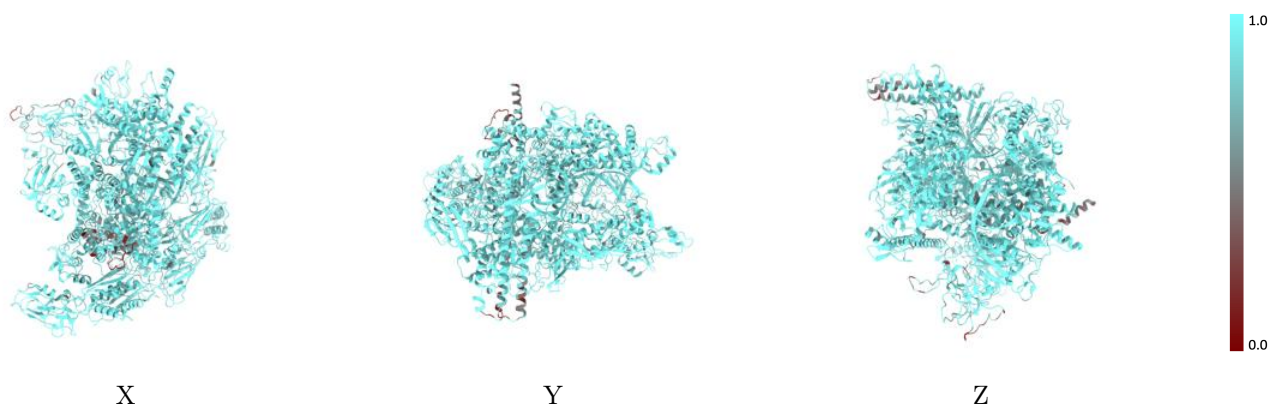
The images above show the 3D surface view of the map at the recommended contour level 0.06 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



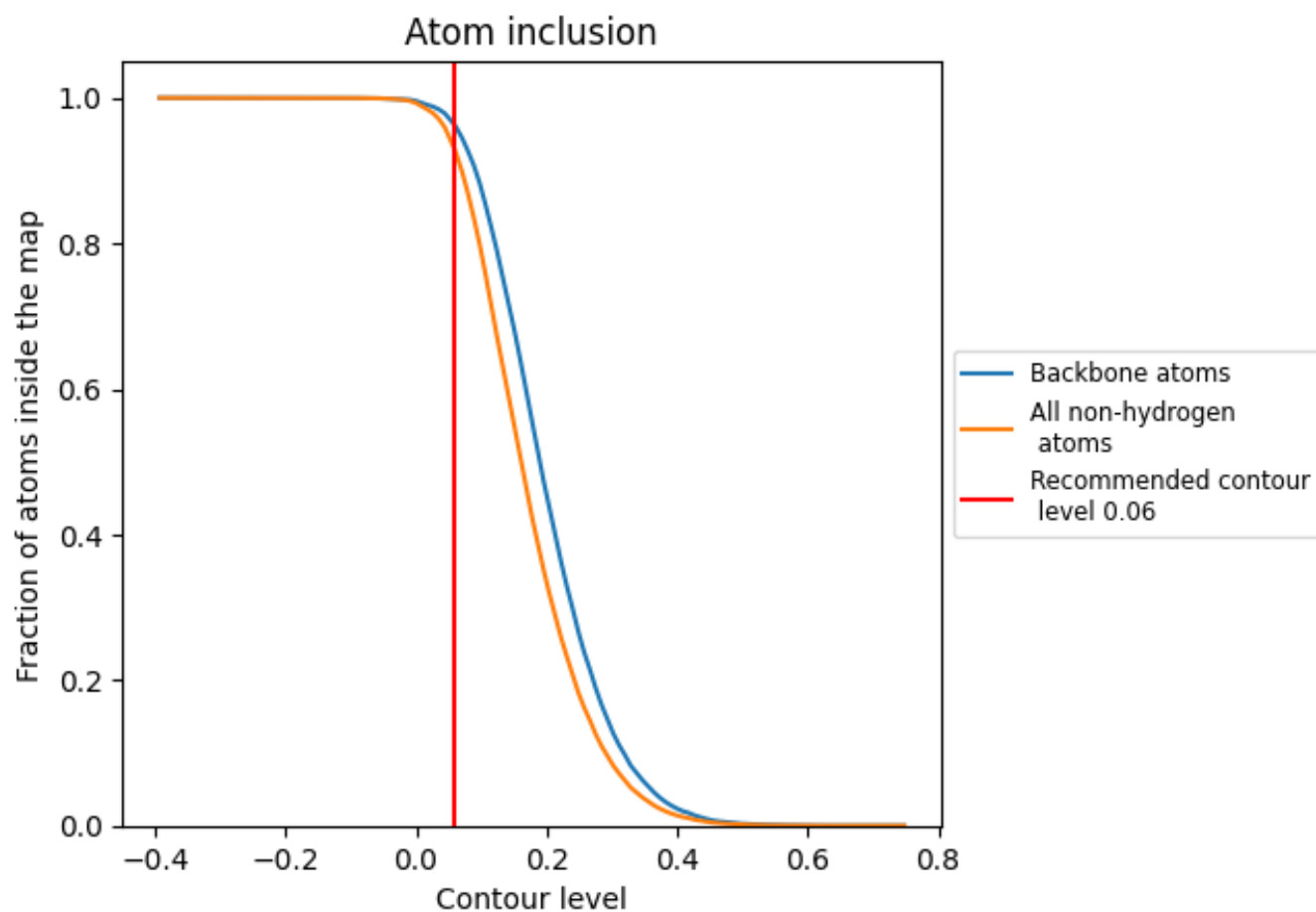
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.06).



















## 9.4 Atom inclusion [i](#)



At the recommended contour level, 96% of all backbone atoms, 93% 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 (0.06) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9274	 0.3000
A	 0.9452	 0.3420
B	 0.9286	 0.3040
C	 0.9367	 0.3100
D	 0.9356	 0.2890
E	 0.5300	 0.1960
N	 0.9474	 0.2410
R	 0.8448	 0.3110
T	 0.9854	 0.3060

