Full wwPDB EM Validation Report ⓘ

Apr 22, 2024 – 01:51 PM EDT

PDB ID	:	8U80
EMDB ID	:	EMD-41995
Title	:	KCTD5/Cullin3/Gbeta1gamma2 Complex: Local Refinment of KCTD5(BTB)/Cullin3(NTD)
Authors	:	Kuntz, D.A.; Nguyen, D.M.; Narayanan, N.; Prive, G.G.
Deposited on	:	2023-09-15
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:

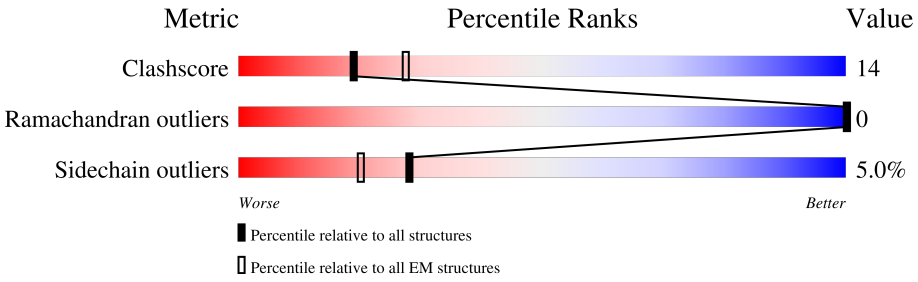
EMDB validation analysis	:	0.0.1.dev92
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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	K1	234	31% 16% 51%
1	K2	234	29% 18% 51%
1	K3	234	33% 15% 51%
1	K4	234	29% 18% 51%
1	K5	234	30% 17% 51%
2	C1	381	10% 68% 24% 6%
2	C2	381	6% 69% 24% 6%
2	C3	381	61% 29% 6%

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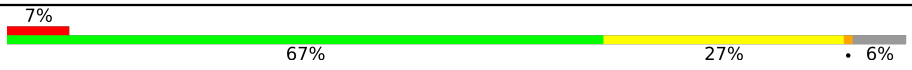
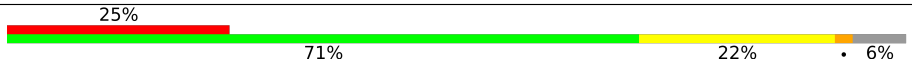
Mol	Chain	Length	Quality of chain
2	C4	381	
2	C5	381	

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 38457 atoms, of which 19197 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 BTB/POZ domain-containing protein KCTD5.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	K1	114	Total	C	H	N	O	S	0	0
			1840	583	920	157	178	2		
1	K2	114	Total	C	H	N	O	S	0	0
			1840	583	920	157	178	2		
1	K3	114	Total	C	H	N	O	S	0	0
			1840	583	920	157	178	2		
1	K4	114	Total	C	H	N	O	S	0	0
			1840	583	920	157	178	2		
1	K5	114	Total	C	H	N	O	S	0	0
			1840	583	920	157	178	2		

- Molecule 2 is a protein called Cullin-3.

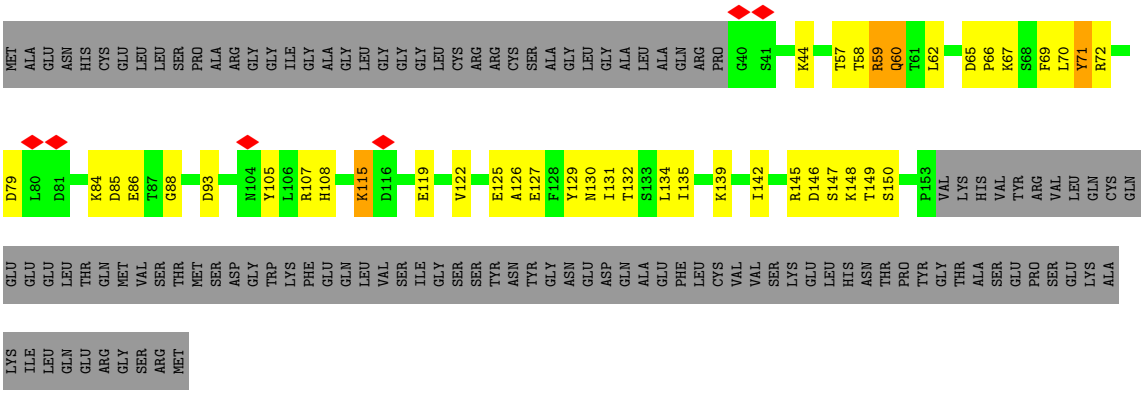
Mol	Chain	Residues	Atoms						AltConf	Trace
2	C1	358	Total	C	H	N	O	S	0	0
			5852	1844	2920	509	555	24		
2	C2	358	Total	C	H	N	O	S	0	0
			5851	1844	2919	509	555	24		
2	C3	358	Total	C	H	N	O	S	0	0
			5851	1844	2919	509	555	24		
2	C4	358	Total	C	H	N	O	S	0	0
			5851	1844	2919	509	555	24		
2	C5	358	Total	C	H	N	O	S	0	0
			5852	1844	2920	509	555	24		

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.

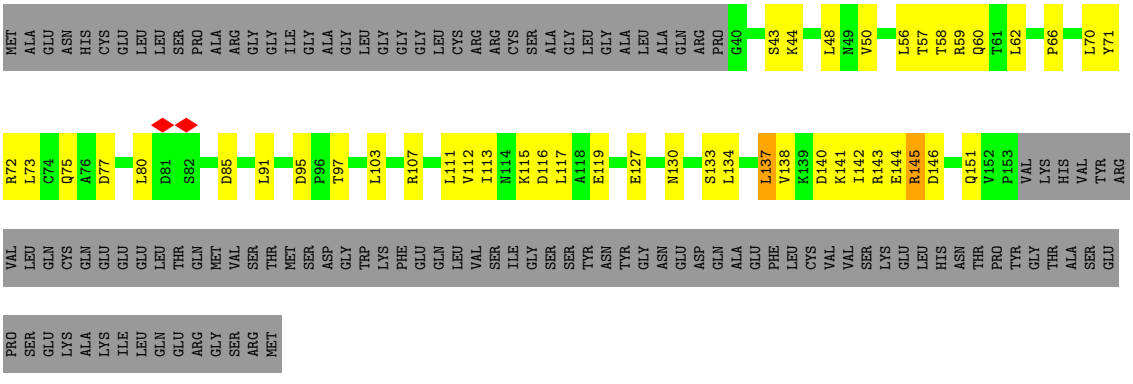
• Molecule 1: BTB/POZ domain-containing protein KCTD5

Chain K1:



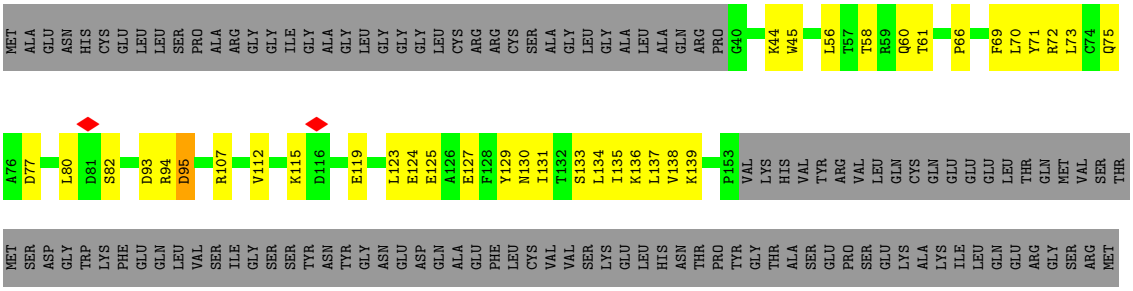
• Molecule 1: BTB/POZ domain-containing protein KCTD5

Chain K2:



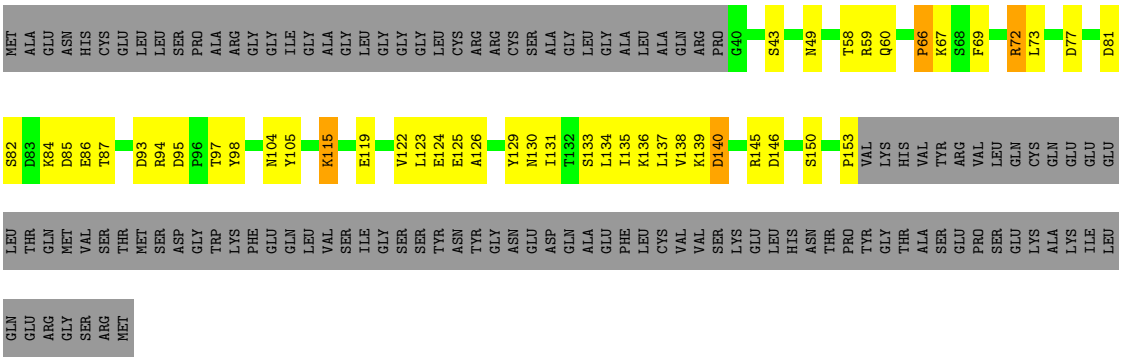
• Molecule 1: BTB/POZ domain-containing protein KCTD5

Chain K3:



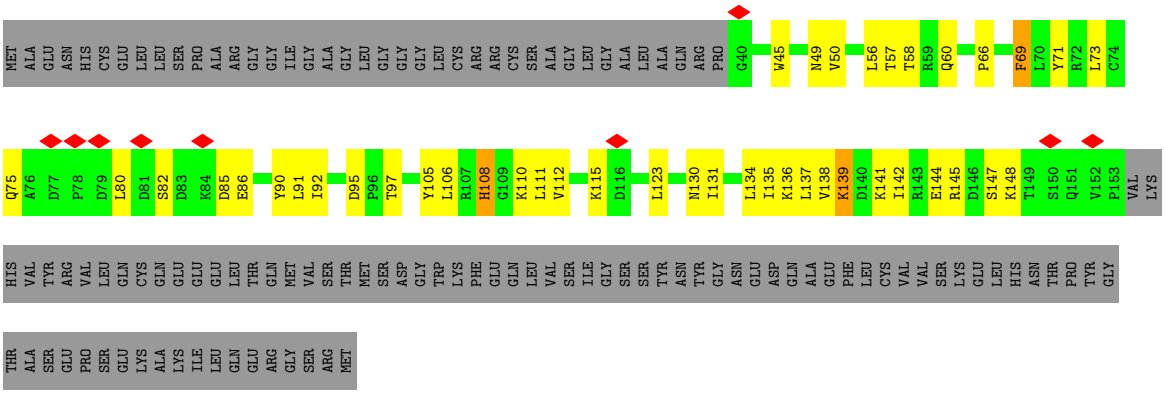
• Molecule 1: BTB/POZ domain-containing protein KCTD5

Chain K4:



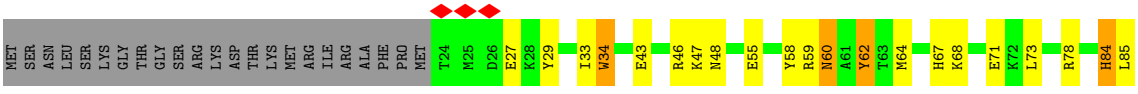
• Molecule 1: BTB/POZ domain-containing protein KCTD5

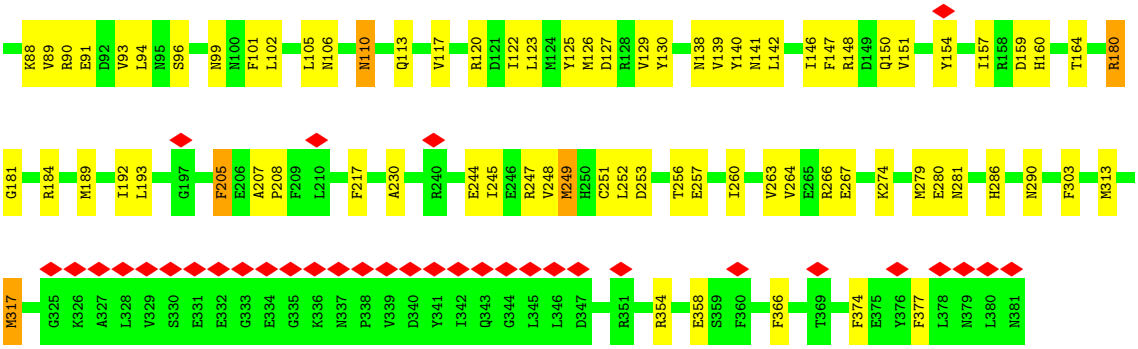
Chain K5:



• Molecule 2: Cullin-3

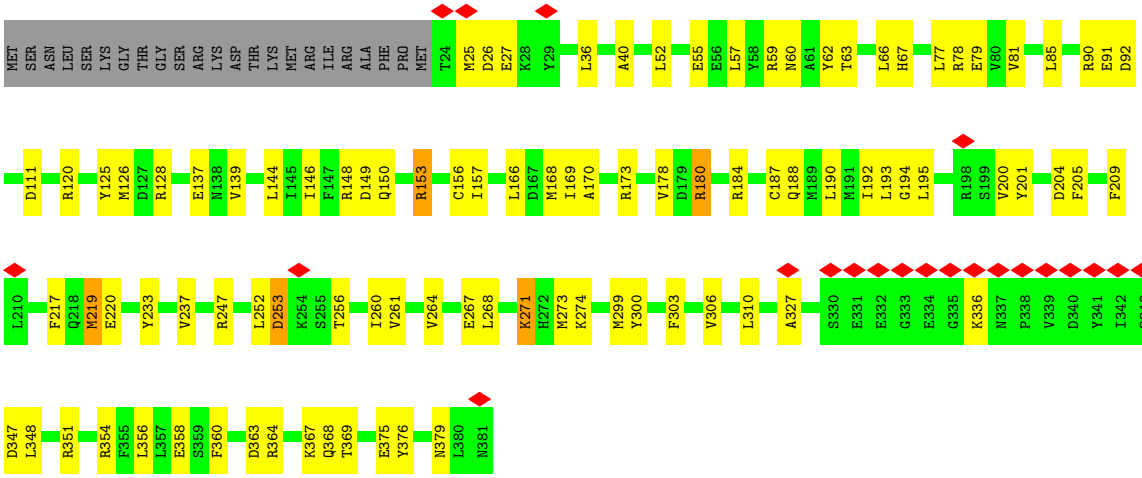
Chain C1:





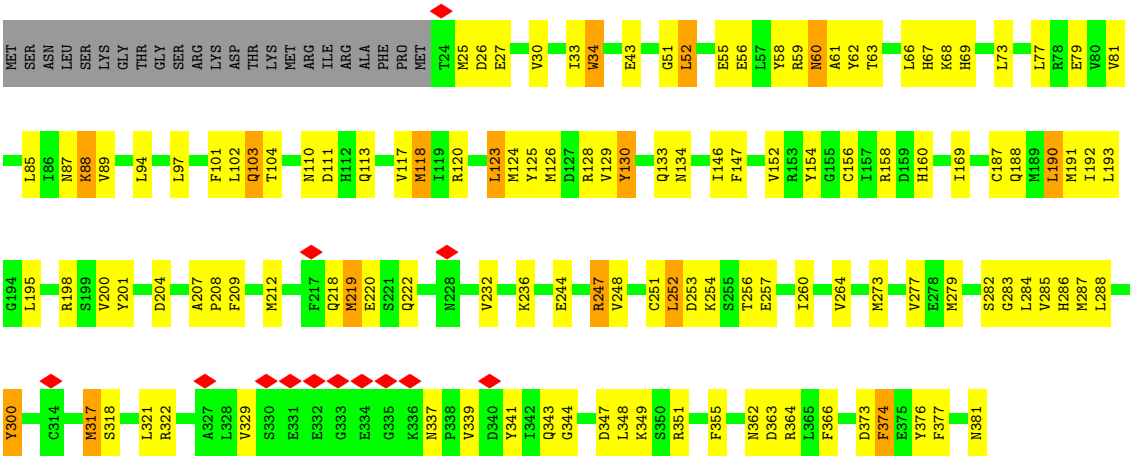
• Molecule 2: Cullin-3

Chain C2:



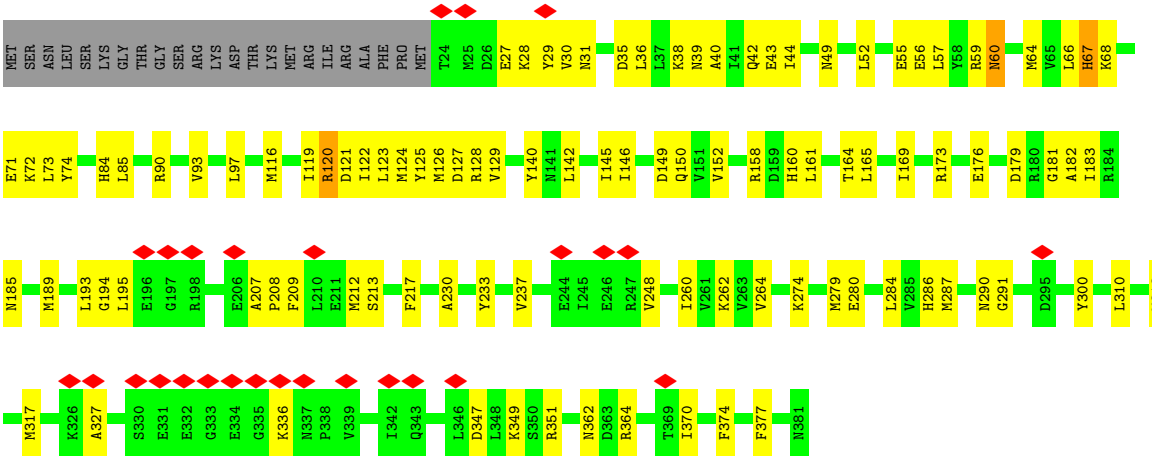
• Molecule 2: Cullin-3

Chain C3:



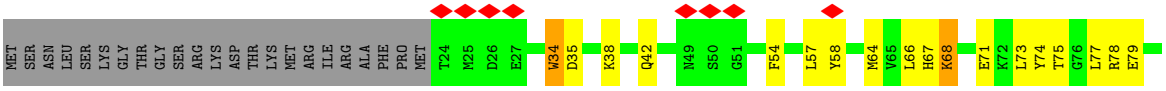
• Molecule 2: Cullin-3

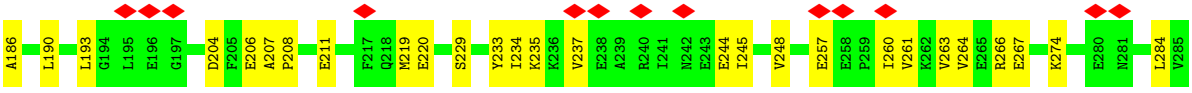
Chain C4:

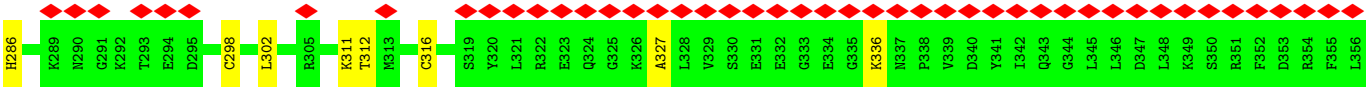


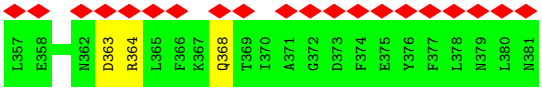
- Molecule 2: Cullin-3

Chain C5:









4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	64612	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	49.35	Depositor
Minimum defocus (nm)	250	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	1.963	Depositor
Minimum map value	-0.001	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.031	Depositor
Recommended contour level	0.08	Depositor
Map size (Å)	333.72, 333.72, 333.72	wwPDB
Map dimensions	324, 324, 324	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.03, 1.03, 1.03	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	K1	0.28	0/937	0.56	0/1267
1	K2	0.28	0/937	0.54	0/1267
1	K3	0.27	0/937	0.54	0/1267
1	K4	0.66	1/937 (0.1%)	0.94	4/1267 (0.3%)
1	K5	0.30	0/937	0.58	1/1267 (0.1%)
2	C1	0.25	0/2976	0.50	0/3996
2	C2	0.25	0/2976	0.50	0/3996
2	C3	0.26	0/2976	0.52	0/3996
2	C4	0.26	0/2976	0.52	0/3996
2	C5	0.25	0/2976	0.50	0/3996
All	All	0.29	1/19565 (0.0%)	0.55	5/26315 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	K4	153	PRO	CG-CD	-16.05	0.97	1.50

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	K4	153	PRO	N-CD-CG	-19.34	74.20	103.20
1	K4	153	PRO	CA-CB-CG	-14.06	77.29	104.00
1	K4	153	PRO	N-CA-CB	-9.72	91.63	103.30
1	K4	66	PRO	CA-N-CD	-6.38	102.56	111.50
1	K5	66	PRO	CA-N-CD	-5.66	103.58	111.50

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	K1	920	920	919	34	0
1	K2	920	920	919	38	0
1	K3	920	920	919	32	0
1	K4	920	920	919	38	0
1	K5	920	920	919	45	0
2	C1	2932	2920	2918	78	0
2	C2	2932	2919	2918	68	0
2	C3	2932	2919	2918	90	0
2	C4	2932	2919	2918	77	0
2	C5	2932	2920	2918	68	0
All	All	19260	19197	19185	548	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 14.

All (548) 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)
2:C4:52:LEU:HD12	2:C4:57:LEU:HD11	1.34	1.09
1:K4:105:TYR:HH	1:K4:133:SER:HG	1.11	0.94
2:C3:253:ASP:OD1	2:C3:254:LYS:N	2.10	0.84
1:K4:43:SER:O	1:K4:59:ARG:NH1	2.11	0.84
1:K4:119:GLU:OE1	1:K4:119:GLU:N	2.10	0.83
2:C2:137:GLU:OE1	2:C2:137:GLU:N	2.14	0.80
1:K4:93:ASP:OD2	1:K5:58:THR:HG23	1.82	0.80
2:C2:52:LEU:HD11	2:C2:57:LEU:HD11	1.64	0.79
1:K3:93:ASP:OD2	1:K4:58:THR:OG1	2.01	0.79
2:C5:77:LEU:HD21	2:C5:123:LEU:CD1	2.13	0.79
1:K2:134:LEU:HD22	1:K2:137:LEU:HD11	1.63	0.78
1:K2:43:SER:O	1:K2:59:ARG:NH1	2.16	0.78
2:C2:178:VAL:O	2:C2:180:ARG:NH2	2.16	0.78
1:K4:85:ASP:OD1	1:K4:86:GLU:N	2.17	0.77
1:K5:141:LYS:O	1:K5:141:LYS:NZ	2.17	0.77
1:K3:95:ASP:OD2	1:K4:104:ASN:ND2	2.17	0.77
2:C5:133:GLN:N	2:C5:133:GLN:OE1	2.18	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C3:85:LEU:HD12	2:C3:146:ILE:HG22	1.65	0.77
2:C3:318:SER:OG	2:C3:322:ARG:NH1	2.17	0.76
2:C5:74:TYR:OH	2:C5:137:GLU:O	2.02	0.76
1:K1:145:ARG:O	1:K1:149:THR:OG1	2.06	0.73
1:K2:140:ASP:O	1:K2:144:GLU:N	2.19	0.73
1:K5:141:LYS:NZ	1:K5:144:GLU:OE1	2.15	0.72
2:C3:232:VAL:HG12	2:C3:236:LYS:NZ	2.04	0.72
2:C3:232:VAL:HG12	2:C3:236:LYS:HZ1	1.55	0.72
2:C4:169:ILE:HG21	2:C4:209:PHE:HE1	1.54	0.71
1:K5:144:GLU:O	1:K5:147:SER:OG	2.03	0.71
2:C3:247:ARG:O	2:C3:251:CYS:N	2.22	0.71
2:C3:188:GLN:O	2:C3:192:ILE:HD12	1.90	0.70
1:K5:144:GLU:O	1:K5:148:LYS:NZ	2.24	0.69
1:K2:151:GLN:OE1	1:K2:151:GLN:N	2.24	0.69
2:C3:123:LEU:HD22	2:C3:126:MET:CE	2.22	0.69
2:C4:179:ASP:O	2:C4:179:ASP:OD2	2.10	0.69
2:C3:55:GLU:OE1	2:C3:55:GLU:N	2.25	0.69
2:C3:218:GLN:NE2	2:C3:222:GLN:OE1	2.26	0.69
2:C3:25:MET:SD	2:C3:27:GLU:N	2.66	0.68
1:K4:72:ARG:NH1	1:K4:77:ASP:OD2	2.27	0.68
1:K1:146:ASP:O	1:K1:150:SER:N	2.27	0.67
2:C2:260:ILE:O	2:C2:264:VAL:HG23	1.95	0.67
2:C3:123:LEU:HD22	2:C3:126:MET:HE1	1.77	0.67
1:K5:141:LYS:HZ1	1:K5:145:ARG:HB2	1.58	0.67
2:C5:234:ILE:HG23	2:C5:302:LEU:HD22	1.77	0.67
1:K2:134:LEU:CD2	1:K2:137:LEU:HD11	2.25	0.67
1:K3:131:ILE:O	1:K3:135:ILE:HD12	1.95	0.66
2:C4:260:ILE:O	2:C4:264:VAL:HG23	1.94	0.66
1:K2:57:THR:OG1	1:K2:107:ARG:NH2	2.28	0.66
2:C3:283:GLY:O	2:C3:286:HIS:N	2.28	0.66
1:K2:71:TYR:O	1:K2:75:GLN:NE2	2.27	0.66
1:K4:130:ASN:OD1	2:C4:128:ARG:NE	2.23	0.66
1:K4:69:PHE:O	1:K4:73:LEU:HD12	1.96	0.65
2:C1:89:VAL:O	2:C1:93:VAL:HG23	1.96	0.65
2:C1:106:ASN:O	2:C1:110:ASN:ND2	2.29	0.65
1:K1:86:GLU:N	1:K1:86:GLU:OE1	2.29	0.65
2:C3:190:LEU:CD2	2:C3:200:VAL:HG12	2.25	0.65
1:K2:70:LEU:HD13	1:K2:73:LEU:HD12	1.77	0.65
1:K4:85:ASP:OD2	1:K4:87:THR:OG1	2.14	0.65
2:C1:147:PHE:CD1	2:C1:193:LEU:HD21	2.32	0.65
2:C1:354:ARG:NH1	2:C1:358:GLU:OE1	2.30	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C2:79:GLU:N	2:C2:79:GLU:OE1	2.30	0.64
2:C5:138:ASN:ND2	2:C5:141:ASN:OD1	2.30	0.64
2:C2:187:CYS:SG	2:C2:252:LEU:HD13	2.37	0.64
2:C3:283:GLY:N	2:C3:287:MET:SD	2.71	0.64
1:K2:140:ASP:OD1	1:K2:143:ARG:NH2	2.31	0.64
1:K2:137:LEU:HD12	1:K2:138:VAL:N	2.13	0.63
2:C4:169:ILE:HG22	2:C4:173:ARG:HE	1.63	0.63
2:C4:57:LEU:HD13	2:C4:122:ILE:CD1	2.28	0.63
2:C5:186:ALA:O	2:C5:190:LEU:HD12	1.99	0.63
2:C3:77:LEU:HD22	2:C3:123:LEU:HD12	1.79	0.63
1:K1:72:ARG:NH2	1:K1:79:ASP:OD1	2.32	0.63
2:C5:235:LYS:NZ	2:C5:298:CYS:SG	2.71	0.63
2:C4:169:ILE:HG21	2:C4:209:PHE:CE1	2.33	0.63
2:C2:354:ARG:NH1	2:C2:358:GLU:OE2	2.32	0.63
2:C1:138:ASN:OD1	2:C1:140:TYR:N	2.31	0.62
2:C5:153:ARG:O	2:C5:153:ARG:NH1	2.32	0.62
2:C4:52:LEU:HD12	2:C4:57:LEU:CD1	2.21	0.62
1:K4:69:PHE:CE2	1:K4:73:LEU:HD11	2.34	0.62
1:K1:119:GLU:OE2	1:K1:145:ARG:NH2	2.33	0.62
2:C1:33:ILE:HG23	2:C1:60:ASN:HB3	1.80	0.62
2:C3:56:GLU:O	2:C3:59:ARG:N	2.33	0.62
1:K5:50:VAL:HG22	1:K5:92:ILE:HB	1.82	0.61
2:C4:317:MET:SD	2:C4:370:ILE:HG21	2.39	0.61
2:C5:263:VAL:HG22	2:C5:266:ARG:HH21	1.66	0.61
2:C4:121:ASP:O	2:C4:124:MET:SD	2.58	0.61
2:C4:165:LEU:HD22	2:C4:183:ILE:HG23	1.81	0.61
2:C3:113:GLN:O	2:C3:117:VAL:HG23	2.00	0.61
2:C3:192:ILE:HD12	2:C3:192:ILE:H	1.64	0.61
2:C3:118:MET:SD	2:C3:118:MET:N	2.73	0.61
2:C3:77:LEU:O	2:C3:81:VAL:HG23	2.00	0.61
2:C4:183:ILE:HD12	2:C4:183:ILE:H	1.66	0.61
2:C4:280:GLU:OE1	2:C4:280:GLU:N	2.33	0.60
2:C1:64:MET:SD	2:C1:73:LEU:HD23	2.41	0.60
2:C3:58:TYR:O	2:C3:62:TYR:N	2.31	0.60
1:K3:130:ASN:OD1	2:C3:128:ARG:NH1	2.33	0.60
2:C3:279:MET:N	2:C3:282:SER:O	2.34	0.60
1:K5:73:LEU:HD13	1:K5:90:TYR:HD2	1.66	0.60
2:C3:287:MET:SD	2:C3:287:MET:N	2.75	0.60
2:C5:190:LEU:HD12	2:C5:190:LEU:H	1.67	0.60
1:K5:110:LYS:HA	1:K5:110:LYS:HE3	1.82	0.59
2:C5:92:ASP:N	2:C5:92:ASP:OD1	2.34	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K4:134:LEU:O	1:K4:138:VAL:HG23	2.03	0.59
2:C4:85:LEU:HD12	2:C4:146:ILE:HG22	1.82	0.59
1:K3:58:THR:O	1:K3:61:THR:OG1	2.20	0.59
2:C2:52:LEU:CD1	2:C2:57:LEU:HD11	2.32	0.59
2:C3:190:LEU:HD13	2:C3:201:TYR:HD1	1.67	0.59
1:K4:60:GLN:OE1	1:K4:60:GLN:N	2.34	0.59
1:K5:95:ASP:OD1	1:K5:97:THR:N	2.35	0.59
2:C1:84:HIS:ND1	2:C1:85:LEU:HD23	2.18	0.59
2:C1:147:PHE:HD1	2:C1:193:LEU:HD21	1.68	0.59
2:C1:93:VAL:HG11	2:C1:157:ILE:HD12	1.85	0.59
1:K2:44:LYS:O	1:K2:58:THR:HG23	2.03	0.58
2:C2:85:LEU:HD12	2:C2:146:ILE:HG22	1.84	0.58
2:C5:125:TYR:HE1	2:C5:129:VAL:HG21	1.68	0.58
1:K4:105:TYR:OH	1:K4:133:SER:OG	2.03	0.58
2:C2:253:ASP:OD1	2:C2:256:THR:N	2.36	0.58
2:C5:244:GLU:CD	2:C5:264:VAL:HG21	2.23	0.58
1:K4:135:ILE:HG22	1:K4:139:LYS:CE	2.33	0.58
1:K5:85:ASP:OD1	1:K5:86:GLU:N	2.37	0.58
2:C3:61:ALA:HB1	2:C3:123:LEU:HD23	1.86	0.57
2:C2:375:GLU:OE2	2:C2:379:ASN:ND2	2.37	0.57
2:C5:86:ILE:HD11	2:C5:150:GLN:HB3	1.87	0.57
1:K5:56:LEU:HD12	1:K5:57:THR:N	2.19	0.57
1:K5:131:ILE:HG23	1:K5:134:LEU:HB3	1.85	0.57
2:C4:142:LEU:O	2:C4:142:LEU:HD23	2.04	0.57
2:C1:249:MET:SD	2:C1:249:MET:N	2.78	0.57
1:K3:60:GLN:N	1:K3:60:GLN:OE1	2.38	0.56
2:C5:73:LEU:O	2:C5:77:LEU:HD13	2.05	0.56
1:K5:111:LEU:O	1:K5:111:LEU:HD12	2.05	0.56
2:C1:317:MET:SD	2:C1:317:MET:N	2.79	0.56
1:K5:56:LEU:HD12	1:K5:57:THR:H	1.71	0.56
2:C2:144:LEU:HD12	2:C2:193:LEU:HD23	1.88	0.56
2:C3:79:GLU:N	2:C3:79:GLU:OE1	2.39	0.56
2:C3:244:GLU:HB3	2:C3:260:ILE:HD13	1.87	0.56
2:C2:63:THR:O	2:C2:67:HIS:ND1	2.29	0.56
1:K5:71:TYR:O	1:K5:75:GLN:NE2	2.26	0.56
1:K4:122:VAL:O	1:K4:126:ALA:N	2.28	0.56
1:K5:131:ILE:O	1:K5:135:ILE:HD12	2.05	0.56
2:C4:185:ASN:O	2:C4:189:MET:N	2.35	0.56
1:K3:134:LEU:O	1:K3:138:VAL:HG23	2.05	0.55
2:C2:205:PHE:CE1	2:C2:252:LEU:HD11	2.41	0.55
2:C1:151:VAL:O	2:C1:157:ILE:HG21	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C4:57:LEU:HD13	2:C4:122:ILE:HD11	1.89	0.55
2:C4:185:ASN:N	2:C4:185:ASN:OD1	2.39	0.55
2:C2:66:LEU:HD13	2:C2:66:LEU:O	2.06	0.55
2:C5:90:ARG:NE	2:C5:150:GLN:O	2.40	0.55
1:K3:70:LEU:HA	1:K3:73:LEU:HD12	1.87	0.55
2:C3:77:LEU:HD22	2:C3:123:LEU:CD1	2.36	0.55
1:K3:71:TYR:O	1:K3:75:GLN:NE2	2.40	0.55
1:K4:135:ILE:HG22	1:K4:139:LYS:HE3	1.88	0.55
2:C3:187:CYS:SG	2:C3:252:LEU:HD23	2.47	0.55
1:K5:106:LEU:HD12	1:K5:131:ILE:HD13	1.90	0.54
1:K3:124:GLU:OE1	2:C3:62:TYR:OH	2.25	0.54
1:K3:124:GLU:OE1	1:K3:124:GLU:O	2.25	0.54
2:C2:253:ASP:OD1	2:C2:256:THR:OG1	2.25	0.54
1:K5:58:THR:OG1	2:C4:59:ARG:NH2	2.41	0.54
1:K3:77:ASP:OD1	1:K3:77:ASP:N	2.41	0.54
2:C1:123:LEU:HD23	2:C1:126:MET:HE1	1.90	0.54
1:K1:119:GLU:O	1:K1:122:VAL:HG12	2.08	0.54
1:K5:137:LEU:HD12	1:K5:138:VAL:N	2.23	0.54
2:C5:34:TRP:CZ3	2:C5:73:LEU:HD13	2.43	0.54
2:C3:363:ASP:OD1	2:C3:366:PHE:N	2.36	0.53
1:K3:135:ILE:HD12	1:K3:135:ILE:H	1.74	0.53
2:C1:113:GLN:O	2:C1:117:VAL:HG23	2.08	0.53
2:C4:97:LEU:HD22	2:C4:160:HIS:CG	2.42	0.53
1:K2:62:LEU:HD13	1:K2:70:LEU:HD12	1.90	0.53
2:C2:233:TYR:O	2:C2:237:VAL:HG23	2.08	0.53
2:C3:123:LEU:HD22	2:C3:126:MET:HE3	1.91	0.53
2:C2:267:GLU:N	2:C2:267:GLU:OE2	2.42	0.53
2:C4:142:LEU:HD21	2:C4:146:ILE:HD11	1.90	0.53
2:C4:286:HIS:O	2:C4:290:ASN:ND2	2.35	0.53
2:C4:327:ALA:O	2:C4:336:LYS:NZ	2.41	0.53
2:C1:142:LEU:C	2:C1:142:LEU:HD13	2.28	0.53
1:K4:123:LEU:C	1:K4:123:LEU:HD13	2.29	0.53
2:C1:120:ARG:HA	2:C1:139:VAL:HG11	1.90	0.53
2:C5:233:TYR:O	2:C5:237:VAL:HG23	2.09	0.53
2:C3:317:MET:O	2:C3:321:LEU:N	2.39	0.52
2:C3:344:GLY:O	2:C3:348:LEU:N	2.42	0.52
1:K3:127:GLU:OE1	2:C3:128:ARG:NH2	2.42	0.52
2:C5:207:ALA:HB3	2:C5:208:PRO:HD3	1.91	0.52
1:K1:57:THR:OG1	1:K1:107:ARG:NH2	2.43	0.52
1:K1:93:ASP:OD2	1:K2:58:THR:OG1	2.28	0.52
1:K4:119:GLU:OE2	1:K4:145:ARG:NH2	2.34	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C3:87:ASN:OD1	2:C3:88:LYS:N	2.42	0.52
2:C4:284:LEU:HD22	2:C4:313:MET:HG2	1.91	0.52
1:K5:82:SER:OG	2:C5:54:PHE:N	2.42	0.52
2:C1:43:GLU:OE2	2:C1:48:ASN:N	2.41	0.52
1:K3:119:GLU:OE1	1:K3:119:GLU:N	2.39	0.52
2:C5:77:LEU:HD11	2:C5:123:LEU:HD11	1.91	0.52
2:C5:152:VAL:HG21	2:C5:193:LEU:CD1	2.40	0.52
2:C3:43:GLU:N	2:C3:43:GLU:OE1	2.42	0.52
1:K2:58:THR:HG22	1:K2:60:GLN:OE1	2.09	0.52
2:C1:47:LYS:CG	2:C1:47:LYS:O	2.58	0.52
2:C2:91:GLU:OE1	2:C2:92:ASP:N	2.44	0.51
1:K1:131:ILE:N	1:K1:131:ILE:HD12	2.25	0.51
1:K2:137:LEU:HD12	1:K2:138:VAL:H	1.75	0.51
1:K5:147:SER:OG	1:K5:148:LYS:NZ	2.44	0.51
1:K2:130:ASN:OD1	2:C2:128:ARG:NE	2.35	0.51
1:K4:131:ILE:O	1:K4:131:ILE:HG13	2.11	0.51
2:C4:36:LEU:HD13	2:C4:36:LEU:C	2.30	0.51
2:C4:116:MET:O	2:C4:120:ARG:N	2.35	0.51
2:C5:79:GLU:O	2:C5:82:THR:OG1	2.26	0.51
2:C3:188:GLN:O	2:C3:191:MET:N	2.43	0.51
2:C4:56:GLU:OE1	2:C4:59:ARG:NH2	2.44	0.51
1:K1:67:LYS:O	1:K1:130:ASN:ND2	2.40	0.51
1:K2:115:LYS:HD2	1:K2:115:LYS:O	2.11	0.51
2:C1:280:GLU:O	2:C1:281:ASN:OD1	2.28	0.51
2:C1:123:LEU:HD23	2:C1:126:MET:CE	2.41	0.51
2:C2:168:MET:HE2	2:C2:178:VAL:HG13	1.92	0.51
2:C5:66:LEU:HD13	2:C5:66:LEU:C	2.30	0.51
2:C5:219:MET:SD	2:C5:220:GLU:N	2.83	0.51
2:C2:120:ARG:HA	2:C2:139:VAL:HG11	1.93	0.50
2:C4:40:ALA:O	2:C4:43:GLU:N	2.44	0.50
2:C1:93:VAL:HG11	2:C1:157:ILE:CD1	2.41	0.50
2:C2:271:LYS:O	2:C2:271:LYS:NZ	2.25	0.50
2:C3:337:ASN:OD1	2:C3:339:VAL:N	2.44	0.50
2:C5:88:LYS:O	2:C5:92:ASP:OD1	2.29	0.50
2:C4:44:ILE:HG23	2:C4:49:ASN:ND2	2.27	0.50
2:C5:57:LEU:HB2	2:C5:122:ILE:HD12	1.94	0.50
2:C4:57:LEU:HD13	2:C4:122:ILE:HD13	1.93	0.50
2:C5:86:ILE:HD11	2:C5:150:GLN:CB	2.41	0.50
2:C2:190:LEU:HD21	2:C2:204:ASP:HB2	1.93	0.49
2:C2:253:ASP:OD1	2:C2:253:ASP:C	2.51	0.49
2:C3:73:LEU:HD21	2:C3:123:LEU:HD21	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K5:85:ASP:HB2	1:K5:91:LEU:HD21	1.94	0.49
2:C1:73:LEU:HD13	2:C1:73:LEU:O	2.12	0.49
2:C1:147:PHE:CE2	2:C1:151:VAL:HG11	2.47	0.49
2:C3:257:GLU:HA	2:C3:257:GLU:OE1	2.13	0.49
2:C4:35:ASP:O	2:C4:38:LYS:N	2.45	0.49
2:C5:120:ARG:HA	2:C5:139:VAL:HG11	1.94	0.49
1:K5:58:THR:HG21	2:C4:59:ARG:HH12	1.78	0.49
2:C3:190:LEU:HD22	2:C3:200:VAL:HG12	1.93	0.49
2:C1:217:PHE:CZ	2:C1:264:VAL:HG22	2.48	0.49
1:K2:116:ASP:O	1:K3:115:LYS:NZ	2.34	0.49
1:K4:136:LYS:HG2	1:K4:137:LEU:N	2.26	0.49
1:K4:146:ASP:O	1:K4:150:SER:N	2.37	0.49
2:C2:90:ARG:NH2	2:C2:150:GLN:O	2.44	0.49
2:C4:121:ASP:O	2:C4:123:LEU:N	2.45	0.49
1:K3:69:PHE:N	1:K3:129:TYR:O	2.39	0.48
1:K4:115:LYS:HA	1:K4:115:LYS:HE3	1.95	0.48
1:K5:58:THR:HG21	2:C4:59:ARG:NH1	2.28	0.48
2:C1:247:ARG:O	2:C1:251:CYS:N	2.45	0.48
1:K5:144:GLU:OE2	1:K5:148:LYS:NZ	2.41	0.48
2:C2:264:VAL:HG13	2:C2:268:LEU:HD23	1.95	0.48
2:C5:257:GLU:O	2:C5:261:VAL:HG23	2.13	0.48
2:C2:166:LEU:HA	2:C2:169:ILE:HG22	1.95	0.48
2:C3:33:ILE:CG2	2:C3:60:ASN:HB3	2.43	0.48
2:C1:90:ARG:O	2:C1:94:LEU:HD13	2.13	0.48
2:C5:90:ARG:O	2:C5:94:LEU:HD23	2.13	0.48
1:K2:111:LEU:HD12	1:K2:111:LEU:O	2.14	0.48
2:C5:363:ASP:OD1	2:C5:364:ARG:N	2.45	0.48
2:C2:273:MET:HE2	2:C2:306:VAL:HG21	1.96	0.48
2:C5:244:GLU:OE1	2:C5:264:VAL:HG21	2.14	0.48
1:K2:112:VAL:HG23	1:K2:112:VAL:O	2.13	0.48
2:C2:190:LEU:CD1	2:C2:200:VAL:HG12	2.44	0.48
1:K5:69:PHE:HZ	1:K5:92:ILE:HD12	1.79	0.48
2:C4:233:TYR:O	2:C4:237:VAL:HG13	2.14	0.48
2:C5:57:LEU:CB	2:C5:122:ILE:HD12	2.44	0.48
1:K1:44:LYS:HD3	1:K1:44:LYS:N	2.29	0.47
2:C2:26:ASP:OD1	2:C2:27:GLU:N	2.46	0.47
2:C3:321:LEU:HD11	2:C3:377:PHE:HZ	1.78	0.47
2:C3:362:ASN:OD1	2:C3:362:ASN:O	2.32	0.47
2:C1:260:ILE:O	2:C1:264:VAL:HG23	2.14	0.47
2:C4:230:ALA:HB2	2:C4:279:MET:HG3	1.97	0.47
2:C5:74:TYR:HA	2:C5:77:LEU:HD22	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K2:85:ASP:HB2	1:K2:91:LEU:HD21	1.96	0.47
1:K5:108:HIS:O	2:C4:66:LEU:HD21	2.14	0.47
2:C2:194:GLY:C	2:C2:195:LEU:HD12	2.35	0.47
2:C3:219:MET:SD	2:C3:220:GLU:N	2.88	0.47
2:C5:71:GLU:O	2:C5:75:THR:OG1	2.29	0.47
1:K1:44:LYS:O	1:K1:58:THR:HG23	2.14	0.47
2:C1:55:GLU:H	2:C1:55:GLU:CD	2.17	0.47
2:C1:245:ILE:HG22	2:C1:249:MET:SD	2.54	0.47
1:K2:57:THR:OG1	1:K2:103:LEU:HD21	2.15	0.47
1:K4:95:ASP:OD1	1:K4:97:THR:N	2.46	0.47
2:C4:287:MET:O	2:C4:291:GLY:N	2.48	0.47
1:K1:126:ALA:CB	1:K1:134:LEU:HD12	2.45	0.47
2:C2:356:LEU:HA	2:C2:360:PHE:HB2	1.96	0.47
2:C3:26:ASP:O	2:C3:30:VAL:HG23	2.15	0.47
2:C3:207:ALA:HB3	2:C3:208:PRO:HD3	1.97	0.47
2:C4:56:GLU:OE1	2:C4:56:GLU:HA	2.13	0.47
2:C5:78:ARG:O	2:C5:82:THR:HG23	2.14	0.47
2:C2:190:LEU:HG	2:C2:201:TYR:HA	1.96	0.47
2:C5:118:MET:H	2:C5:118:MET:HE2	1.80	0.47
1:K1:148:LYS:HE2	1:K1:148:LYS:HA	1.97	0.46
1:K4:95:ASP:OD1	1:K4:98:TYR:N	2.37	0.46
2:C3:154:TYR:O	2:C3:158:ARG:N	2.37	0.46
2:C5:77:LEU:HD21	2:C5:123:LEU:HD13	1.94	0.46
1:K4:69:PHE:CZ	1:K4:73:LEU:HD11	2.50	0.46
2:C1:47:LYS:O	2:C1:47:LYS:HG3	2.16	0.46
2:C4:347:ASP:OD2	2:C4:351:ARG:NE	2.42	0.46
1:K1:125:GLU:OE1	1:K1:129:TYR:CE2	2.68	0.46
2:C1:127:ASP:OD2	2:C1:139:VAL:HG12	2.16	0.46
2:C1:366:PHE:CD1	2:C1:366:PHE:N	2.80	0.46
2:C2:60:ASN:O	2:C2:63:THR:OG1	2.26	0.46
2:C3:103:GLN:OE1	2:C3:104:THR:N	2.48	0.46
2:C4:30:VAL:HG13	2:C4:64:MET:CE	2.45	0.46
2:C4:217:PHE:CE2	2:C4:264:VAL:HG22	2.50	0.46
2:C5:123:LEU:HD13	2:C5:126:MET:CE	2.46	0.46
2:C5:211:GLU:N	2:C5:211:GLU:OE1	2.48	0.46
1:K1:85:ASP:N	1:K1:85:ASP:OD1	2.49	0.46
1:K4:131:ILE:O	1:K4:131:ILE:CG1	2.64	0.46
2:C1:230:ALA:HB2	2:C1:279:MET:HG3	1.97	0.46
2:C2:260:ILE:HG13	2:C2:261:VAL:N	2.30	0.46
2:C3:277:VAL:HG12	2:C3:285:VAL:HG23	1.96	0.46
2:C2:77:LEU:O	2:C2:81:VAL:HG12	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C3:63:THR:O	2:C3:67:HIS:ND1	2.44	0.46
2:C5:85:LEU:HD12	2:C5:146:ILE:HG22	1.98	0.46
1:K1:66:PRO:HA	1:K1:71:TYR:CD1	2.51	0.46
1:K3:58:THR:HG21	2:C2:59:ARG:HH21	1.81	0.46
1:K4:115:LYS:O	1:K4:115:LYS:HD3	2.16	0.46
1:K5:134:LEU:O	1:K5:138:VAL:HG13	2.16	0.46
2:C1:105:LEU:C	2:C1:105:LEU:HD13	2.36	0.46
1:K2:137:LEU:HA	1:K2:140:ASP:OD2	2.16	0.46
1:K3:61:THR:HG21	1:K3:107:ARG:HG2	1.97	0.46
2:C1:189:MET:HA	2:C1:192:ILE:HD12	1.98	0.46
2:C2:40:ALA:HB1	2:C2:52:LEU:HD21	1.97	0.46
2:C3:321:LEU:HD12	2:C3:321:LEU:O	2.16	0.45
2:C3:349:LYS:HB2	2:C3:374:PHE:CE1	2.52	0.45
2:C5:116:MET:O	2:C5:116:MET:SD	2.74	0.45
2:C1:34:TRP:CE3	2:C1:64:MET:HE1	2.51	0.45
2:C4:179:ASP:OD2	2:C4:182:ALA:HB3	2.16	0.45
2:C4:213:SER:O	2:C4:217:PHE:N	2.35	0.45
1:K1:60:GLN:CD	1:K1:60:GLN:H	2.19	0.45
2:C2:156:CYS:SG	2:C2:157:ILE:N	2.89	0.45
1:K2:56:LEU:O	1:K2:107:ARG:NH2	2.48	0.45
2:C3:169:ILE:HD13	2:C3:209:PHE:CE1	2.51	0.45
2:C5:138:ASN:OD1	2:C5:140:TYR:N	2.42	0.45
2:C5:138:ASN:N	2:C5:141:ASN:OD1	2.48	0.45
1:K5:123:LEU:HD12	1:K5:142:ILE:CD1	2.47	0.45
2:C3:260:ILE:O	2:C3:264:VAL:HG23	2.17	0.45
2:C5:260:ILE:O	2:C5:264:VAL:HG23	2.17	0.45
1:K1:65:ASP:OD1	1:K1:66:PRO:HD2	2.17	0.45
2:C1:91:GLU:OE2	2:C1:91:GLU:N	2.30	0.45
2:C3:62:TYR:CE1	2:C3:66:LEU:HD21	2.51	0.45
2:C5:311:LYS:HD3	2:C5:312:THR:N	2.31	0.45
1:K2:137:LEU:HD12	1:K2:138:VAL:HG23	1.99	0.45
1:K5:45:TRP:HA	1:K5:58:THR:HA	1.98	0.45
2:C1:154:TYR:HB3	2:C1:157:ILE:HG22	1.98	0.45
1:K2:138:VAL:O	1:K2:142:ILE:HG13	2.17	0.45
2:C2:36:LEU:HD13	2:C2:36:LEU:O	2.17	0.45
2:C3:376:TYR:CD1	2:C3:376:TYR:N	2.84	0.45
2:C1:125:TYR:O	2:C1:129:VAL:HG12	2.17	0.45
2:C3:220:GLU:OE1	2:C3:220:GLU:HA	2.17	0.45
1:K1:125:GLU:OE1	1:K1:125:GLU:O	2.34	0.44
1:K5:60:GLN:H	1:K5:60:GLN:CD	2.20	0.44
2:C2:344:GLY:O	2:C2:348:LEU:N	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C3:51:GLY:O	2:C3:52:LEU:HG	2.18	0.44
2:C3:85:LEU:HA	2:C3:89:VAL:HB	1.98	0.44
1:K4:66:PRO:HD2	1:K4:67:LYS:N	2.33	0.44
2:C3:373:ASP:C	2:C3:373:ASP:OD2	2.56	0.44
2:C1:244:GLU:O	2:C1:248:VAL:HG23	2.18	0.44
2:C4:74:TYR:CZ	2:C4:142:LEU:HD12	2.53	0.44
2:C5:266:ARG:NH1	2:C5:267:GLU:OE2	2.51	0.44
1:K3:45:TRP:HB3	1:K3:56:LEU:HD21	2.00	0.44
2:C1:286:HIS:O	2:C1:290:ASN:ND2	2.45	0.44
2:C2:78:ARG:HE	2:C2:146:ILE:HD11	1.82	0.44
1:K2:134:LEU:HD22	1:K2:137:LEU:CD1	2.40	0.44
1:K3:112:VAL:O	1:K3:112:VAL:HG23	2.17	0.44
2:C1:71:GLU:OE2	2:C1:71:GLU:N	2.33	0.44
2:C1:147:PHE:HE2	2:C1:151:VAL:HG11	1.82	0.44
2:C2:190:LEU:HD11	2:C2:200:VAL:HG12	1.98	0.44
2:C2:364:ARG:NH1	2:C2:368:GLN:OE1	2.49	0.44
1:K1:59:ARG:O	1:K1:62:LEU:N	2.50	0.44
1:K2:95:ASP:OD1	1:K2:97:THR:N	2.49	0.44
1:K5:136:LYS:HD3	1:K5:136:LYS:C	2.38	0.44
2:C1:245:ILE:N	2:C1:245:ILE:HD13	2.33	0.44
2:C1:266:ARG:NE	2:C1:267:GLU:OE2	2.49	0.44
2:C3:300:TYR:CD1	2:C3:300:TYR:C	2.91	0.44
2:C4:55:GLU:OE2	2:C4:55:GLU:N	2.42	0.44
2:C5:64:MET:CE	2:C5:64:MET:HA	2.46	0.44
1:K4:98:TYR:HB2	1:K4:125:GLU:HG3	2.00	0.44
1:K5:106:LEU:CD1	1:K5:131:ILE:HD13	2.48	0.44
2:C1:160:HIS:O	2:C1:164:THR:OG1	2.30	0.44
2:C2:184:ARG:O	2:C2:188:GLN:HG3	2.18	0.44
1:K3:123:LEU:HD13	1:K3:124:GLU:N	2.33	0.43
1:K5:139:LYS:HD2	1:K5:139:LYS:C	2.38	0.43
2:C1:58:TYR:C	2:C1:58:TYR:CD2	2.91	0.43
2:C1:138:ASN:ND2	2:C1:141:ASN:OD1	2.51	0.43
2:C2:247:ARG:HA	2:C2:247:ARG:CZ	2.48	0.43
1:K2:48:LEU:HB3	1:K2:50:VAL:HG23	1.99	0.43
1:K5:80:LEU:O	1:K5:80:LEU:HD12	2.18	0.43
2:C1:46:ARG:HA	2:C1:46:ARG:NE	2.33	0.43
2:C1:159:ASP:OD1	2:C1:160:HIS:N	2.51	0.43
2:C1:263:VAL:HG22	2:C1:266:ARG:NH2	2.33	0.43
2:C5:137:GLU:HB3	2:C5:141:ASN:HB2	2.00	0.43
1:K2:117:LEU:O	1:K3:115:LYS:NZ	2.50	0.43
2:C3:129:VAL:HG13	2:C3:130:TYR:N	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C4:161:LEU:HD11	2:C4:165:LEU:HD11	2.00	0.43
1:K5:69:PHE:CZ	1:K5:92:ILE:HD12	2.53	0.43
1:K5:112:VAL:O	1:K5:112:VAL:HG12	2.18	0.43
2:C1:129:VAL:HG13	2:C1:130:TYR:N	2.33	0.43
2:C1:181:GLY:O	2:C1:184:ARG:N	2.52	0.43
2:C3:56:GLU:O	2:C3:60:ASN:OD1	2.36	0.43
2:C3:94:LEU:HA	2:C3:97:LEU:HD13	2.00	0.43
2:C3:347:ASP:OD2	2:C3:351:ARG:NE	2.43	0.43
2:C4:123:LEU:HB3	2:C4:126:MET:SD	2.58	0.43
2:C5:77:LEU:HD21	2:C5:123:LEU:HD12	1.96	0.43
1:K1:142:ILE:HD12	1:K1:142:ILE:HA	1.91	0.43
1:K3:133:SER:O	1:K3:137:LEU:HD23	2.19	0.43
2:C1:248:VAL:HG13	2:C1:256:THR:HB	2.01	0.43
2:C5:85:LEU:O	2:C5:89:VAL:HB	2.18	0.43
1:K3:136:LYS:HD2	1:K3:136:LYS:O	2.19	0.43
2:C3:204:ASP:C	2:C3:204:ASP:OD1	2.57	0.43
2:C4:158:ARG:HG2	2:C4:158:ARG:HH11	1.83	0.43
1:K2:57:THR:HG21	1:K2:103:LEU:HD11	2.00	0.43
1:K2:111:LEU:HD22	1:K2:141:LYS:HE2	2.00	0.43
2:C1:67:HIS:O	2:C1:68:LYS:HG2	2.19	0.43
2:C2:62:TYR:HE2	2:C2:66:LEU:HD23	1.84	0.43
2:C2:273:MET:CE	2:C2:306:VAL:HG21	2.49	0.43
2:C3:133:GLN:OE1	2:C3:134:ASN:ND2	2.52	0.43
2:C4:40:ALA:O	2:C4:44:ILE:HG13	2.18	0.43
2:C4:310:LEU:HA	2:C4:313:MET:CE	2.48	0.43
1:K2:145:ARG:NH2	1:K2:146:ASP:OD2	2.44	0.43
2:C1:62:TYR:CD2	2:C1:62:TYR:C	2.92	0.43
2:C1:102:LEU:HD22	2:C1:102:LEU:H	1.84	0.43
2:C3:195:LEU:HD12	2:C3:195:LEU:N	2.34	0.43
2:C4:28:LYS:O	2:C4:31:ASN:N	2.52	0.43
2:C4:56:GLU:O	2:C4:60:ASN:OD1	2.36	0.43
2:C4:121:ASP:O	2:C4:122:ILE:C	2.57	0.43
1:K1:115:LYS:O	1:K1:115:LYS:HD3	2.18	0.43
2:C1:150:GLN:OE1	2:C1:150:GLN:HA	2.19	0.43
2:C4:207:ALA:HB3	2:C4:208:PRO:HD3	2.01	0.43
2:C2:327:ALA:O	2:C2:336:LYS:NZ	2.50	0.43
2:C3:25:MET:SD	2:C3:26:ASP:N	2.91	0.43
2:C4:90:ARG:O	2:C4:93:VAL:HG22	2.19	0.43
2:C4:119:ILE:N	2:C4:119:ILE:HD13	2.34	0.43
2:C4:125:TYR:CE2	2:C4:129:VAL:HG11	2.54	0.43
1:K2:66:PRO:HA	1:K2:71:TYR:CD1	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C3:288:LEU:HD22	2:C3:317:MET:HG3	2.01	0.42
2:C4:67:HIS:C	2:C4:68:LYS:HG2	2.40	0.42
1:K2:72:ARG:NE	1:K2:77:ASP:OD2	2.52	0.42
1:K5:86:GLU:OE2	1:K5:86:GLU:HA	2.19	0.42
2:C4:160:HIS:O	2:C4:164:THR:OG1	2.35	0.42
1:K1:62:LEU:HD22	1:K1:70:LEU:HD23	2.02	0.42
2:C1:34:TRP:CE3	2:C1:64:MET:CE	3.02	0.42
2:C4:194:GLY:C	2:C4:195:LEU:HD12	2.39	0.42
1:K1:84:LYS:O	1:K1:88:GLY:N	2.42	0.42
1:K5:58:THR:HB	1:K5:60:GLN:OE1	2.19	0.42
2:C1:207:ALA:HB3	2:C1:208:PRO:HD3	2.01	0.42
2:C2:55:GLU:OE2	2:C2:59:ARG:NH1	2.53	0.42
2:C2:148:ARG:HD2	2:C2:149:ASP:OD1	2.19	0.42
2:C2:347:ASP:O	2:C2:351:ARG:N	2.43	0.42
2:C3:34:TRP:CZ2	2:C3:73:LEU:HA	2.55	0.42
2:C3:248:VAL:HG13	2:C3:253:ASP:O	2.19	0.42
2:C4:40:ALA:HB2	2:C4:52:LEU:HD11	2.00	0.42
2:C4:71:GLU:OE1	2:C4:72:LYS:N	2.52	0.42
2:C5:118:MET:O	2:C5:122:ILE:HG12	2.20	0.42
2:C5:284:LEU:HD23	2:C5:316:CYS:HB3	2.01	0.42
1:K1:115:LYS:HE3	1:K1:115:LYS:HA	2.00	0.42
1:K4:133:SER:HA	1:K4:136:LYS:HE2	2.00	0.42
2:C1:78:ARG:HG3	2:C1:146:ILE:HD11	2.01	0.42
2:C4:310:LEU:HD23	2:C4:313:MET:HE1	2.00	0.42
1:K1:119:GLU:OE1	1:K1:145:ARG:NE	2.52	0.42
1:K5:135:ILE:HD12	1:K5:135:ILE:H	1.85	0.42
2:C1:263:VAL:HG22	2:C1:266:ARG:HH21	1.83	0.42
2:C5:168:MET:SD	2:C5:168:MET:N	2.93	0.42
1:K1:105:TYR:CD1	1:K1:105:TYR:C	2.93	0.42
1:K2:72:ARG:NH2	1:K2:80:LEU:HD21	2.34	0.42
2:C2:169:ILE:HG23	2:C2:170:ALA:N	2.34	0.42
1:K3:94:ARG:NH2	1:K3:125:GLU:OE1	2.46	0.42
1:K3:135:ILE:HG22	1:K3:139:LYS:HE2	2.01	0.42
2:C1:122:ILE:HG22	2:C1:123:LEU:HD12	2.01	0.42
2:C4:52:LEU:CD1	2:C4:57:LEU:HD21	2.49	0.42
2:C4:248:VAL:HG21	2:C4:260:ILE:HG21	2.02	0.42
2:C5:244:GLU:O	2:C5:248:VAL:HG23	2.20	0.42
1:K1:69:PHE:HE2	2:C1:58:TYR:CG	2.37	0.42
1:K3:72:ARG:NH2	1:K3:77:ASP:OD2	2.53	0.42
2:C2:299:MET:O	2:C2:303:PHE:HD1	2.03	0.42
2:C3:123:LEU:CD2	2:C3:126:MET:HE1	2.47	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C3:260:ILE:HD12	2:C3:260:ILE:C	2.40	0.42
2:C4:149:ASP:HB2	2:C4:150:GLN:OE1	2.20	0.42
2:C4:364:ARG:HD3	2:C4:364:ARG:C	2.41	0.42
2:C5:327:ALA:O	2:C5:336:LYS:NZ	2.51	0.42
2:C3:68:LYS:N	2:C3:68:LYS:HD2	2.34	0.42
2:C5:274:LYS:HD3	2:C5:274:LYS:N	2.34	0.42
1:K4:94:ARG:NH2	1:K4:124:GLU:O	2.53	0.41
1:K5:105:TYR:CD2	1:K5:105:TYR:C	2.93	0.41
2:C1:245:ILE:HG23	2:C1:257:GLU:HG3	2.02	0.41
2:C4:152:VAL:HG21	2:C4:193:LEU:HD13	2.02	0.41
2:C4:181:GLY:O	2:C4:185:ASN:OD1	2.38	0.41
2:C4:212:MET:SD	2:C4:213:SER:N	2.92	0.41
1:K4:66:PRO:HD2	1:K4:67:LYS:H	1.84	0.41
2:C1:205:PHE:CZ	2:C1:252:LEU:HD22	2.55	0.41
2:C4:73:LEU:HG	2:C4:126:MET:HE1	2.01	0.41
2:C5:167:ASP:C	2:C5:167:ASP:OD1	2.58	0.41
1:K1:135:ILE:O	1:K1:139:LYS:NZ	2.40	0.41
2:C1:90:ARG:CZ	2:C1:90:ARG:HB3	2.50	0.41
2:C2:52:LEU:HD11	2:C2:57:LEU:HD21	2.02	0.41
2:C4:27:GLU:HG2	2:C4:29:TYR:N	2.34	0.41
2:C5:35:ASP:O	2:C5:38:LYS:N	2.53	0.41
1:K3:66:PRO:HA	1:K3:71:TYR:CG	2.55	0.41
1:K4:81:ASP:O	1:K4:82:SER:HB2	2.21	0.41
1:K5:130:ASN:ND2	2:C5:58:TYR:OH	2.53	0.41
2:C1:148:ARG:HB2	2:C1:193:LEU:HD22	2.02	0.41
2:C1:303:PHE:HB2	2:C1:313:MET:HE3	2.02	0.41
2:C1:374:PHE:HA	2:C1:377:PHE:CZ	2.56	0.41
2:C2:153:ARG:CZ	2:C2:153:ARG:HB3	2.50	0.41
2:C2:188:GLN:O	2:C2:192:ILE:HG13	2.20	0.41
2:C2:300:TYR:OH	2:C2:310:LEU:HD13	2.21	0.41
2:C2:356:LEU:HD21	2:C2:367:LYS:HB3	2.01	0.41
2:C4:374:PHE:HA	2:C4:377:PHE:CZ	2.55	0.41
1:K3:123:LEU:HD13	1:K3:123:LEU:C	2.41	0.41
2:C2:217:PHE:CE2	2:C2:264:VAL:HG22	2.55	0.41
2:C3:113:GLN:HA	2:C3:113:GLN:OE1	2.20	0.41
2:C4:142:LEU:O	2:C4:145:ILE:HG22	2.21	0.41
1:K1:132:THR:HA	1:K1:135:ILE:HD11	2.02	0.41
1:K4:136:LYS:O	1:K4:140:ASP:OD1	2.38	0.41
1:K5:141:LYS:HZ1	1:K5:145:ARG:CB	2.31	0.41
2:C1:126:MET:HG3	2:C1:130:TYR:HB3	2.01	0.41
2:C2:256:THR:HG22	2:C2:260:ILE:HG23	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C3:30:VAL:HG21	2:C3:69:HIS:CD2	2.56	0.41
1:K1:66:PRO:HA	1:K1:71:TYR:CE1	2.56	0.41
2:C3:61:ALA:CB	2:C3:123:LEU:HD23	2.49	0.41
2:C3:355:PHE:N	2:C3:355:PHE:CD1	2.88	0.41
1:K5:131:ILE:HG23	1:K5:131:ILE:O	2.21	0.41
2:C1:71:GLU:H	2:C1:71:GLU:CD	2.21	0.41
1:K1:148:LYS:O	1:K1:148:LYS:HD3	2.21	0.41
1:K2:127:GLU:OE1	2:C2:128:ARG:NH2	2.44	0.41
2:C1:96:SER:HA	2:C1:99:ASN:OD1	2.21	0.41
2:C2:201:TYR:OH	2:C2:252:LEU:HD12	2.21	0.41
2:C3:125:TYR:CE1	2:C3:129:VAL:HG11	2.56	0.41
2:C3:277:VAL:O	2:C3:284:LEU:N	2.54	0.41
2:C5:114:THR:O	2:C5:118:MET:HE1	2.20	0.41
2:C5:244:GLU:HG2	2:C5:245:ILE:N	2.36	0.41
1:K3:69:PHE:HB3	1:K3:129:TYR:HA	2.02	0.40
2:C3:212:MET:SD	2:C3:212:MET:C	2.99	0.40
2:C4:122:ILE:HG22	2:C4:123:LEU:HD13	2.03	0.40
2:C5:219:MET:SD	2:C5:219:MET:C	2.99	0.40
1:K1:146:ASP:OD1	1:K1:147:SER:N	2.54	0.40
2:C2:219:MET:SD	2:C2:220:GLU:N	2.94	0.40
2:C3:256:THR:O	2:C3:260:ILE:HG23	2.22	0.40
2:C5:82:THR:HG22	2:C5:146:ILE:CG2	2.51	0.40
1:K4:119:GLU:O	1:K4:122:VAL:HG22	2.22	0.40
2:C1:33:ILE:CG2	2:C1:60:ASN:HB3	2.49	0.40
2:C2:364:ARG:HA	2:C2:367:LYS:HE2	2.03	0.40
2:C3:152:VAL:HG21	2:C3:193:LEU:CD1	2.51	0.40
2:C5:67:HIS:C	2:C5:68:LYS:HG2	2.40	0.40
2:C5:86:ILE:HD12	2:C5:86:ILE:N	2.36	0.40
2:C1:33:ILE:HG22	2:C1:64:MET:HE3	2.03	0.40
2:C1:99:ASN:OD1	2:C1:99:ASN:N	2.54	0.40
2:C1:180:ARG:NE	2:C1:180:ARG:H	2.20	0.40
2:C2:169:ILE:HG21	2:C2:209:PHE:HE2	1.86	0.40
2:C2:368:GLN:OE1	2:C2:369:THR:HG23	2.21	0.40
1:K2:113:ILE:O	1:K2:113:ILE:HG13	2.22	0.40
1:K3:80:LEU:HD21	1:K3:82:SER:OG	2.22	0.40
1:K4:69:PHE:N	1:K4:129:TYR:O	2.47	0.40
2:C3:101:PHE:CG	2:C3:160:HIS:CE1	3.10	0.40
2:C3:329:VAL:HA	2:C3:341:TYR:CE1	2.57	0.40
2:C5:118:MET:H	2:C5:118:MET:CE	2.35	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	K1	112/234 (48%)	109 (97%)	3 (3%)	0	100	100
1	K2	112/234 (48%)	108 (96%)	4 (4%)	0	100	100
1	K3	112/234 (48%)	108 (96%)	4 (4%)	0	100	100
1	K4	112/234 (48%)	105 (94%)	7 (6%)	0	100	100
1	K5	112/234 (48%)	108 (96%)	4 (4%)	0	100	100
2	C1	356/381 (93%)	343 (96%)	13 (4%)	0	100	100
2	C2	356/381 (93%)	341 (96%)	15 (4%)	0	100	100
2	C3	356/381 (93%)	339 (95%)	17 (5%)	0	100	100
2	C4	356/381 (93%)	335 (94%)	21 (6%)	0	100	100
2	C5	356/381 (93%)	343 (96%)	13 (4%)	0	100	100
All	All	2340/3075 (76%)	2239 (96%)	101 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	K1	103/200 (52%)	97 (94%)	6 (6%)	20	55
1	K2	103/200 (52%)	99 (96%)	4 (4%)	32	65
1	K3	103/200 (52%)	101 (98%)	2 (2%)	57	80
1	K4	103/200 (52%)	98 (95%)	5 (5%)	25	59

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	K5	103/200 (52%)	98 (95%)	5 (5%)	25 59
2	C1	326/346 (94%)	310 (95%)	16 (5%)	25 59
2	C2	326/346 (94%)	313 (96%)	13 (4%)	31 65
2	C3	326/346 (94%)	299 (92%)	27 (8%)	11 42
2	C4	326/346 (94%)	312 (96%)	14 (4%)	29 63
2	C5	326/346 (94%)	310 (95%)	16 (5%)	25 59
All	All	2145/2730 (79%)	2037 (95%)	108 (5%)	28 59

All (108) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	K1	59	ARG
1	K1	60	GLN
1	K1	71	TYR
1	K1	108	HIS
1	K1	115	LYS
1	K1	127	GLU
1	K2	119	GLU
1	K2	133	SER
1	K2	137	LEU
1	K2	145	ARG
1	K3	44	LYS
1	K3	95	ASP
1	K4	49	ASN
1	K4	72	ARG
1	K4	84	LYS
1	K4	115	LYS
1	K4	140	ASP
1	K5	49	ASN
1	K5	69	PHE
1	K5	108	HIS
1	K5	115	LYS
1	K5	139	LYS
2	C1	27	GLU
2	C1	29	TYR
2	C1	34	TRP
2	C1	59	ARG
2	C1	60	ASN
2	C1	62	TYR
2	C1	84	HIS

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Mol	Chain	Res	Type
2	C1	88	LYS
2	C1	101	PHE
2	C1	110	ASN
2	C1	180	ARG
2	C1	205	PHE
2	C1	249	MET
2	C1	253	ASP
2	C1	274	LYS
2	C1	317	MET
2	C2	25	MET
2	C2	111	ASP
2	C2	125	TYR
2	C2	126	MET
2	C2	153	ARG
2	C2	173	ARG
2	C2	180	ARG
2	C2	219	MET
2	C2	253	ASP
2	C2	271	LYS
2	C2	274	LYS
2	C2	363	ASP
2	C2	376	TYR
2	C3	34	TRP
2	C3	52	LEU
2	C3	60	ASN
2	C3	88	LYS
2	C3	102	LEU
2	C3	103	GLN
2	C3	110	ASN
2	C3	111	ASP
2	C3	118	MET
2	C3	120	ARG
2	C3	123	LEU
2	C3	124	MET
2	C3	130	TYR
2	C3	147	PHE
2	C3	156	CYS
2	C3	190	LEU
2	C3	198	ARG
2	C3	219	MET
2	C3	247	ARG
2	C3	252	LEU

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Mol	Chain	Res	Type
2	C3	273	MET
2	C3	300	TYR
2	C3	317	MET
2	C3	343	GLN
2	C3	364	ARG
2	C3	374	PHE
2	C3	381	ASN
2	C4	39	ASN
2	C4	42	GLN
2	C4	60	ASN
2	C4	67	HIS
2	C4	84	HIS
2	C4	120	ARG
2	C4	127	ASP
2	C4	140	TYR
2	C4	176	GLU
2	C4	262	LYS
2	C4	274	LYS
2	C4	300	TYR
2	C4	349	LYS
2	C4	362	ASN
2	C5	34	TRP
2	C5	42	GLN
2	C5	68	LYS
2	C5	84	HIS
2	C5	118	MET
2	C5	125	TYR
2	C5	126	MET
2	C5	130	TYR
2	C5	135	ASN
2	C5	140	TYR
2	C5	185	ASN
2	C5	204	ASP
2	C5	206	GLU
2	C5	229	SER
2	C5	286	HIS
2	C5	368	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	K3	108	HIS

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Mol	Chain	Res	Type
2	C1	45	GLN
2	C1	110	ASN
2	C2	87	ASN
2	C2	218	GLN
2	C3	134	ASN
2	C3	218	GLN
2	C3	286	HIS
2	C3	361	ASN
2	C4	69	HIS
2	C4	84	HIS
2	C5	69	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

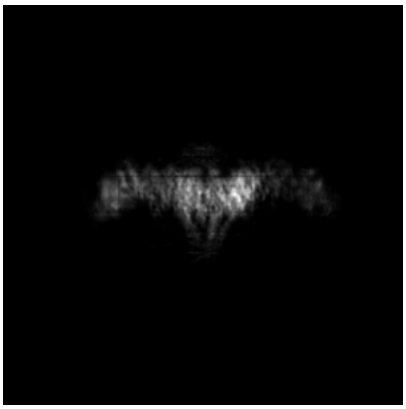
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-41995. These allow visual inspection of the internal detail of the map and identification of artifacts.

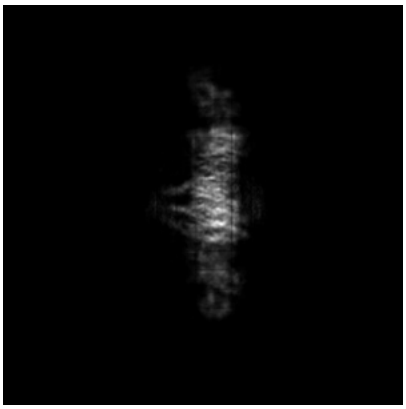
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

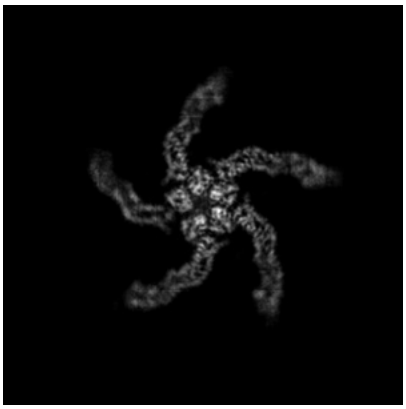
6.1.1 Primary map



X

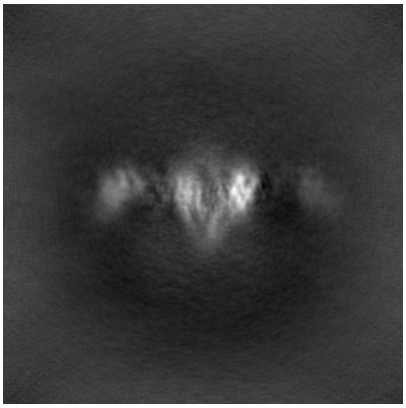


Y

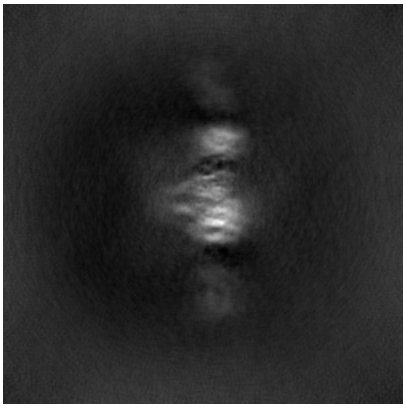


Z

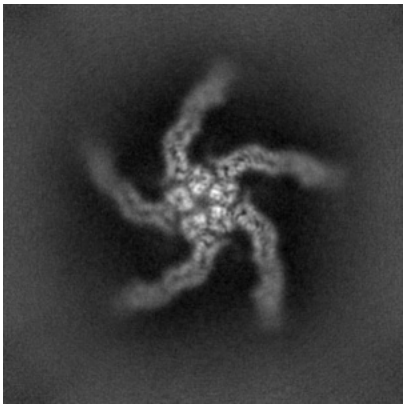
6.1.2 Raw map



X



Y



Z

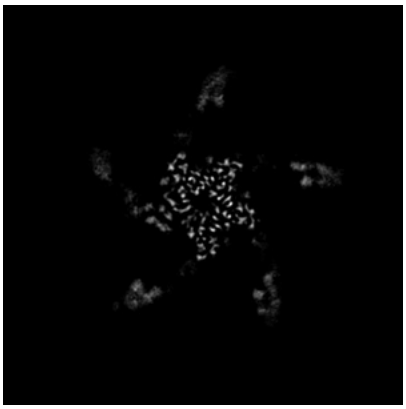
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

6.2.1 Primary map

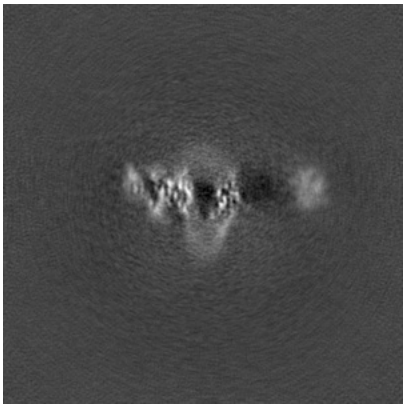
X Index: 162

Y Index: 162

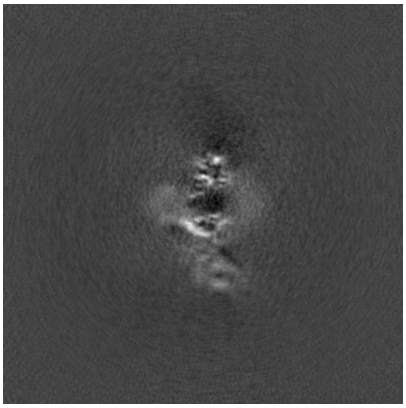


Z Index: 162

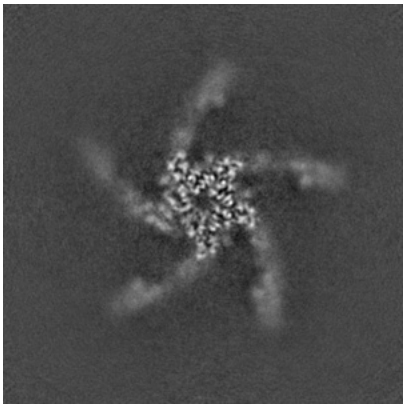
6.2.2 Raw map



X Index: 162



Y Index: 162



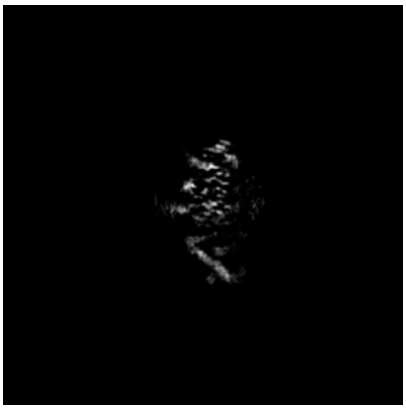
Z Index: 162

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

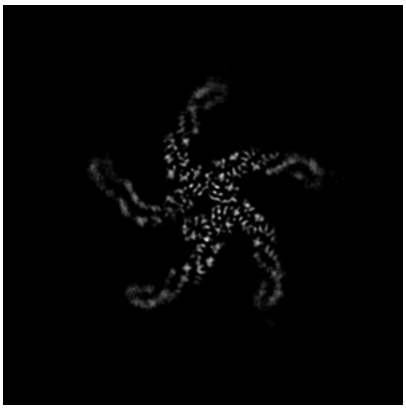
6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 158

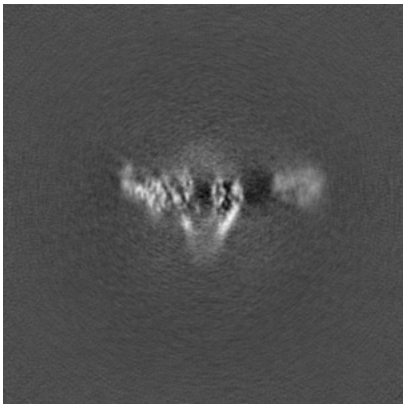


Y Index: 150

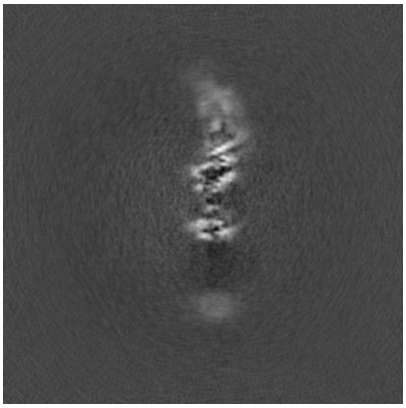


Z Index: 173

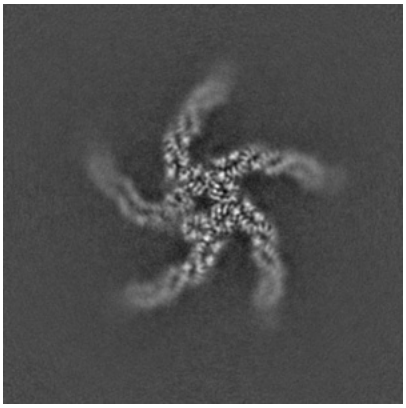
6.3.2 Raw map



X Index: 158



Y Index: 193

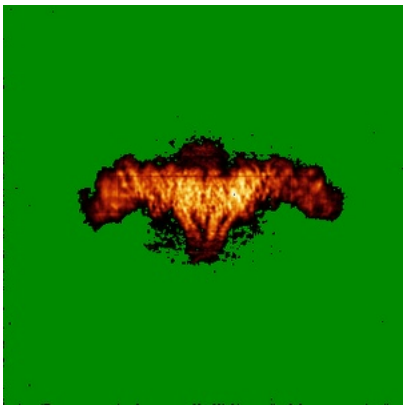


Z Index: 173

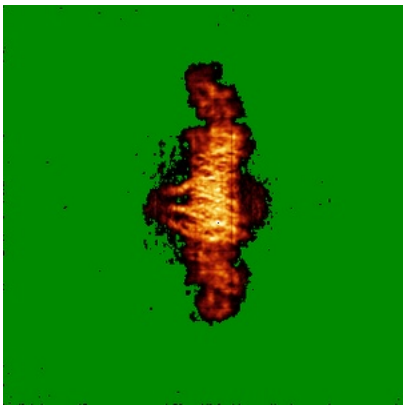
The images above show the largest variance slices of the map in three orthogonal directions.

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

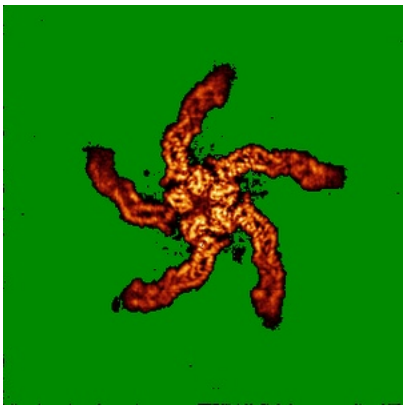
6.4.1 Primary map



X

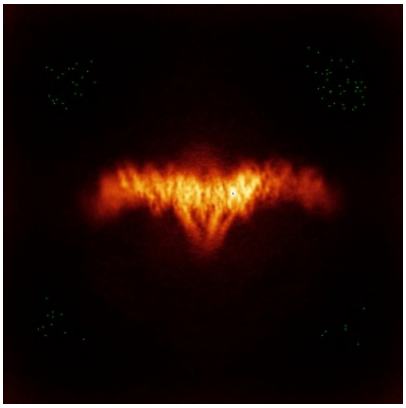


Y

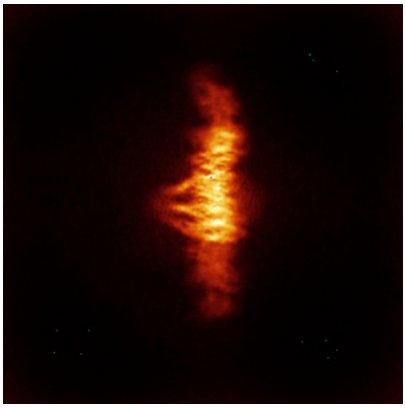


Z

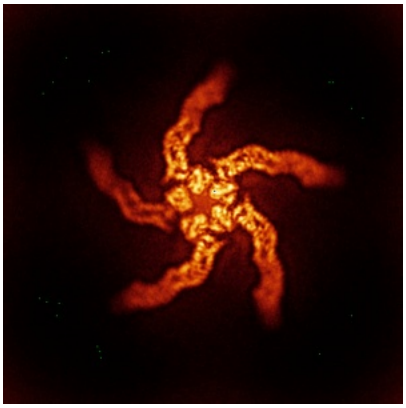
6.4.2 Raw map



X



Y

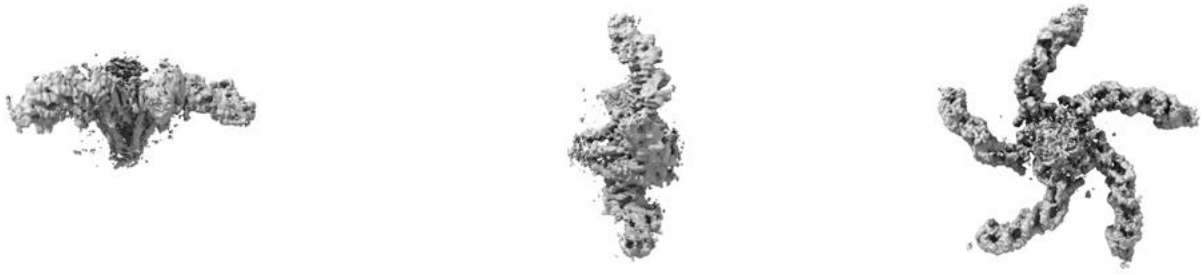


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.08. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

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

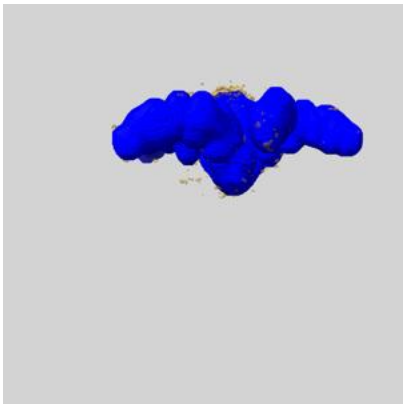
6.6 Mask visualisation (i)

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

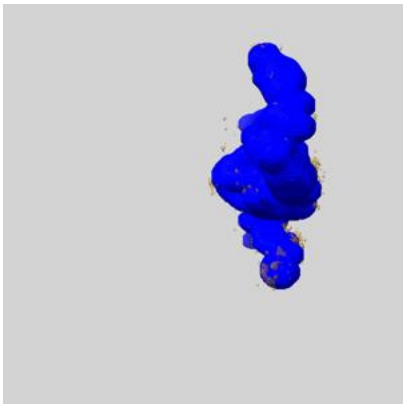
A mask typically either:

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

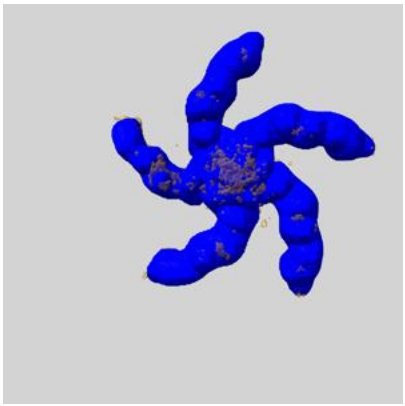
6.6.1 emd_41995_msk_1.map (i)



X



Y

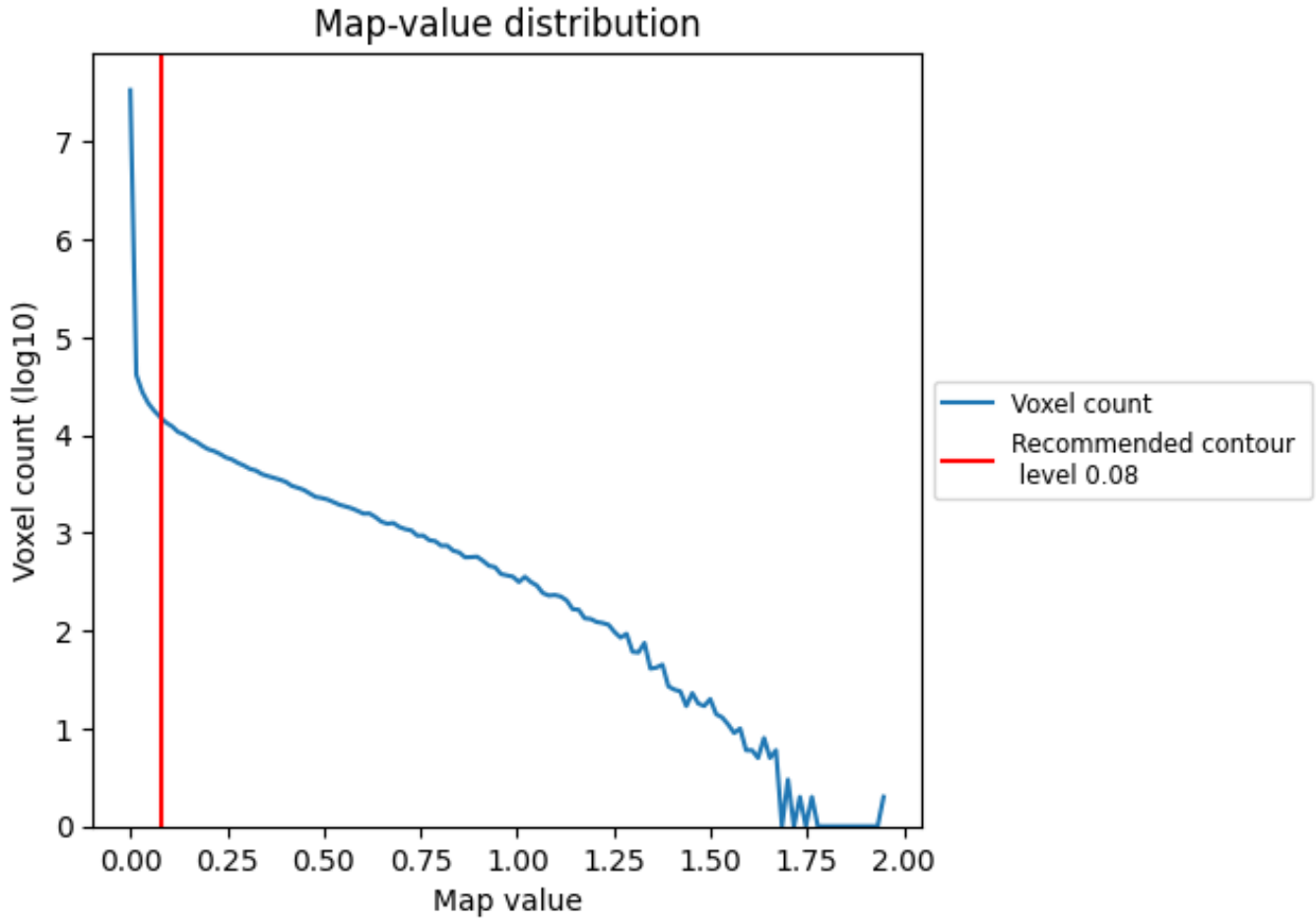


Z

7 Map analysis

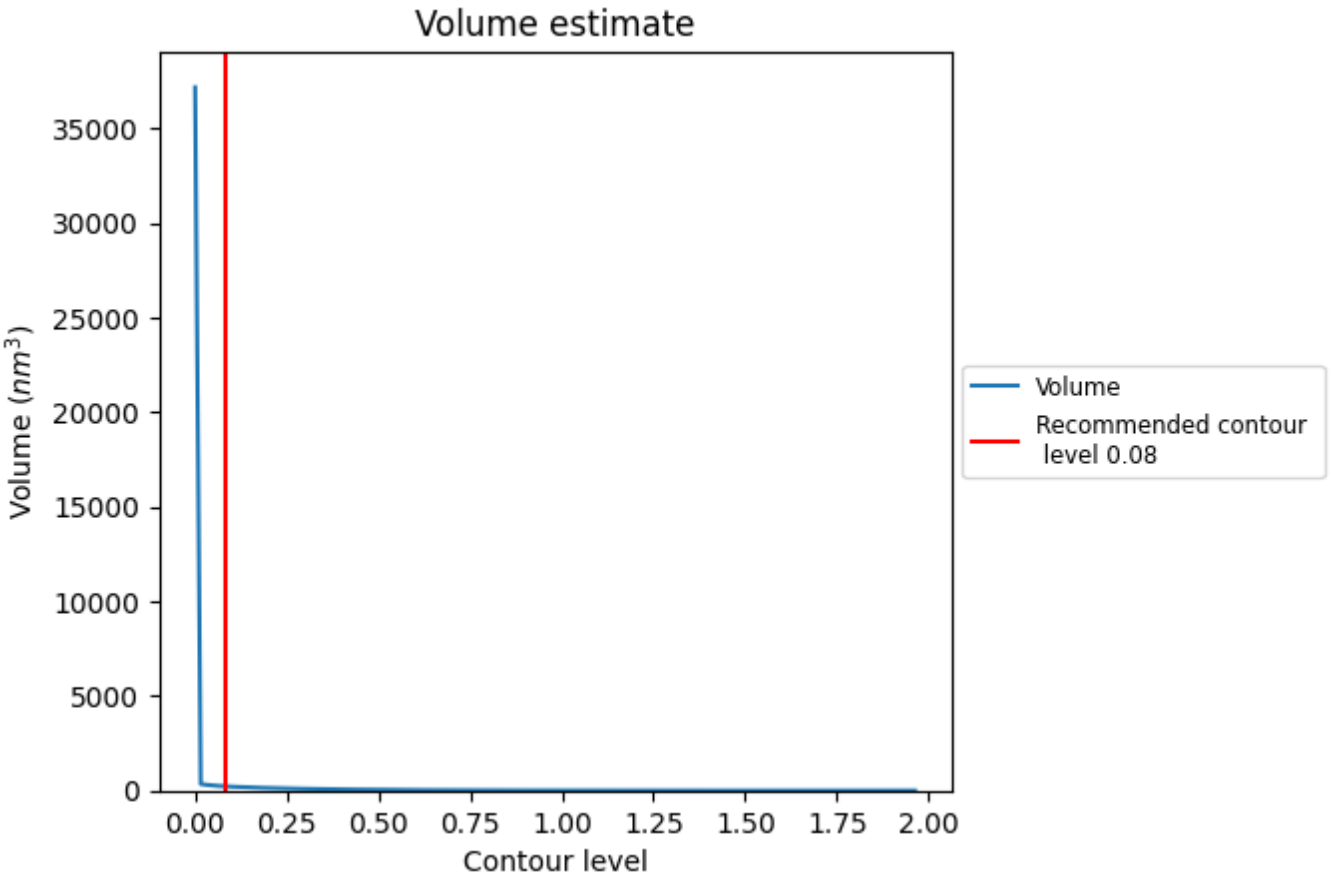
This section contains the results of statistical analysis of the map.

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.

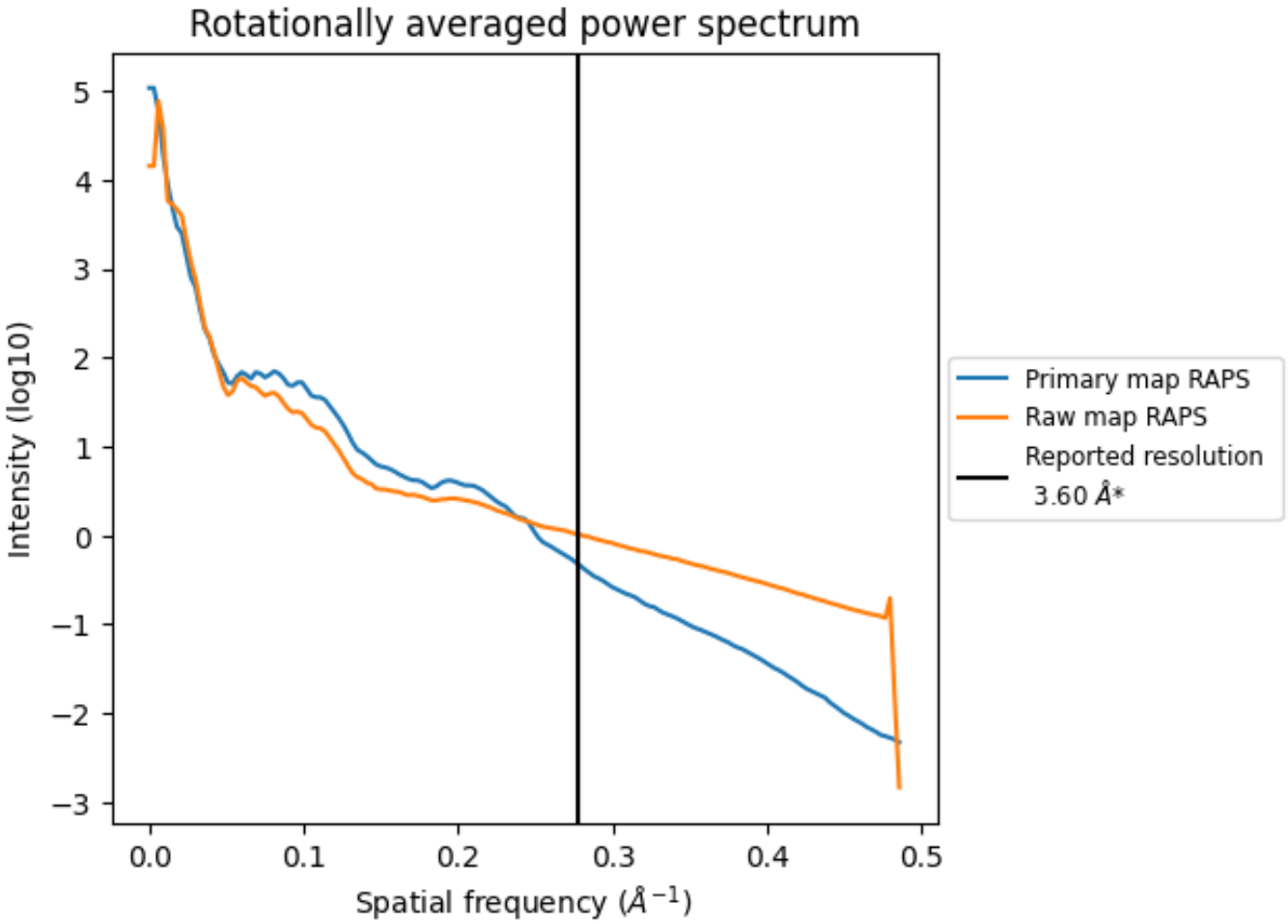
7.2 Volume estimate



The volume at the recommended contour level is 227 nm^3; this corresponds to an approximate mass of 205 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)

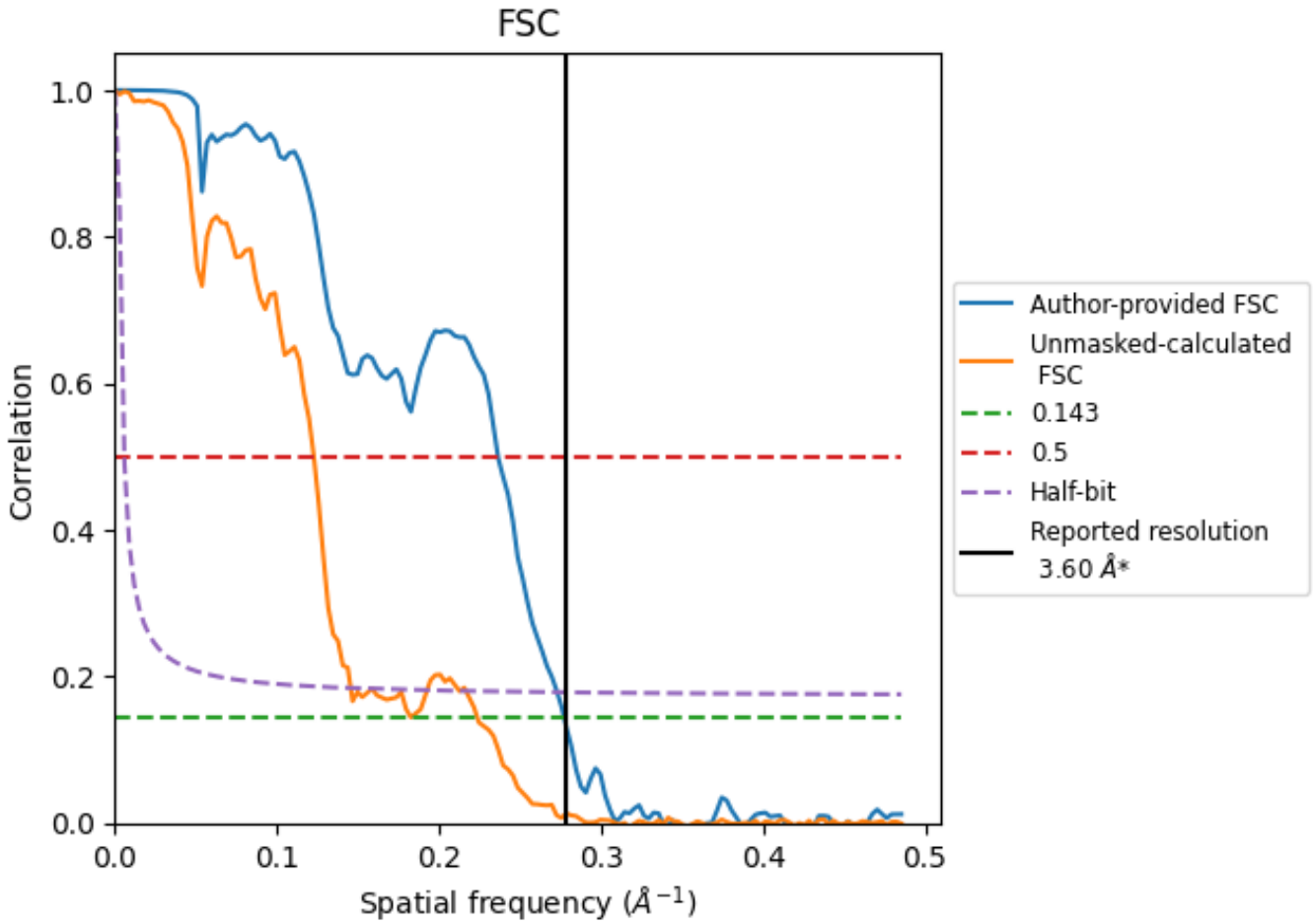


*Reported resolution corresponds to spatial frequency of 0.278 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.278 Å^{-1}

8.2 Resolution estimates (i)

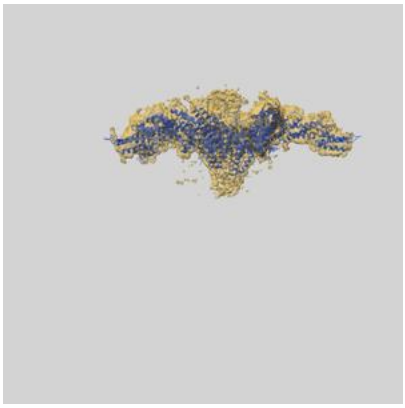
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.61	4.23	3.66
Unmasked-calculated*	4.47	8.14	6.86

*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 4.47 differs from the reported value 3.6 by more than 10 %

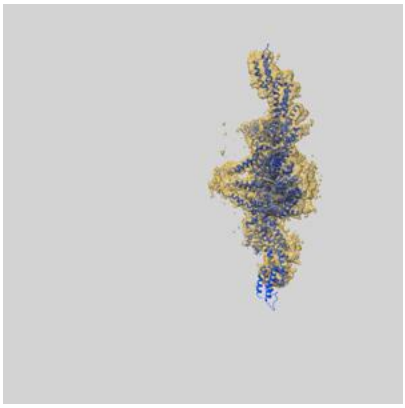
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-41995 and PDB model 8U80. Per-residue inclusion information can be found in section 3 on page 5.

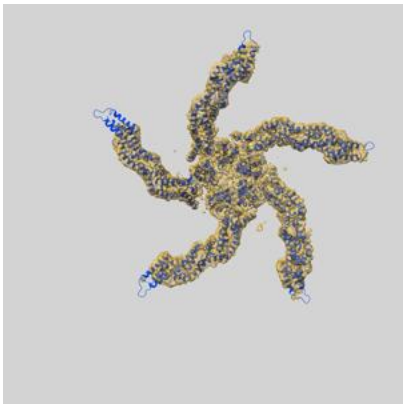
9.1 Map-model overlay



X



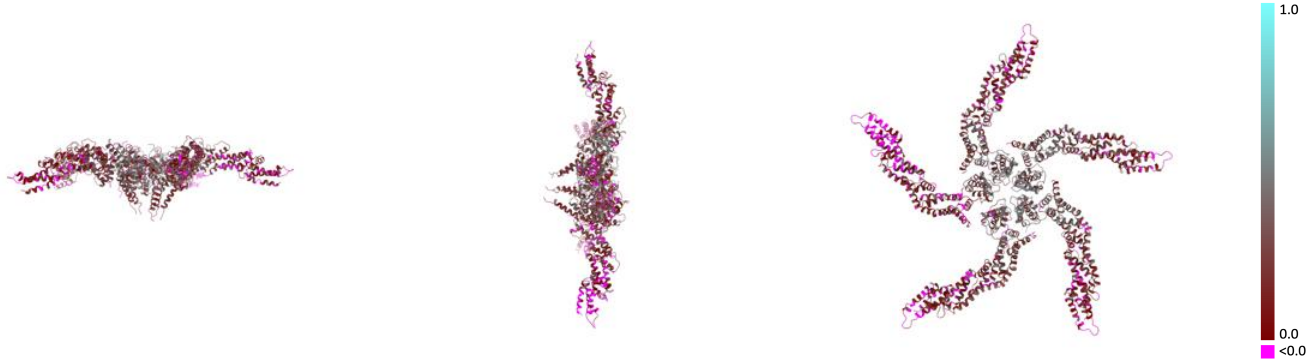
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.08 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.

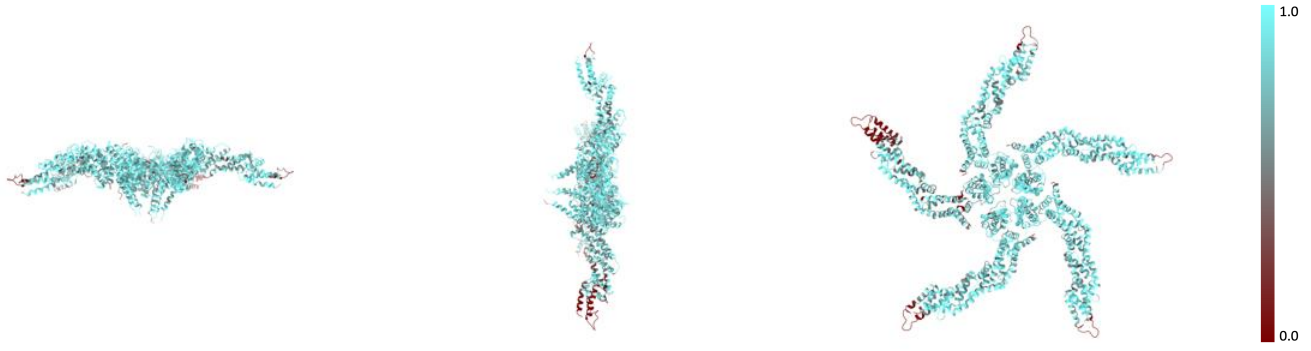
9.2 Q-score mapped to coordinate model



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.

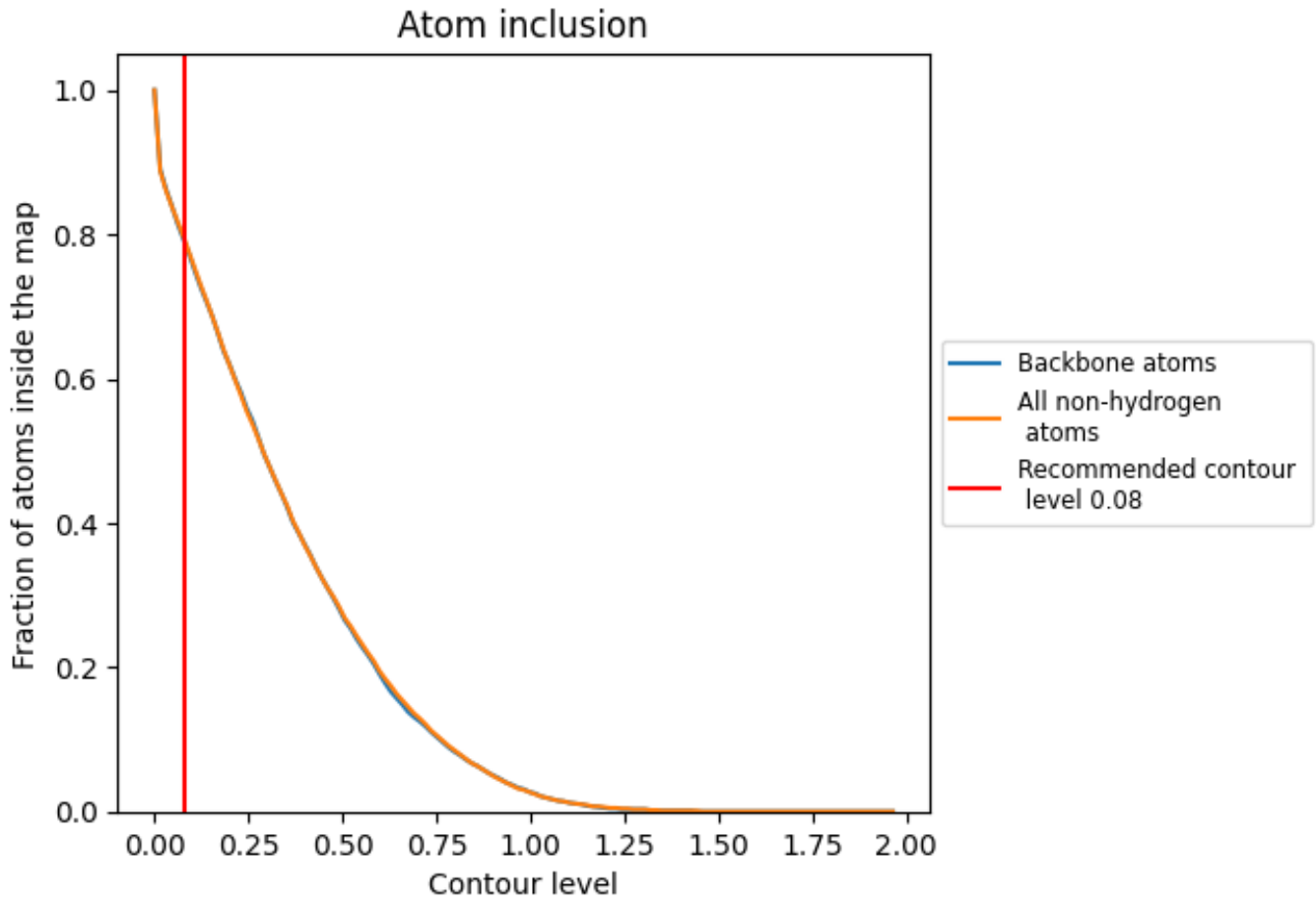
9.3 Atom inclusion mapped to coordinate model



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 (0.08).

9.4 Atom inclusion (i)



At the recommended contour level, 79% of all backbone atoms, 79% 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 (0.08) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7920	0.2300
C1	0.7690	0.1940
C2	0.8020	0.2180
C3	0.8460	0.2590
C4	0.8050	0.2110
C5	0.6220	0.0970
K1	0.8710	0.3080
K2	0.9010	0.3680
K3	0.9120	0.3860
K4	0.9050	0.3590
K5	0.8280	0.2830