



Full wwPDB EM Validation Report ⓘ

Mar 25, 2026 – 08:17 AM UTC

PDB ID : 8I5G / pdb_00008i5g
EMDB ID : EMD-35194
Title : Structure of human Nav1.7 in complex with PF-05089771
Authors : Wu, Q.R.; Yan, N.
Deposited on : 2023-01-25
Resolution : 2.70 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:

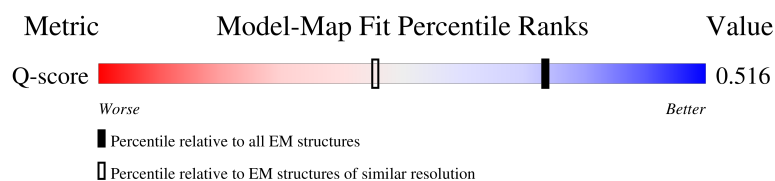
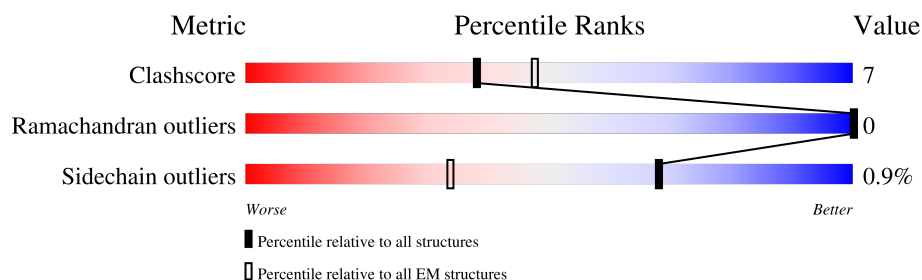
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 2.70 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	10327 (2.20 - 3.20)

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

Mol	Chain	Length	Quality of chain
1	B	192	
2	C	215	
3	A	1988	
4	D	2	

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Mol	Chain	Length	Quality of chain
4	E	2	50% 100%
4	F	2	100%

2 Entry composition [i](#)

There are 12 unique types of molecules in this entry. The entry contains 13389 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Sodium channel subunit beta-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	173	Total	C	N	O	S	0	0
			1416	902	232	272	10		

- Molecule 2 is a protein called Sodium channel subunit beta-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	119	Total	C	N	O	S	4	0
			980	615	172	183	10		

- Molecule 3 is a protein called Sodium channel protein type 9 subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A	1273	Total	C	N	O	S	1	0
			10273	6810	1615	1771	77		

- Molecule 4 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



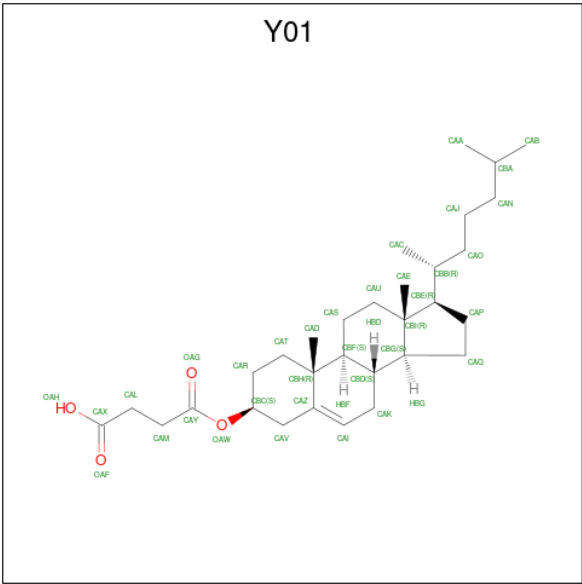
Mol	Chain	Residues	Atoms				AltConf	Trace
4	D	2	Total	C	N	O	0	0
			28	16	2	10		
4	E	2	Total	C	N	O	0	0
			28	16	2	10		
4	F	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C₈H₁₅NO₆).



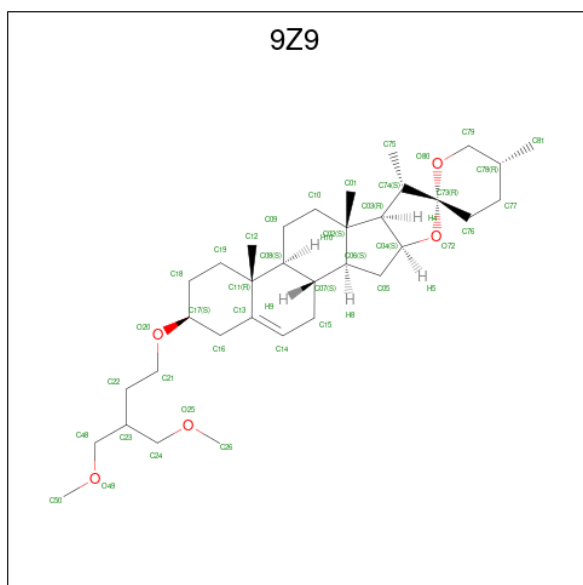
Mol	Chain	Residues	Atoms				AltConf
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	A	1	Total	C	N	O	0
			14	8	1	5	
5	A	1	Total	C	N	O	0
			14	8	1	5	

- Molecule 6 is CHOLESTEROL HEMISUCCINATE (CCD ID: Y01) (formula: $C_{31}H_{50}O_4$).



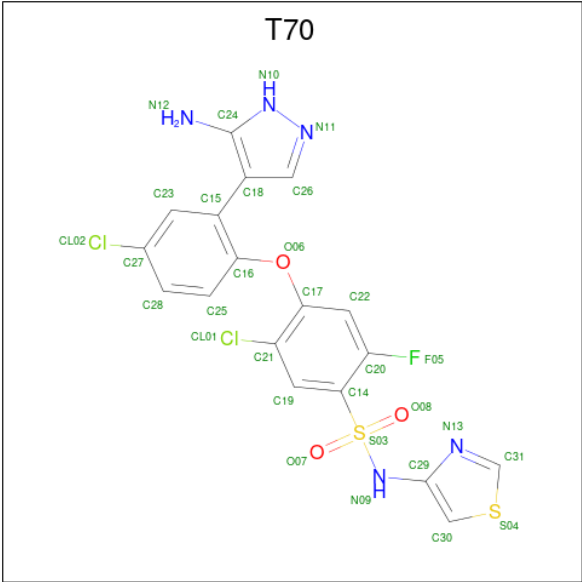
Mol	Chain	Residues	Atoms			AltConf
6	A	1	Total	C	O	0
			35	31	4	
6	A	1	Total	C	O	0
			35	31	4	

- Molecule 7 is (3beta,14beta,17beta,25R)-3-[4-methoxy-3-(methoxymethyl)butoxy]spirost-5-en (CCD ID: 9Z9) (formula: C₃₄H₅₆O₅).



Mol	Chain	Residues	Atoms			AltConf
7	A	1	Total	C	O	0
			39	34	5	

- Molecule 8 is PF-05089771 (CCD ID: T70) (formula: C₁₈H₁₂Cl₂FN₅O₃S₂) (labeled as "Ligand of Interest" by depositor).

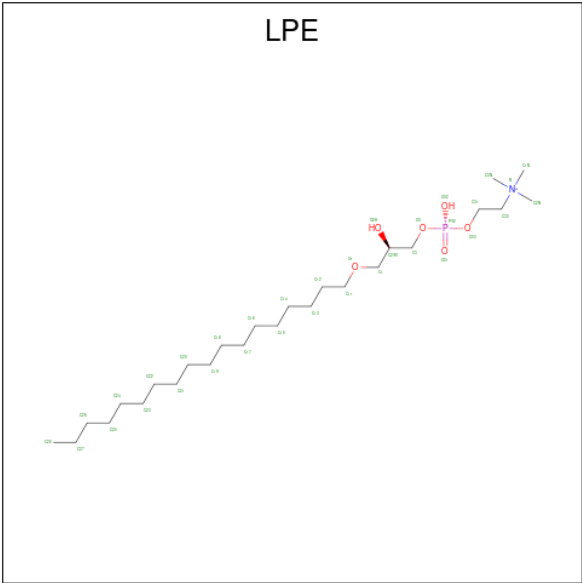


Mol	Chain	Residues	Atoms							AltConf
8	A	1	Total	C	Cl	F	N	O	S	0
			31	18	2	1	5	3	2	

- Molecule 9 is SODIUM ION (CCD ID: NA) (formula: Na).

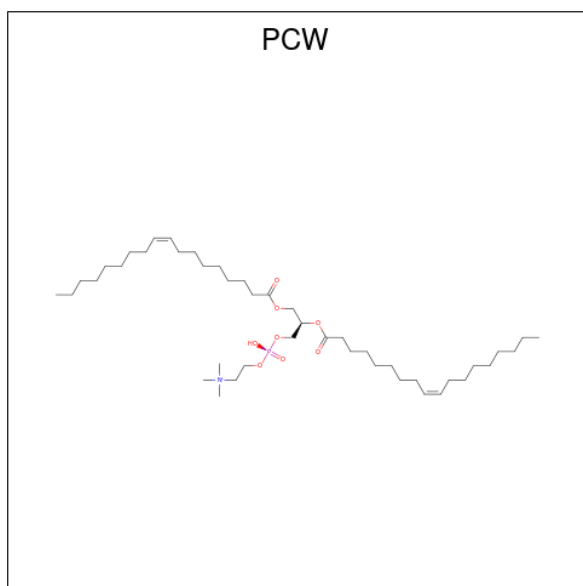
Mol	Chain	Residues	Atoms		AltConf
			Total	Na	
9	A	1	1	1	0

- Molecule 10 is 1-O-OCTADECYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: LPE) (formula: C₂₆H₅₇NO₆P).



Mol	Chain	Residues	Atoms					AltConf
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			18	10	1	6	1	
10	A	1	Total	C	N	O	P	0
			28	20	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			17	9	1	6	1	

- Molecule 11 is 1,2-DIOLEOYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: PCW) (formula: $C_{44}H_{85}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
11	A	1	Total	C	N	O	P	0
			53	43	1	8	1	
11	A	1	Total	C	N	O	P	0
			47	37	1	8	1	
11	A	1	Total	C	N	O	P	0
			44	34	1	8	1	

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Mol	Chain	Residues	Atoms					AltConf
11	A	1	Total	C	N	O	P	0
			44	34	1	8	1	
11	A	1	Total	C	N	O	P	0
			44	34	1	8	1	

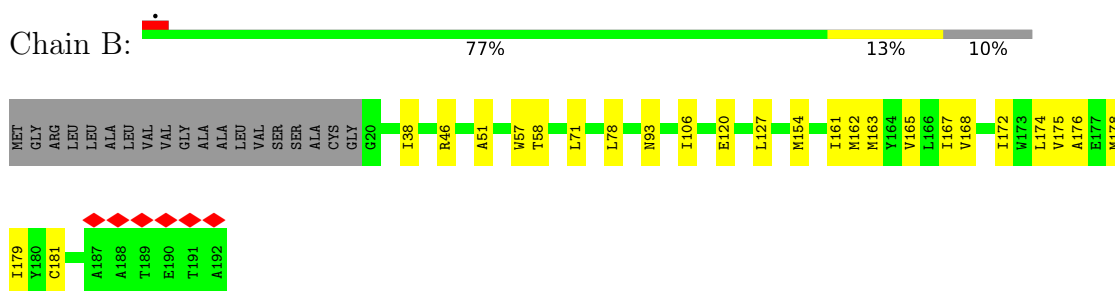
- Molecule 12 is water.

Mol	Chain	Residues	Atoms		AltConf
12	A	5	Total	O	0
			5	5	

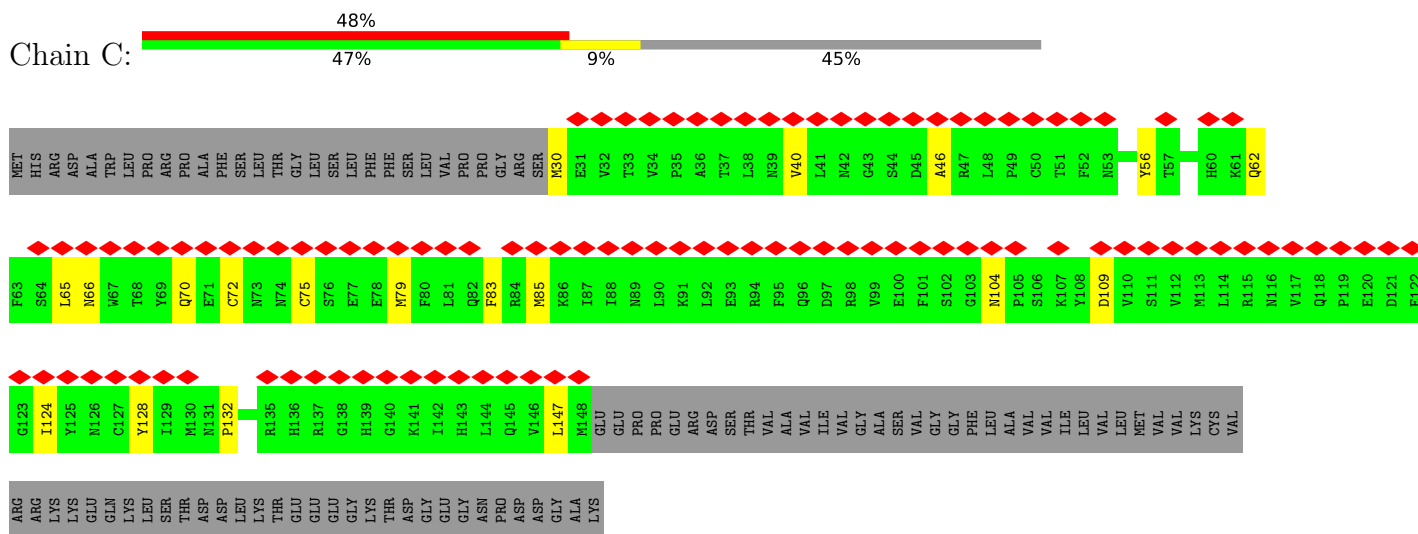
3 Residue-property plots

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

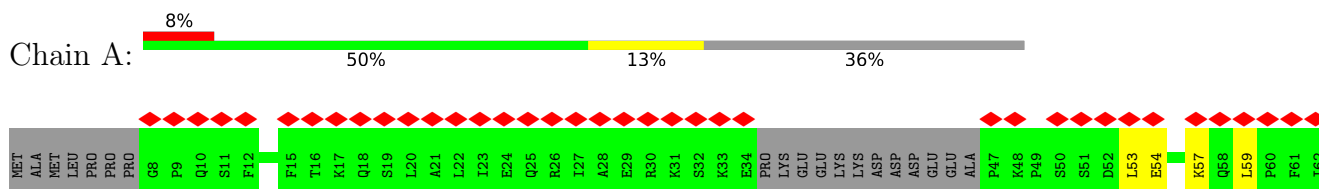
• Molecule 1: Sodium channel subunit beta-1



• Molecule 2: Sodium channel subunit beta-2



• Molecule 3: Sodium channel protein type 9 subunit alpha







4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	297950	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.250	Depositor
Minimum map value	-1.973	Depositor
Average map value	0.009	Depositor
Map value standard deviation	0.083	Depositor
Recommended contour level	0.35	Depositor
Map size (Å)	249.12, 249.12, 249.12	wwPDB
Map dimensions	288, 288, 288	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.865, 0.865, 0.865	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: 9Z9, T70, NA, NAG, Y01, PCW, LPE

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	B	0.12	0/1442	0.29	0/1949
2	C	0.10	0/1011	0.31	0/1367
3	A	0.13	0/10524	0.35	0/14258
All	All	0.13	0/12977	0.34	0/17574

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	B	1416	0	1380	15	0
2	C	980	0	935	11	0
3	A	10273	0	10498	172	0
4	D	28	0	25	0	0
4	E	28	0	25	0	0
4	F	28	0	25	0	0
5	A	28	0	26	1	0
5	B	42	0	39	0	0
6	A	70	0	98	2	0
7	A	39	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	A	31	0	0	1	0
9	A	1	0	0	0	0
10	A	188	0	253	9	0
11	A	232	0	323	13	0
12	A	5	0	0	0	0
All	All	13389	0	13627	201	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 7.

All (201) 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)
3:A:285:THR:O	3:A:289:ILE:HD12	1.80	0.80
3:A:348:SER:HB2	11:A:2011:PCW:H332	1.66	0.76
3:A:67:PRO:HB2	3:A:70:MET:HG3	1.67	0.76
3:A:747:ASP:OD2	3:A:987:ASN:ND2	2.22	0.72
3:A:1324:VAL:HG21	3:A:1455:VAL:HG21	1.73	0.70
1:B:181:CYS:SG	3:A:1187:LYS:NZ	2.64	0.70
3:A:1474:MET:HE1	3:A:1482:TYR:HB2	1.75	0.68
3:A:1219:LYS:HB3	3:A:1222:ILE:HD12	1.76	0.66
3:A:1738:PHE:HD1	10:A:2009:LPE:H2N3	1.60	0.65
3:A:1230:ASP:OD1	3:A:1293:ARG:NH2	2.30	0.64
3:A:1467:LEU:HD21	3:A:1472:ILE:HG22	1.81	0.63
3:A:1739:TYR:HD2	10:A:2009:LPE:H3N3	1.63	0.63
3:A:287:GLU:H	3:A:287:GLU:CD	2.07	0.63
1:B:168:VAL:O	1:B:172:ILE:HG23	1.99	0.62
3:A:1502:ASN:HB3	3:A:1505:GLN:HB2	1.81	0.61
3:A:748:LEU:O	3:A:752:ILE:HG12	2.00	0.61
3:A:1277:THR:HG22	3:A:1278:LEU:HD23	1.81	0.60
3:A:1330:ILE:HD12	6:A:2019:Y01:HAA3	1.84	0.60
3:A:265:GLN:NE2	3:A:1610:ARG:O	2.34	0.60
3:A:271:LEU:HD12	3:A:343:SER:HA	1.83	0.59
3:A:1365:PRO:HD2	3:A:1369:GLU:HG3	1.84	0.59
2:C:65:LEU:HB3	2:C:83:PHE:HB3	1.85	0.58
3:A:1003:LYS:HE2	3:A:1007:ARG:HH21	1.68	0.58
3:A:1400:LEU:HD21	3:A:1744:ILE:HD11	1.84	0.58
3:A:1576:VAL:HG13	11:A:2012:PCW:H63	1.85	0.58
3:A:1474:MET:HE3	3:A:1642:PRO:HB2	1.86	0.58
3:A:798:MET:HE1	3:A:803:TYR:HA	1.85	0.57
3:A:1373:LEU:HG	3:A:1380:VAL:HG21	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:251:LEU:HD13	3:A:1630:ILE:HB	1.86	0.57
3:A:1400:LEU:HD22	11:A:2008:PCW:H221	1.87	0.57
3:A:124:VAL:HG23	3:A:124:VAL:O	2.06	0.56
3:A:737:ILE:HD13	3:A:740:ILE:HD12	1.87	0.56
3:A:866:LEU:HD21	3:A:965:ALA:HB3	1.87	0.56
1:B:57:TRP:HB2	1:B:71:LEU:HG	1.87	0.56
3:A:1370:CYS:O	3:A:1374:MET:HG3	2.06	0.56
3:A:1659:ALA:O	3:A:1663:MET:HG3	2.06	0.56
2:C:40:VAL:HG11	2:C:46:ALA:HB2	1.87	0.55
3:A:1441:ILE:O	3:A:1445:SER:HB2	2.05	0.55
3:A:993:THR:HG22	3:A:997:LYS:HE3	1.87	0.55
3:A:1497:ILE:HD12	3:A:1572:TYR:HB3	1.89	0.55
2:C:104:ASN:N	2:C:109:ASP:O	2.39	0.55
3:A:1194:PHE:HD1	10:A:2020:LPE:H32	1.71	0.55
3:A:1385:LEU:O	3:A:1388:ASN:ND2	2.39	0.55
3:A:1394:LEU:HG	11:A:2008:PCW:H132	1.89	0.55
3:A:1597:ASP:O	3:A:1601:THR:HG23	2.08	0.54
3:A:768:MET:HE3	3:A:773:LYS:HG2	1.88	0.54
3:A:936:MET:HG2	3:A:941:GLN:HA	1.90	0.54
3:A:53:LEU:O	3:A:99:ARG:NH2	2.41	0.54
3:A:86:LYS:HB2	3:A:102:ALA:HB3	1.90	0.54
3:A:218:VAL:HG11	3:A:883:VAL:HG23	1.90	0.54
3:A:111:PRO:HA	3:A:116:ARG:HD2	1.89	0.53
1:B:176:ALA:O	1:B:179:ILE:HG13	2.08	0.53
3:A:1288:SER:O	3:A:1291:THR:OG1	2.27	0.53
3:A:754:ILE:O	3:A:758:THR:HG22	2.09	0.52
1:B:71:LEU:HD13	1:B:78:LEU:HD11	1.91	0.52
3:A:1348:TYR:CE1	3:A:1384:ASN:HB2	2.45	0.52
2:C:70:GLN:HG3	2:C:124:ILE:HB	1.93	0.51
3:A:1177:ILE:O	3:A:1181:ILE:HG12	2.09	0.51
3:A:1588:ILE:HG22	11:A:2018:PCW:H232	1.92	0.51
3:A:202:THR:HB	3:A:213:LEU:HD13	1.92	0.51
3:A:757:ASN:O	3:A:761:MET:HG3	2.10	0.51
3:A:268:MET:HG2	3:A:1537:GLU:HG2	1.92	0.51
3:A:272:LYS:NZ	3:A:334:GLY:O	2.36	0.51
3:A:863:VAL:HG22	3:A:863:VAL:O	2.10	0.51
3:A:1691:LEU:HD23	3:A:1694:ILE:HD11	1.93	0.51
2:C:85:MET:O	2:C:85:MET:HE3	2.11	0.51
3:A:1396:TYR:HB3	11:A:2008:PCW:H211	1.93	0.51
3:A:1707:ILE:HD12	3:A:1740:PHE:HE2	1.76	0.51
3:A:318:SER:OG	3:A:321:SER:OG	2.28	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:211:SER:O	3:A:215:THR:OG1	2.27	0.50
3:A:782:VAL:O	3:A:786:ILE:HG13	2.11	0.50
3:A:285:THR:C	3:A:289:ILE:HD12	2.37	0.50
3:A:1185:CYS:O	3:A:1189:VAL:HG22	2.12	0.50
3:A:217:ARG:O	3:A:220:ARG:HD3	2.12	0.50
3:A:160:THR:O	3:A:164:THR:HG23	2.11	0.50
2:C:62:GLN:HB3	2:C:132:PRO:HG2	1.93	0.49
3:A:90:VAL:HG21	3:A:120:ILE:HG21	1.93	0.49
3:A:1547:LEU:O	3:A:1551:ASN:ND2	2.43	0.49
3:A:784:THR:OG1	3:A:838:ARG:NH2	2.46	0.49
3:A:187:PRO:HA	3:A:190[B]:TRP:HD1	1.77	0.49
3:A:54:GLU:HB3	3:A:57:LYS:HE3	1.95	0.49
3:A:392:TYR:CZ	3:A:1637:LEU:HB2	2.48	0.48
3:A:1228:TYR:O	3:A:1232:ILE:HG13	2.13	0.48
3:A:266:LEU:O	3:A:1610:ARG:NH1	2.46	0.48
3:A:866:LEU:HD23	3:A:962:LEU:HD12	1.94	0.48
3:A:1191:HIS:CG	10:A:2020:LPE:H322	2.48	0.48
3:A:878:PHE:O	3:A:882:VAL:HG12	2.13	0.48
3:A:184:LEU:O	3:A:190[A]:TRP:NE1	2.42	0.48
3:A:1200:LEU:HD23	3:A:1201:MET:CE	2.44	0.48
3:A:81:TYR:O	3:A:85:LYS:NZ	2.35	0.47
3:A:1325:LEU:O	3:A:1329:LEU:HG	2.14	0.47
3:A:1302:SER:O	3:A:1308:ARG:NH1	2.47	0.47
3:A:395:ASN:HD22	3:A:1758:VAL:HG11	1.79	0.47
3:A:760:PHE:HE1	3:A:776:LEU:HA	1.80	0.47
3:A:1528:ASN:O	3:A:1532:MET:HG3	2.15	0.47
3:A:1759:ILE:HG21	7:A:2003:9Z9:C10	2.45	0.46
3:A:357:LEU:HD23	3:A:363:TRP:HB2	1.97	0.46
1:B:163:MET:O	1:B:167:ILE:HG13	2.16	0.46
3:A:268:MET:CG	3:A:1537:GLU:HG2	2.46	0.46
3:A:392:TYR:CZ	3:A:396:LEU:HD11	2.51	0.46
3:A:235:VAL:O	3:A:239:ILE:HG12	2.14	0.46
3:A:1180:ASN:O	3:A:1184:THR:HG22	2.16	0.46
1:B:175:VAL:O	1:B:179:ILE:HG23	2.16	0.46
1:B:46:ARG:HD3	3:A:325:PRO:HG3	1.98	0.46
3:A:866:LEU:HD21	3:A:965:ALA:CB	2.45	0.46
3:A:1656:PHE:O	3:A:1660:ILE:HG12	2.15	0.46
3:A:1251:LYS:H	3:A:1251:LYS:CD	2.28	0.45
3:A:386:ILE:O	3:A:390:SER:HB3	2.16	0.45
3:A:1630:ILE:HA	3:A:1633:LEU:HD12	1.98	0.45
3:A:730:TRP:CD1	3:A:733:PHE:HE1	2.34	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:147:LEU:HD23	2:C:147:LEU:H	1.81	0.45
3:A:995:ILE:HG23	3:A:999:ILE:HD12	1.98	0.45
3:A:1375:ASN:OD1	5:A:2004:NAG:H2	2.16	0.45
3:A:1443:PHE:HA	3:A:1447:PHE:HD2	1.81	0.45
3:A:244:LYS:HB3	3:A:244:LYS:NZ	2.32	0.45
3:A:1261:LEU:HD21	3:A:1298:LEU:HB3	1.99	0.45
3:A:1328:CYS:HB2	11:A:2008:PCW:H281	1.99	0.45
1:B:38:ILE:HD12	1:B:106:ILE:HD11	2.00	0.44
1:B:58:THR:OG1	1:B:120:GLU:HB2	2.17	0.44
3:A:128:PHE:O	3:A:132:ILE:HG12	2.17	0.44
1:B:51:ALA:HB2	1:B:127:LEU:HD23	2.00	0.44
2:C:72:CYS:H	2:C:75:CYS:HB2	1.82	0.44
3:A:890:LYS:O	3:A:894:GLU:HG2	2.17	0.44
3:A:1305:GLU:H	3:A:1305:GLU:CD	2.22	0.44
3:A:1426:LYS:HB2	3:A:1429:TYR:HB2	1.99	0.44
3:A:379:MET:HE2	3:A:1689:ILE:HD13	1.98	0.44
3:A:839:LEU:HB3	3:A:1334:ILE:HG23	1.99	0.44
3:A:1476:GLU:O	3:A:1480:LYS:HG2	2.17	0.44
3:A:1542:HIS:O	3:A:1546:VAL:HG23	2.18	0.44
3:A:1408:TRP:H	3:A:1408:TRP:CD1	2.35	0.44
2:C:66:ASN:HB2	2:C:128:TYR:HB2	1.99	0.44
3:A:240:GLN:HA	3:A:240:GLN:OE1	2.17	0.44
3:A:265:GLN:OE1	3:A:1616:ARG:NH1	2.50	0.44
3:A:396:LEU:HD22	3:A:1633:LEU:HD22	2.00	0.44
3:A:1375:ASN:HD22	3:A:1375:ASN:HA	1.54	0.44
1:B:162:MET:HA	1:B:165:VAL:HG22	1.99	0.43
2:C:56:TYR:CE1	3:A:897:CYS:HB2	2.53	0.43
3:A:143:MET:HE1	3:A:221:ALA:HB2	1.99	0.43
11:A:2017:PCW:H182	11:A:2018:PCW:H181	2.00	0.43
3:A:192:ASP:OD2	3:A:192:ASP:C	2.62	0.43
3:A:1569:LEU:HD12	3:A:1573:TYR:HD1	1.83	0.43
3:A:1209:LEU:HD11	3:A:1296:ARG:HG2	2.00	0.43
3:A:1492:LYS:HB3	3:A:1492:LYS:HE3	1.88	0.43
10:A:2007:LPE:H121	11:A:2008:PCW:H172	2.01	0.43
1:B:174:LEU:O	1:B:178:MET:HG3	2.19	0.43
3:A:761:MET:SD	3:A:838:ARG:HD2	2.59	0.43
3:A:1318:ILE:HD13	3:A:1318:ILE:HA	1.85	0.43
3:A:1317:ALA:HA	3:A:1459:ASN:OD1	2.19	0.42
3:A:794:LYS:HB3	3:A:794:LYS:HE2	1.80	0.42
3:A:1194:PHE:O	3:A:1198:ILE:HG12	2.19	0.42
3:A:339:TYR:O	11:A:2011:PCW:H61	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:1407:GLY:O	3:A:1410:ILE:HG22	2.18	0.42
3:A:1476:GLU:OE1	3:A:1476:GLU:N	2.51	0.42
3:A:1504:ILE:O	3:A:1508:ILE:HG13	2.19	0.42
3:A:77:ASP:OD2	3:A:87:THR:OG1	2.33	0.42
3:A:264:LEU:O	3:A:268:MET:HB2	2.19	0.42
3:A:760:PHE:CE1	3:A:776:LEU:HA	2.54	0.42
3:A:1402:VAL:HA	3:A:1408:TRP:HB3	2.02	0.42
10:A:2014:LPE:H12	10:A:2014:LPE:H122	1.78	0.42
3:A:768:MET:HG2	3:A:772:PHE:HB3	2.01	0.42
3:A:1474:MET:HE2	3:A:1478:GLN:HB3	2.02	0.42
3:A:729:TYR:HA	3:A:732:LYS:HD3	2.02	0.42
3:A:854:MET:SD	3:A:857:LYS:NZ	2.92	0.42
3:A:1238:ILE:HD11	3:A:1270:LEU:HD13	2.01	0.42
3:A:74:PRO:HG2	3:A:117:ARG:HH21	1.84	0.41
3:A:1197:PHE:O	3:A:1201:MET:HG2	2.20	0.41
3:A:1328:CYS:SG	3:A:1448:THR:HG23	2.60	0.41
3:A:1742:SER:HA	10:A:2007:LPE:H212	2.02	0.41
1:B:154:MET:HE3	1:B:154:MET:HA	2.00	0.41
3:A:769:THR:O	3:A:773:LYS:HG3	2.21	0.41
3:A:1460:PHE:CD2	3:A:1756:ILE:HD13	2.55	0.41
3:A:891:SER:O	3:A:895:CYS:HB2	2.20	0.41
3:A:1194:PHE:HB2	10:A:2020:LPE:O31	2.19	0.41
3:A:1625:LYS:O	3:A:1631:ARG:NH1	2.53	0.41
6:A:2019:Y01:HAO2	6:A:2019:Y01:HAP1	1.37	0.41
11:A:2012:PCW:H2	11:A:2012:PCW:O2P	2.21	0.41
3:A:1619:ARG:HH12	8:A:2005:T70:C30	2.32	0.41
3:A:59:LEU:HA	3:A:97:ILE:HD11	2.03	0.41
3:A:222:LEU:HD23	3:A:222:LEU:HA	1.84	0.41
3:A:388:LEU:O	3:A:392:TYR:HB3	2.21	0.41
3:A:741:VAL:HA	3:A:746:VAL:HG21	2.02	0.41
3:A:750:ILE:HG13	3:A:790:GLU:CD	2.46	0.41
11:A:2012:PCW:H382	11:A:2017:PCW:H382	2.03	0.41
2:C:79:MET:HE3	2:C:79:MET:HA	2.03	0.41
3:A:1463:GLN:HA	3:A:1466:LYS:HE3	2.03	0.41
3:A:853:ASN:O	3:A:857:LYS:HG3	2.21	0.40
3:A:1663:MET:HG3	3:A:1663:MET:H	1.76	0.40
1:B:161:ILE:HD13	1:B:161:ILE:HA	1.85	0.40
3:A:1176:LYS:H	3:A:1176:LYS:HG2	1.67	0.40
3:A:1584:VAL:HG11	11:A:2012:PCW:H161	2.04	0.40
3:A:332:LYS:HB3	3:A:332:LYS:HE3	1.89	0.40
3:A:954:ILE:O	3:A:958:VAL:HG23	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:182:THR:OG1	3:A:183:PHE:N	2.55	0.40
3:A:410:GLN:OE1	3:A:410:GLN:HA	2.21	0.40
3:A:1584:VAL:O	3:A:1588:ILE:HG23	2.22	0.40
3:A:148:PRO:HA	3:A:149:PRO:HD3	1.96	0.40
3:A:166:GLU:HG3	3:A:167:SER:N	2.36	0.40
3:A:186:ASP:HB3	3:A:189:ASN:HD22	1.87	0.40
3:A:389:GLY:O	3:A:393:LEU:HB2	2.22	0.40
3:A:1200:LEU:HD23	3:A:1201:MET:HE2	2.03	0.40
3:A:1641:LEU:HB3	10:A:2013:LPE:H11	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	171/192 (89%)	171 (100%)	0	0	100	100
2	C	120/215 (56%)	117 (98%)	3 (2%)	0	100	100
3	A	1262/1988 (64%)	1241 (98%)	21 (2%)	0	100	100
All	All	1553/2395 (65%)	1529 (98%)	24 (2%)	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	B	157/169 (93%)	156 (99%)	1 (1%)	78	91
2	C	114/193 (59%)	113 (99%)	1 (1%)	70	87
3	A	1136/1778 (64%)	1126 (99%)	10 (1%)	70	87
All	All	1407/2140 (66%)	1395 (99%)	12 (1%)	68	87

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	93	ASN
2	C	30	MET
3	A	130	MET
3	A	131	LEU
3	A	279	SER
3	A	733	PHE
3	A	866	LEU
3	A	1354	THR
3	A	1375	ASN
3	A	1624	VAL
3	A	1630	ILE
3	A	1704	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	122	HIS
2	C	70	GLN
2	C	116	ASN
2	C	118	GLN
2	C	145	GLN
3	A	14	HIS
3	A	270	ASN
3	A	861	ASN
3	A	941	GLN
3	A	956	ASN
3	A	961	ASN
3	A	1539	GLN
3	A	1571	HIS
3	A	1753	ASN

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 ⓘ

6 monosaccharides are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
4	NAG	D	1	4,1	14,14,15	0.31	0	17,19,21	0.78	1 (5%)
4	NAG	D	2	4	14,14,15	0.32	0	17,19,21	0.74	0
4	NAG	E	1	4,3	14,14,15	0.34	0	17,19,21	0.92	1 (5%)
4	NAG	E	2	4	14,14,15	0.34	0	17,19,21	0.74	1 (5%)
4	NAG	F	1	4,3	14,14,15	0.47	0	17,19,21	1.77	4 (23%)
4	NAG	F	2	4	14,14,15	0.31	0	17,19,21	0.81	1 (5%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	D	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	D	2	4	-	0/6/23/26	0/1/1/1
4	NAG	E	1	4,3	-	0/6/23/26	0/1/1/1
4	NAG	E	2	4	-	2/6/23/26	0/1/1/1
4	NAG	F	1	4,3	-	2/6/23/26	0/1/1/1
4	NAG	F	2	4	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	F	1	NAG	C1-O5-C5	4.86	118.69	112.19
4	F	1	NAG	C4-C3-C2	-2.76	106.98	111.02
4	D	1	NAG	C1-O5-C5	2.66	115.75	112.19
4	F	1	NAG	O5-C1-C2	2.60	115.31	111.29
4	F	2	NAG	C1-O5-C5	2.45	115.47	112.19
4	E	1	NAG	C4-C3-C2	2.29	114.37	111.02
4	E	2	NAG	O5-C1-C2	-2.16	107.95	111.29
4	F	1	NAG	O4-C4-C3	2.13	115.40	110.38

There are no chirality outliers.

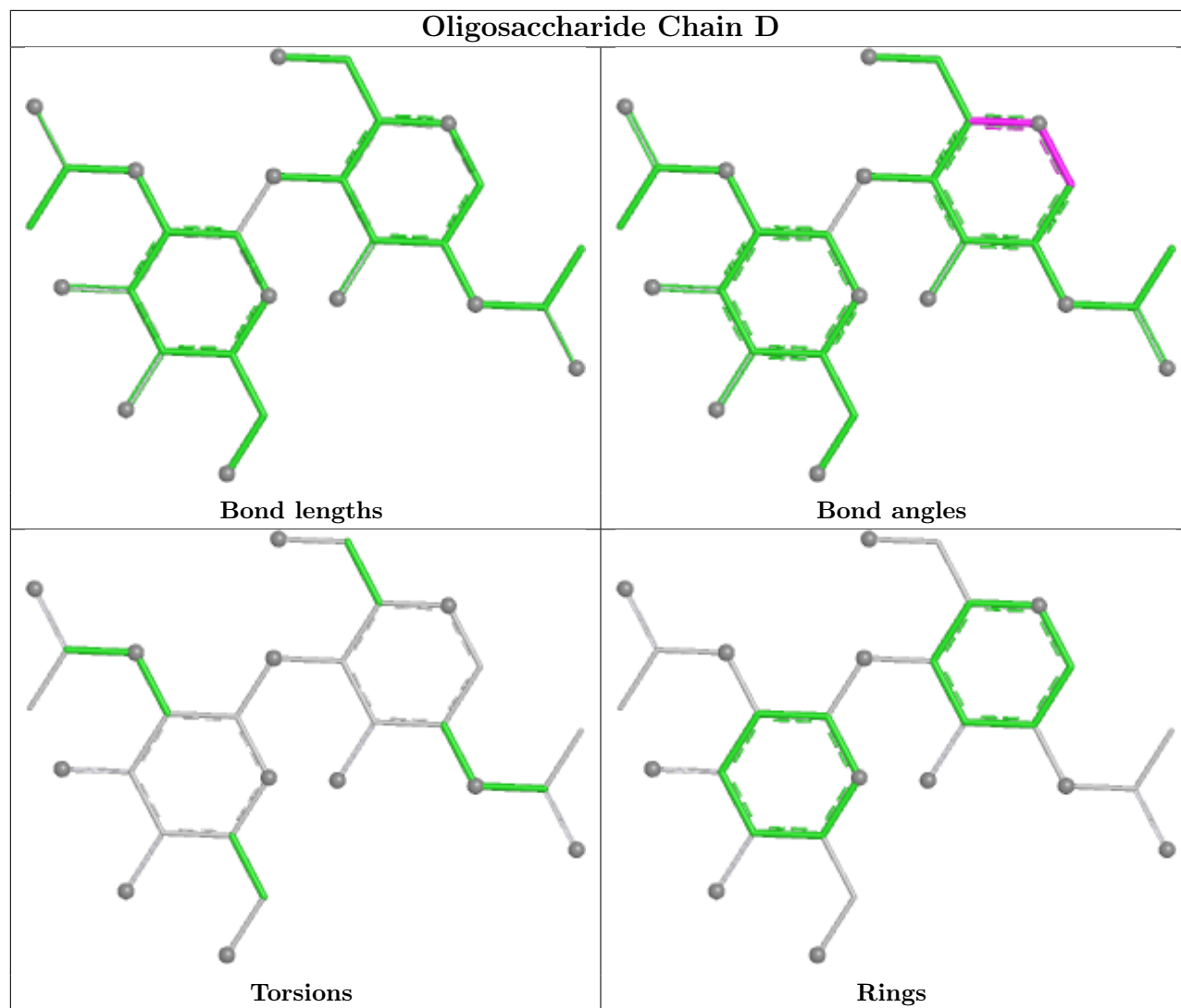
All (4) torsion outliers are listed below:

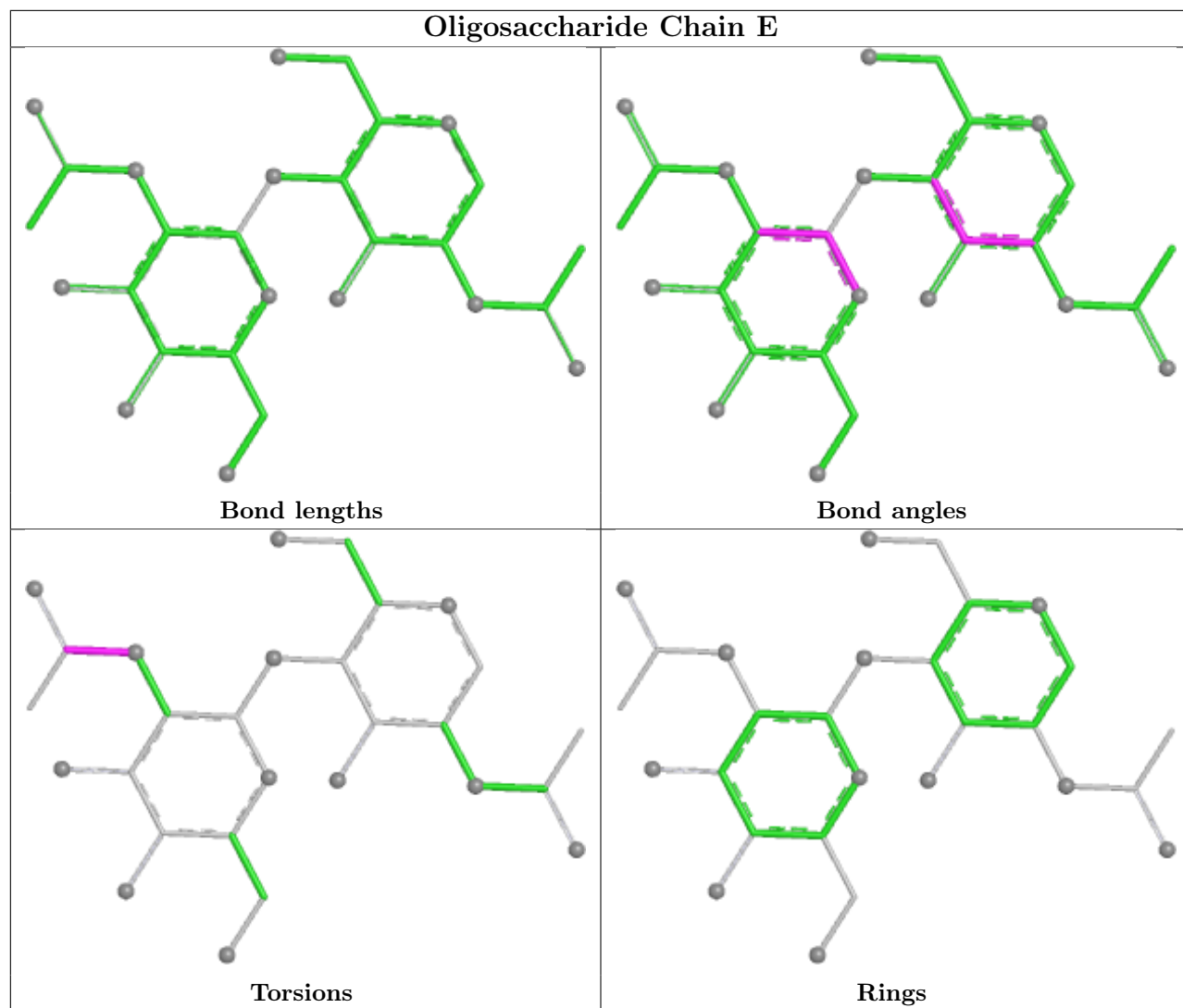
Mol	Chain	Res	Type	Atoms
4	E	2	NAG	C8-C7-N2-C2
4	E	2	NAG	O7-C7-N2-C2
4	F	1	NAG	O5-C5-C6-O6
4	F	1	NAG	C4-C5-C6-O6

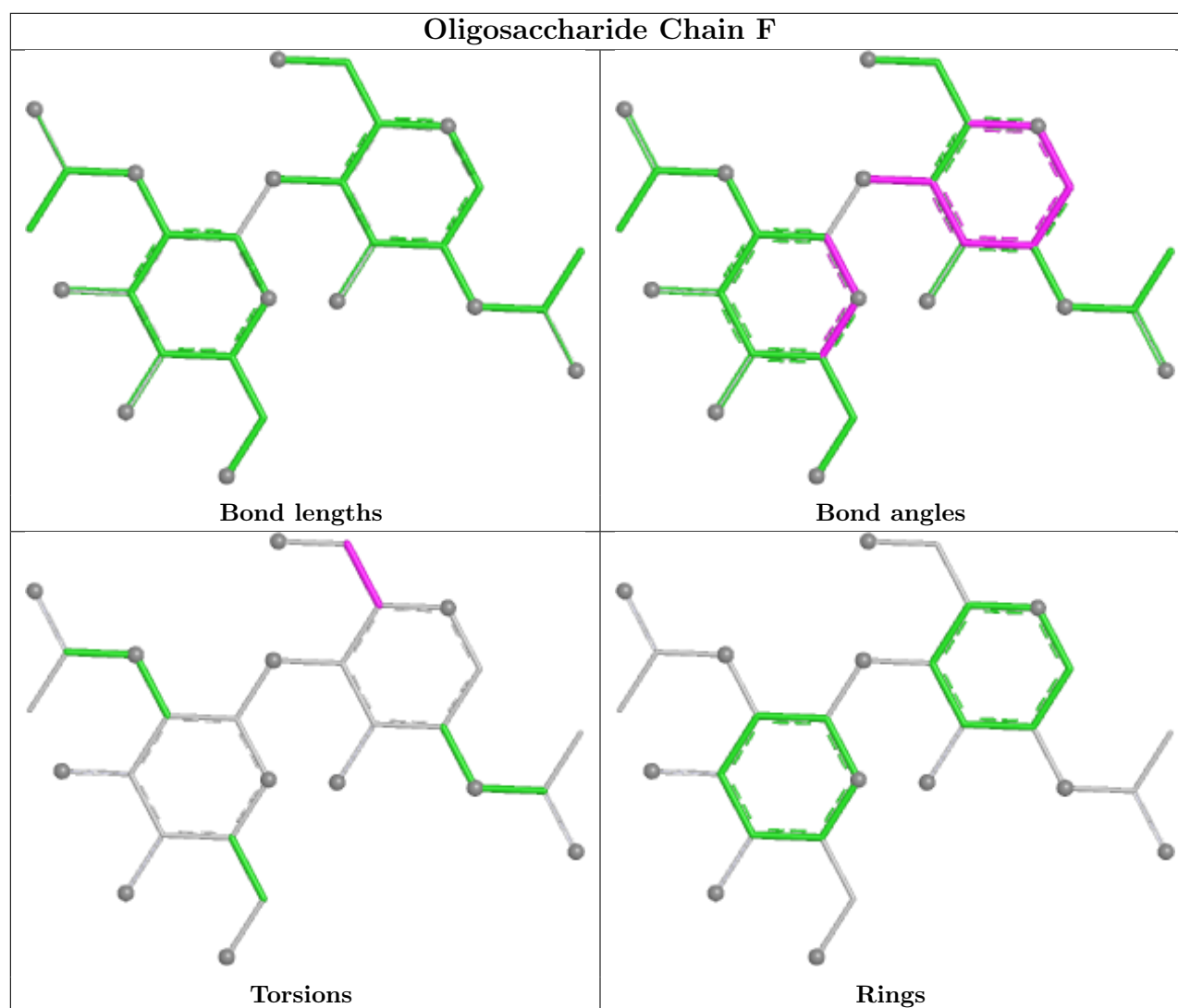
There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.







5.6 Ligand geometry [i](#)

Of 23 ligands modelled in this entry, 1 is monoatomic - leaving 22 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
5	NAG	A	2001	3	14,14,15	0.39	0	17,19,21	0.55	0
11	PCW	A	2012	-	43,43,53	0.32	0	49,51,61	0.36	0
10	LPE	A	2015	-	24,24,33	0.28	0	28,30,39	0.33	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	A	2004	3	14,14,15	0.55	0	17,19,21	1.44	2 (11%)
10	LPE	A	2010	-	27,27,33	0.27	0	31,33,39	0.34	0
5	NAG	B	303	1	14,14,15	0.30	0	17,19,21	0.60	0
10	LPE	A	2016	-	24,24,33	0.29	0	28,30,39	0.39	0
11	PCW	A	2008	-	52,52,53	0.31	0	58,60,61	0.32	0
10	LPE	A	2007	-	24,24,33	0.32	0	25,27,39	0.45	0
6	Y01	A	2002	-	38,38,38	0.45	0	57,57,57	0.50	0
10	LPE	A	2020	-	16,16,33	0.35	0	20,22,39	0.42	0
5	NAG	B	302	1	14,14,15	0.33	0	17,19,21	0.74	1 (5%)
11	PCW	A	2018	-	43,43,53	0.31	0	49,51,61	0.32	0
6	Y01	A	2019	-	38,38,38	0.45	0	57,57,57	0.53	0
11	PCW	A	2017	-	43,43,53	0.31	0	49,51,61	0.33	0
10	LPE	A	2013	-	24,24,33	0.28	0	28,30,39	0.42	0
11	PCW	A	2011	-	46,46,53	0.31	0	52,54,61	0.38	0
8	T70	A	2005	-	32,34,34	5.13	10 (31%)	45,50,50	2.63	10 (22%)
10	LPE	A	2014	-	24,24,33	0.28	0	28,30,39	0.36	0
7	9Z9	A	2003	-	44,44,44	0.27	0	64,68,68	0.50	0
10	LPE	A	2009	-	17,17,33	0.35	0	21,23,39	0.40	0
5	NAG	B	301	1	14,14,15	0.30	0	17,19,21	0.53	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	A	2001	3	-	2/6/23/26	0/1/1/1
11	PCW	A	2012	-	-	2/47/47/57	-
10	LPE	A	2015	-	-	3/25/25/34	-
5	NAG	A	2004	3	-	4/6/23/26	0/1/1/1
10	LPE	A	2010	-	-	3/28/28/34	-
5	NAG	B	303	1	-	2/6/23/26	0/1/1/1
10	LPE	A	2016	-	-	8/25/25/34	-
11	PCW	A	2008	-	-	13/56/56/57	-
10	LPE	A	2007	-	-	3/25/25/34	-
6	Y01	A	2002	-	-	7/19/77/77	0/4/4/4
10	LPE	A	2020	-	-	5/17/17/34	-
5	NAG	B	302	1	-	2/6/23/26	0/1/1/1
11	PCW	A	2018	-	-	4/47/47/57	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	Y01	A	2019	-	-	7/19/77/77	0/4/4/4
11	PCW	A	2017	-	-	7/47/47/57	-
10	LPE	A	2013	-	-	6/25/25/34	-
11	PCW	A	2011	-	-	8/50/50/57	-
8	T70	A	2005	-	-	3/17/19/19	0/4/4/4
10	LPE	A	2014	-	-	4/25/25/34	-
7	9Z9	A	2003	-	-	0/12/100/100	0/6/6/6
10	LPE	A	2009	-	-	3/18/18/34	-
5	NAG	B	301	1	-	0/6/23/26	0/1/1/1

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	A	2005	T70	O07-S03	18.92	1.65	1.43
8	A	2005	T70	O08-S03	18.73	1.65	1.43
8	A	2005	T70	C24-N12	5.36	1.45	1.34
8	A	2005	T70	C30-C29	4.68	1.41	1.35
8	A	2005	T70	C24-N10	-4.62	1.31	1.34
8	A	2005	T70	C15-C18	3.56	1.53	1.49
8	A	2005	T70	C14-S03	3.33	1.82	1.77
8	A	2005	T70	S03-N09	2.98	1.71	1.64
8	A	2005	T70	C29-N09	2.69	1.45	1.39
8	A	2005	T70	C21-CL01	2.27	1.79	1.73

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	A	2005	T70	O08-S03-O07	-9.47	108.01	119.52
8	A	2005	T70	C30-S04-C31	6.50	97.51	89.47
8	A	2005	T70	S04-C31-N13	-5.62	106.79	115.58
8	A	2005	T70	C22-C20-C14	-5.48	120.10	122.66
8	A	2005	T70	C29-C30-S04	-5.10	104.79	110.42
5	A	2004	NAG	C1-O5-C5	4.91	118.76	112.19
8	A	2005	T70	C18-C24-N12	-3.83	126.85	130.21
8	A	2005	T70	C26-N11-N10	3.78	110.86	105.19
8	A	2005	T70	C14-S03-N09	3.65	110.50	105.96
8	A	2005	T70	C18-C26-N11	-3.61	106.38	111.34
8	A	2005	T70	C26-C18-C24	2.26	105.72	103.85
5	B	302	NAG	C1-O5-C5	2.18	115.11	112.19
5	A	2004	NAG	O5-C1-C2	2.09	114.52	111.29

There are no chirality outliers.

All (96) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	2004	NAG	C8-C7-N2-C2
5	A	2004	NAG	O7-C7-N2-C2
10	A	2007	LPE	C31-O33-P-O31
10	A	2007	LPE	C32-C31-O33-P
10	A	2009	LPE	C31-O33-P-O31
10	A	2013	LPE	C3-O3-P-O31
10	A	2014	LPE	C31-O33-P-O31
10	A	2015	LPE	C31-O33-P-O31
10	A	2016	LPE	C31-O33-P-O3
10	A	2016	LPE	C31-O33-P-O31
10	A	2016	LPE	C31-O33-P-O32
10	A	2016	LPE	C32-C31-O33-P
10	A	2020	LPE	C31-O33-P-O3
10	A	2020	LPE	C32-C31-O33-P
10	A	2020	LPE	O33-C31-C32-N
11	A	2008	PCW	C4-O4P-P-O2P
11	A	2011	PCW	O4P-C4-C5-N
11	A	2011	PCW	C1-O3P-P-O2P
11	A	2011	PCW	C4-O4P-P-O3P
11	A	2017	PCW	C1-O3P-P-O4P
11	A	2017	PCW	C4-O4P-P-O2P
11	A	2018	PCW	C1-O3P-P-O2P
6	A	2019	Y01	CAJ-CAO-CBB-CAC
6	A	2002	Y01	CAJ-CAO-CBB-CBE
5	B	303	NAG	C8-C7-N2-C2
5	B	303	NAG	O7-C7-N2-C2
6	A	2002	Y01	CAJ-CAO-CBB-CAC
6	A	2019	Y01	CAC-CBB-CBE-CBI
5	A	2004	NAG	O5-C5-C6-O6
6	A	2019	Y01	CAC-CBB-CBE-CAP
6	A	2019	Y01	CAO-CBB-CBE-CBI
11	A	2012	PCW	C2-C1-O3P-P
6	A	2019	Y01	CAJ-CAO-CBB-CBE
11	A	2017	PCW	C11-C12-C13-C14
6	A	2019	Y01	CAO-CBB-CBE-CAP
5	B	302	NAG	C8-C7-N2-C2
5	A	2004	NAG	C4-C5-C6-O6
11	A	2008	PCW	O3P-C1-C2-C3
10	A	2016	LPE	C2-C1-O1-C11
11	A	2011	PCW	C35-C36-C37-C38

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Mol	Chain	Res	Type	Atoms
10	A	2016	LPE	O1-C1-C2-O2H
5	A	2001	NAG	C8-C7-N2-C2
6	A	2019	Y01	CAN-CAJ-CAO-CBB
5	B	302	NAG	O7-C7-N2-C2
11	A	2018	PCW	O2-C2-C3-O3
10	A	2009	LPE	C32-C31-O33-P
10	A	2014	LPE	C32-C31-O33-P
11	A	2008	PCW	C5-C4-O4P-P
11	A	2008	PCW	C32-C33-C34-C35
10	A	2009	LPE	O33-C31-C32-N
10	A	2013	LPE	O33-C31-C32-N
10	A	2014	LPE	O33-C31-C32-N
10	A	2015	LPE	O33-C31-C32-N
10	A	2016	LPE	O33-C31-C32-N
11	A	2008	PCW	O4P-C4-C5-N
11	A	2017	PCW	O4P-C4-C5-N
11	A	2018	PCW	O4P-C4-C5-N
5	A	2001	NAG	O7-C7-N2-C2
10	A	2007	LPE	C31-O33-P-O3
10	A	2010	LPE	C3-O3-P-O31
10	A	2010	LPE	C31-O33-P-O31
10	A	2013	LPE	C3-O3-P-O33
10	A	2013	LPE	C31-O33-P-O31
10	A	2016	LPE	C3-O3-P-O31
10	A	2020	LPE	C3-O3-P-O31
10	A	2020	LPE	C31-O33-P-O31
11	A	2011	PCW	C4-O4P-P-O2P
11	A	2017	PCW	C1-O3P-P-O2P
10	A	2015	LPE	C2-C3-O3-P
11	A	2011	PCW	C17-C18-C19-C20
11	A	2008	PCW	O3P-C1-C2-O2
6	A	2002	Y01	CAO-CBB-CBE-CBI
11	A	2008	PCW	C31-C32-C33-C34
11	A	2011	PCW	C39-C40-C41-C42
10	A	2014	LPE	C12-C11-O1-C1
6	A	2002	Y01	CAO-CBB-CBE-CAP
6	A	2002	Y01	CAR-CBC-OAW-CAY
11	A	2017	PCW	C33-C34-C35-C36
6	A	2002	Y01	CAC-CBB-CBE-CBI
10	A	2010	LPE	C2-C3-O3-P
11	A	2008	PCW	O2-C2-C3-O3
11	A	2018	PCW	C1-C2-C3-O3

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Mol	Chain	Res	Type	Atoms
11	A	2008	PCW	O31-C31-O2-C2
8	A	2005	T70	C16-C15-C18-C24
11	A	2008	PCW	C37-C38-C39-C40
11	A	2011	PCW	C37-C38-C39-C40
11	A	2008	PCW	C17-C18-C19-C20
11	A	2017	PCW	C2-C1-O3P-P
11	A	2008	PCW	C39-C40-C41-C42
8	A	2005	T70	C23-C15-C18-C26
10	A	2013	LPE	C32-C31-O33-P
6	A	2002	Y01	CAV-CBC-OAW-CAY
8	A	2005	T70	C23-C15-C18-C24
11	A	2008	PCW	C32-C31-O2-C2
11	A	2012	PCW	O2-C31-C32-C33
10	A	2013	LPE	C2-C1-O1-C11

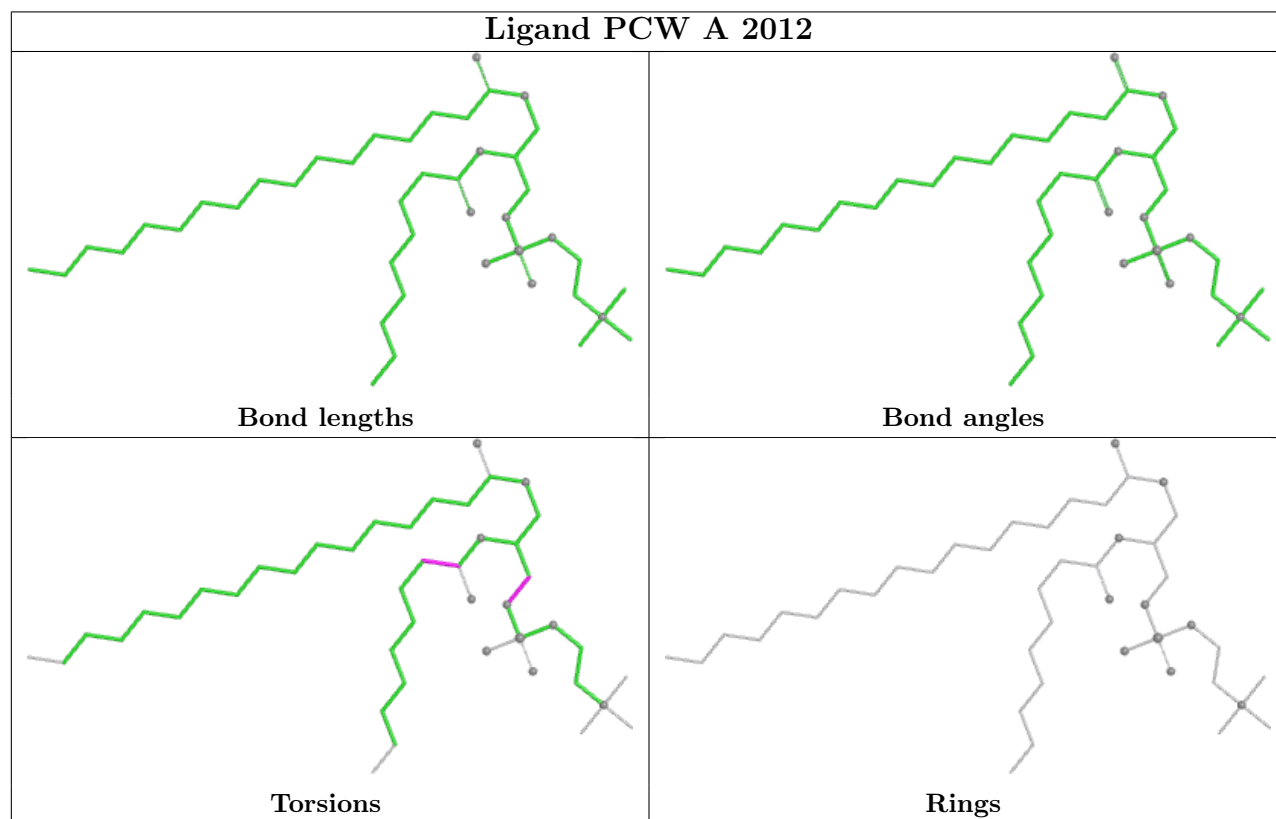
There are no ring outliers.

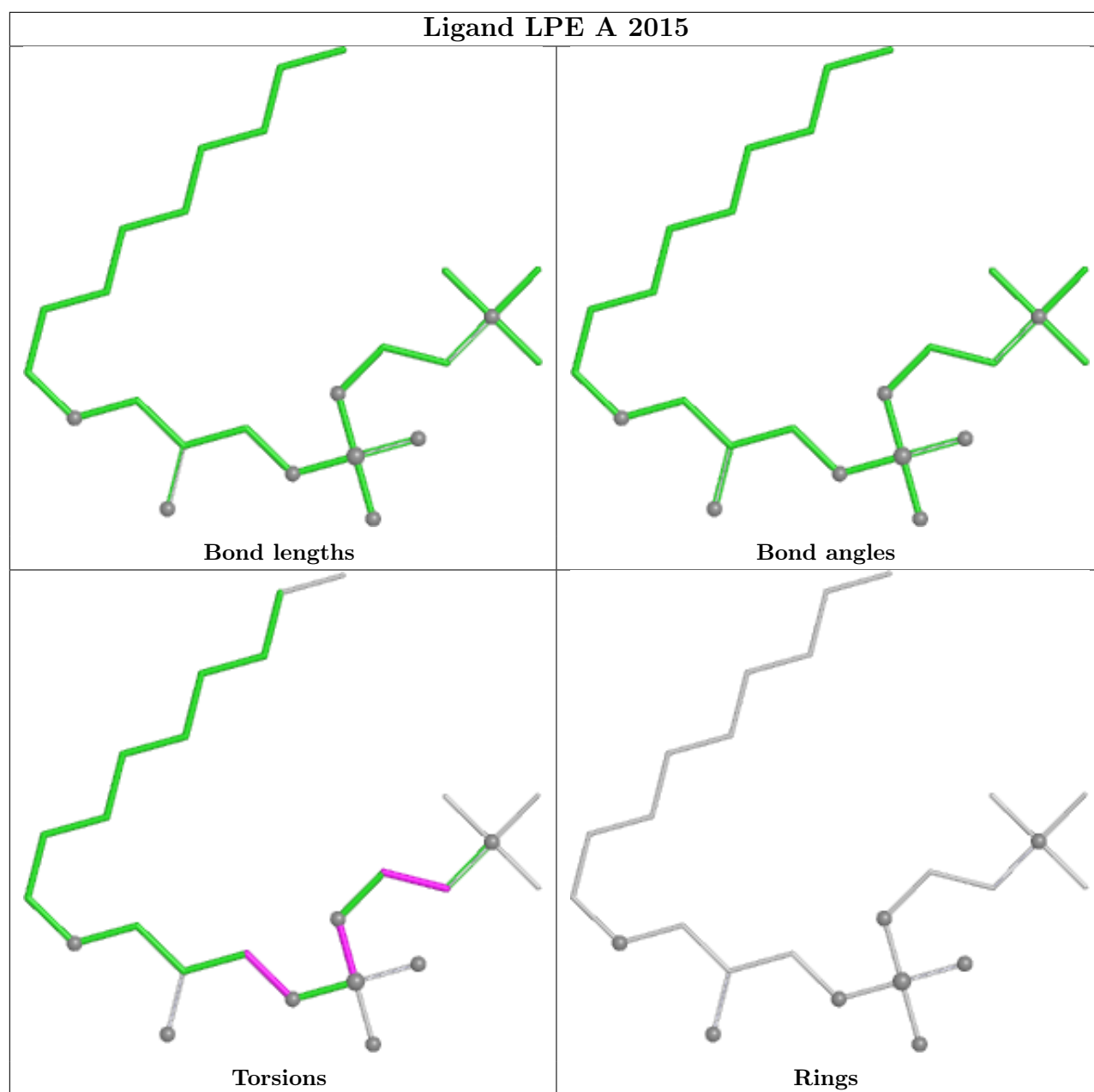
14 monomers are involved in 26 short contacts:

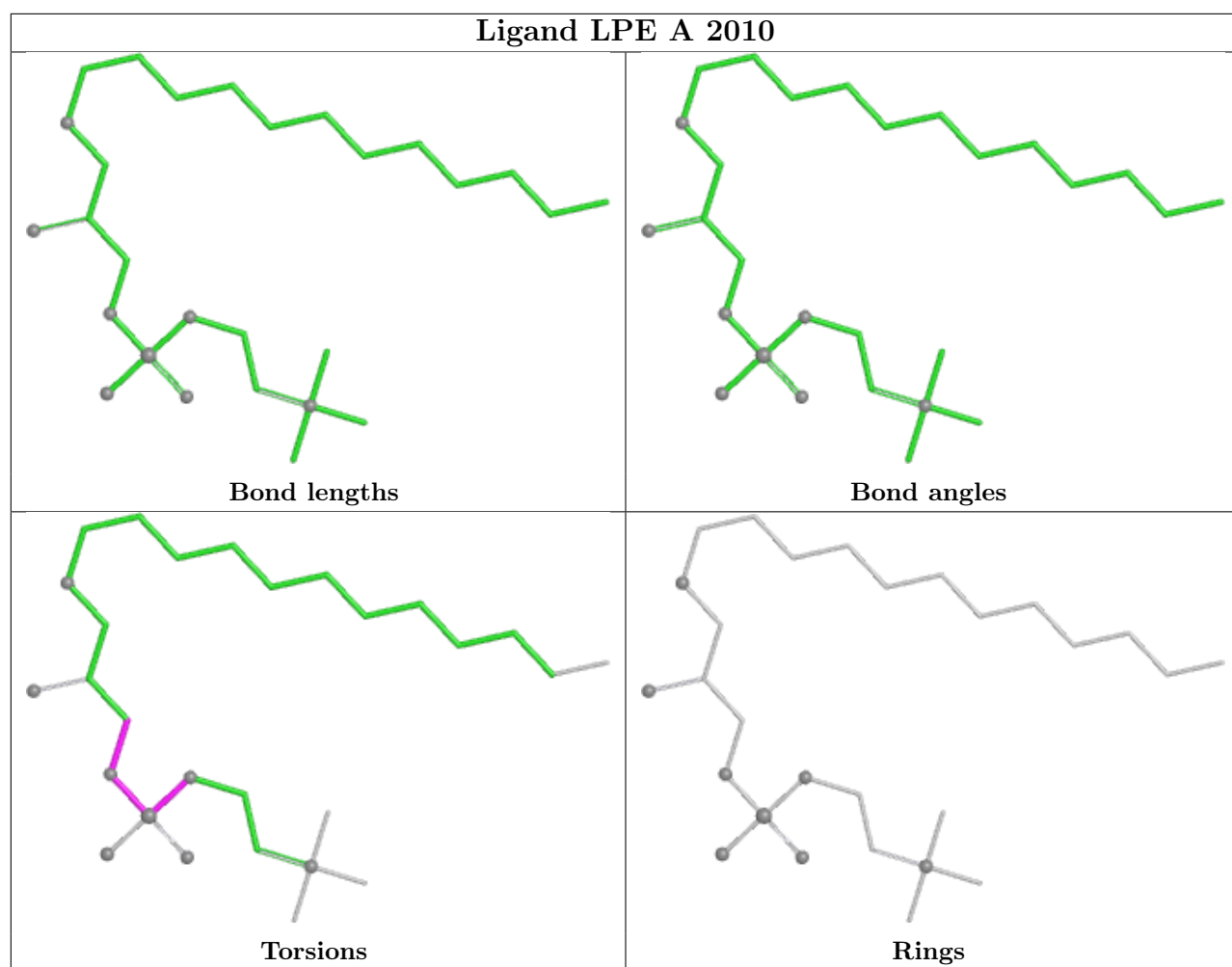
Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	A	2012	PCW	4	0
5	A	2004	NAG	1	0
11	A	2008	PCW	5	0
10	A	2007	LPE	2	0
10	A	2020	LPE	3	0
11	A	2018	PCW	2	0
6	A	2019	Y01	2	0
11	A	2017	PCW	2	0
10	A	2013	LPE	1	0
11	A	2011	PCW	2	0
8	A	2005	T70	1	0
10	A	2014	LPE	1	0
7	A	2003	9Z9	1	0
10	A	2009	LPE	2	0

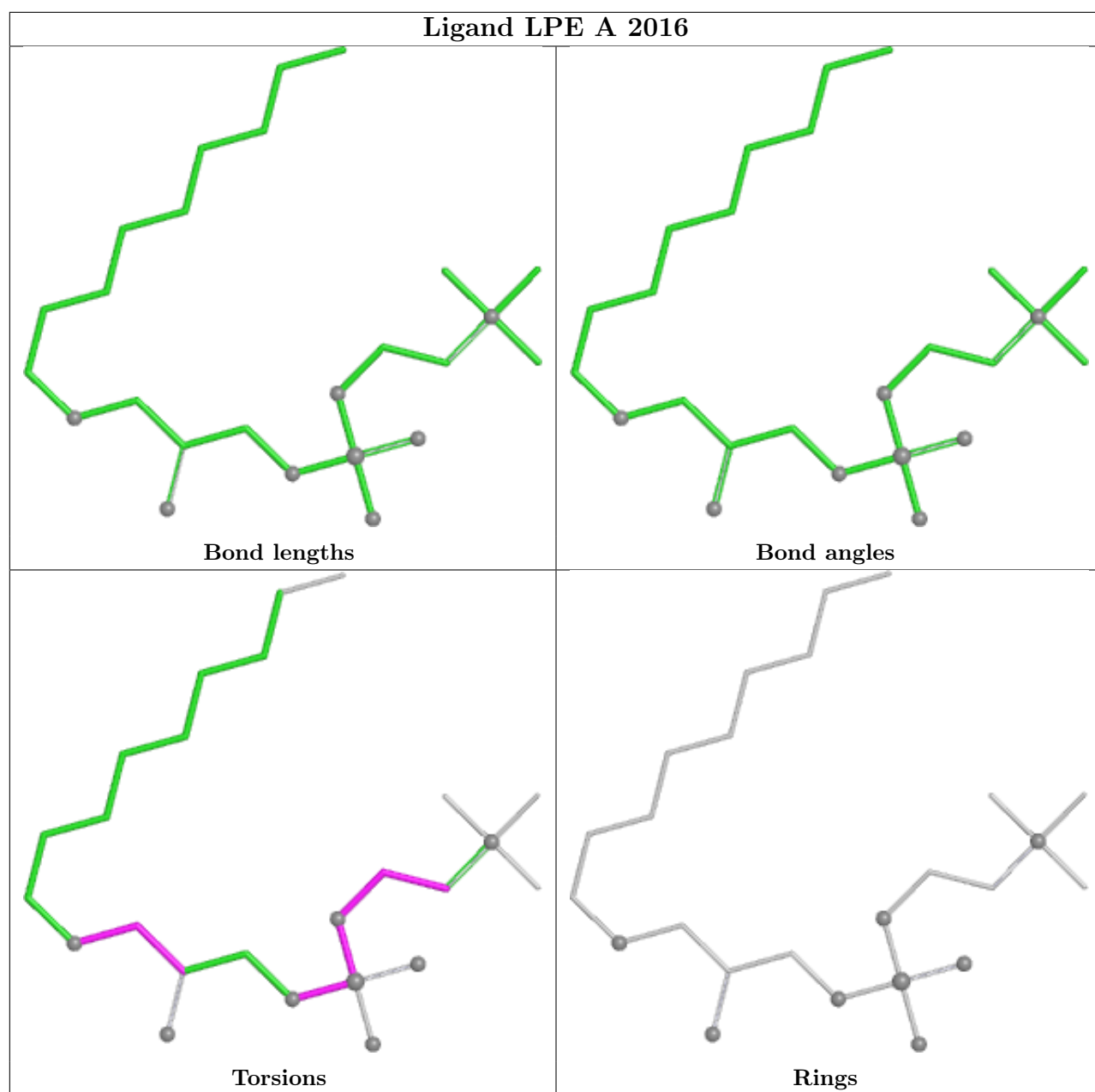
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the

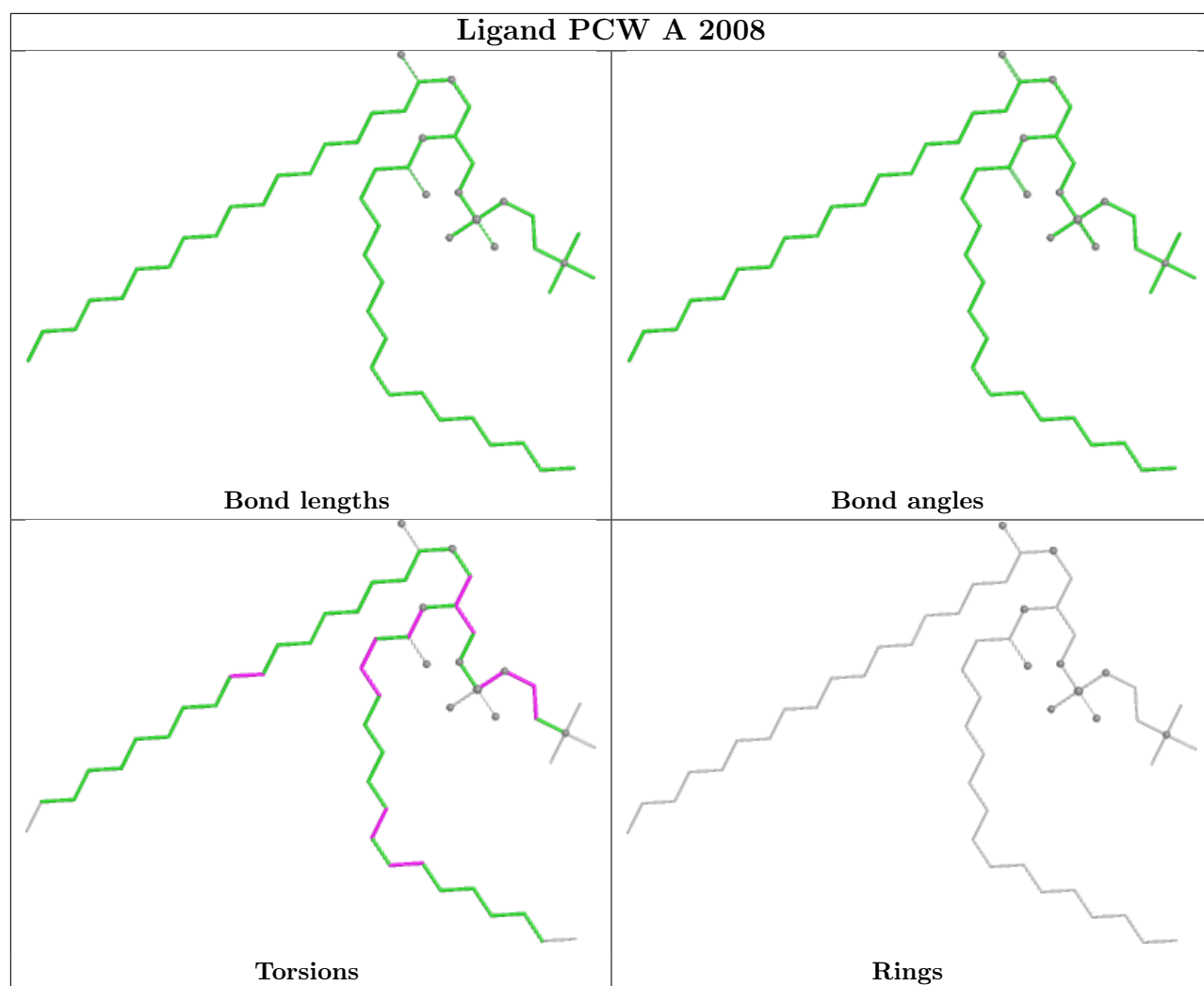
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

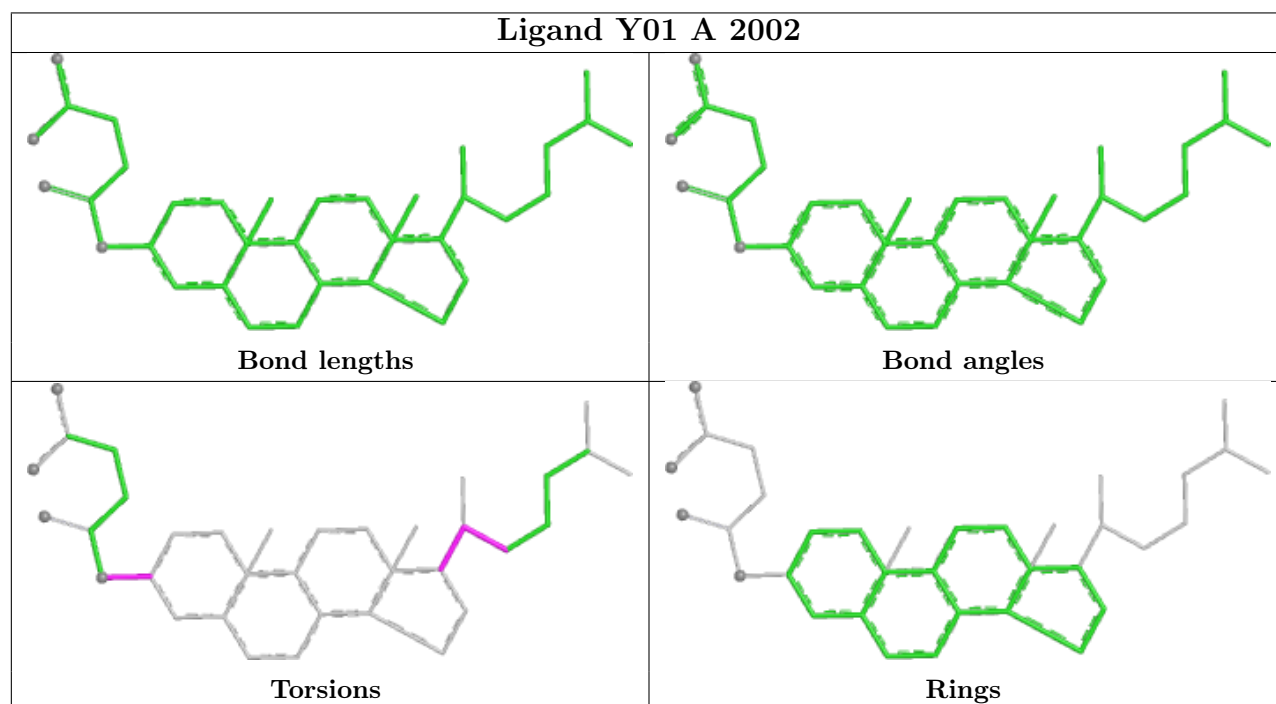
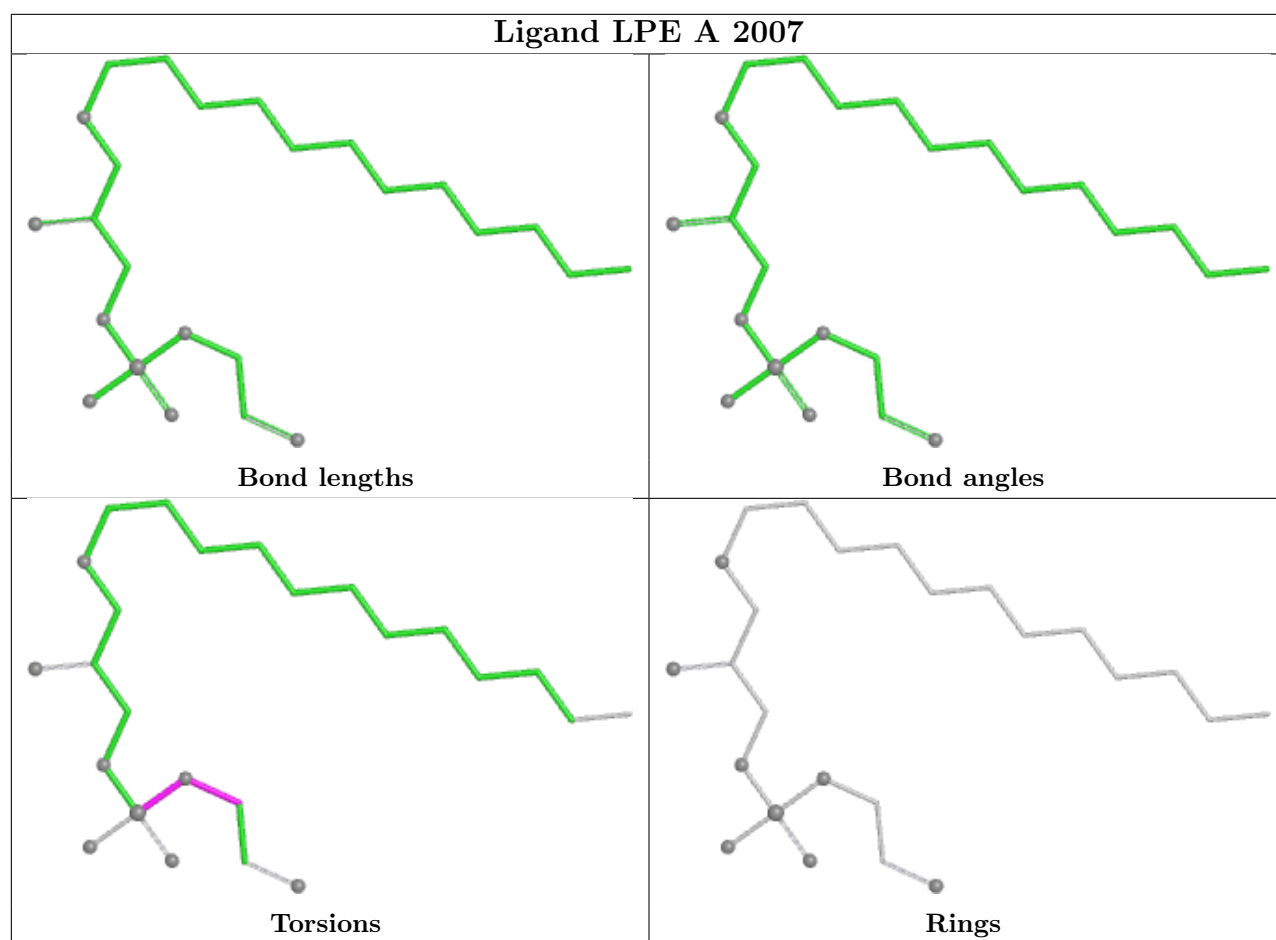


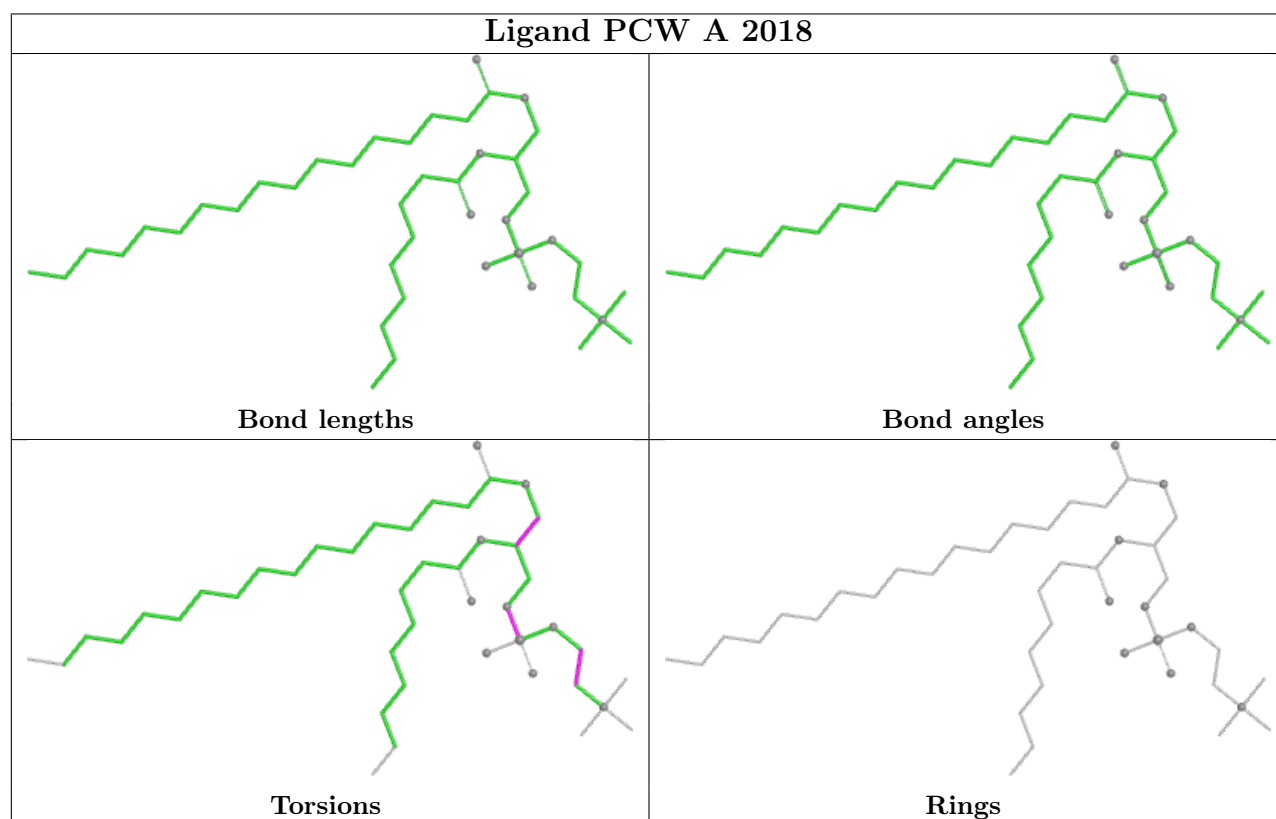
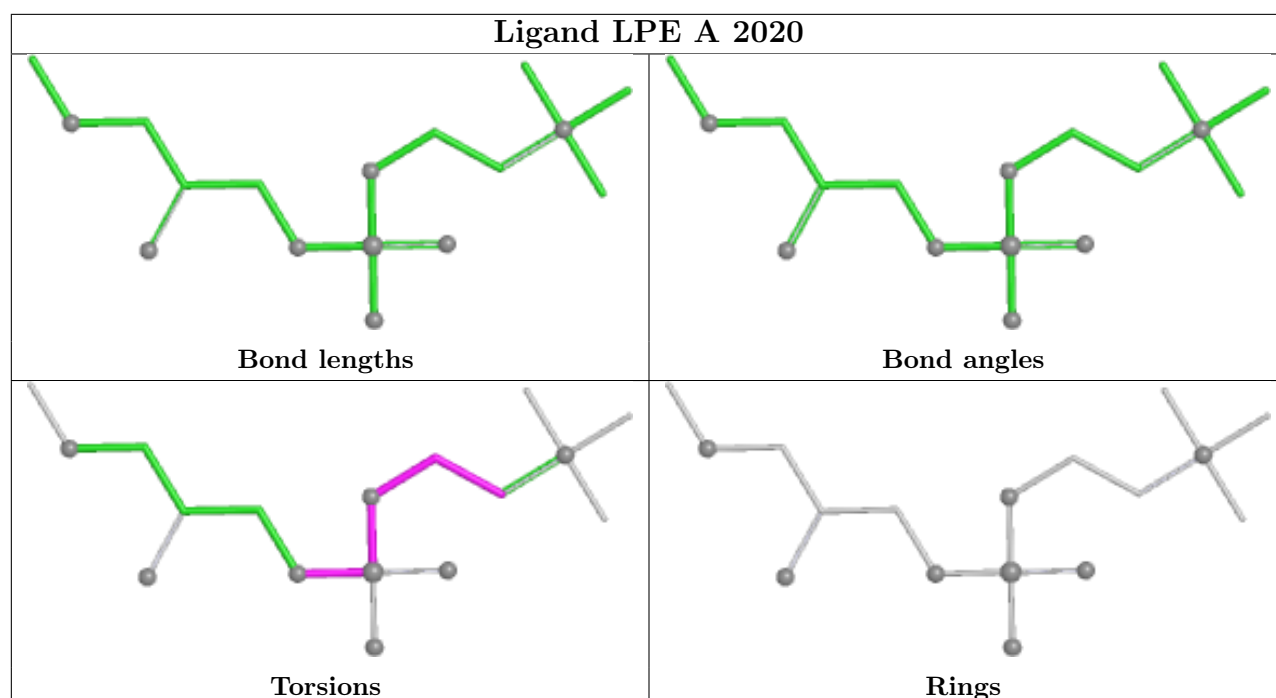


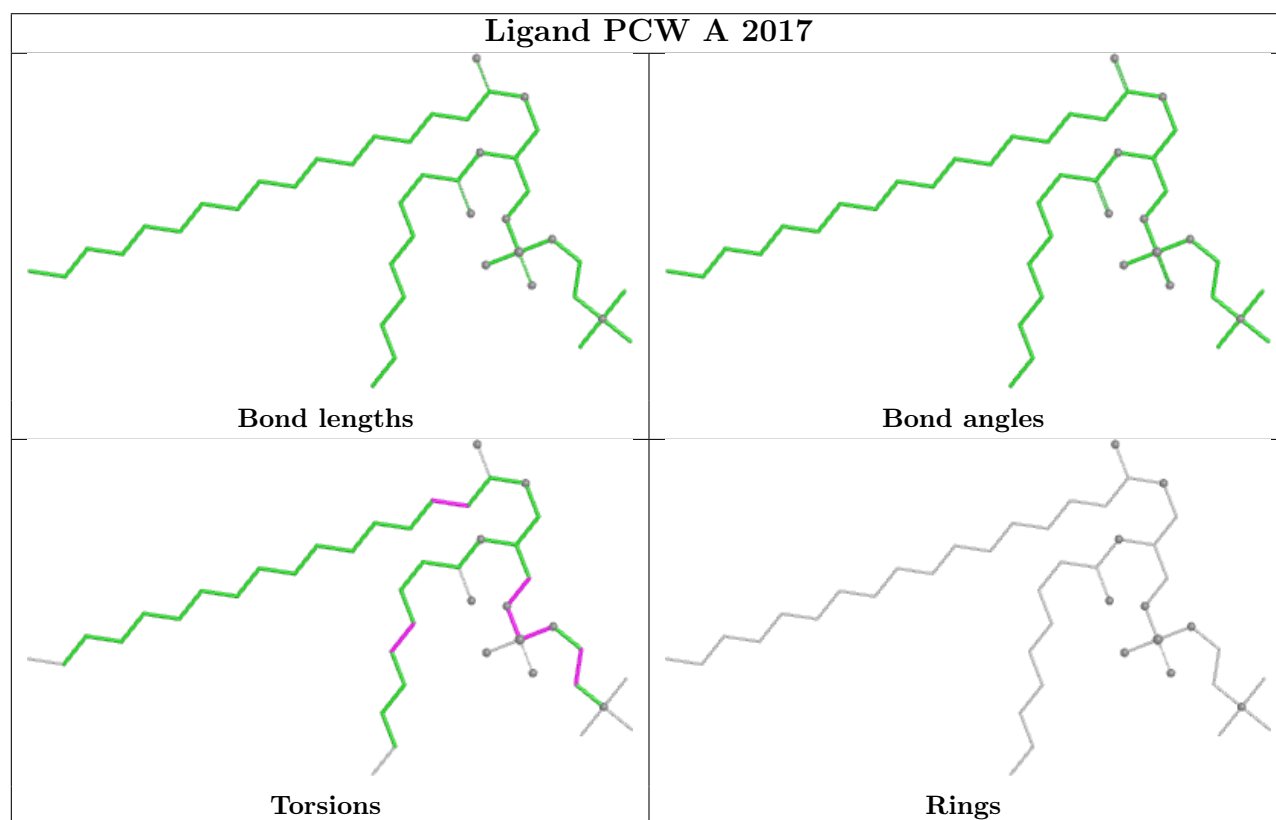
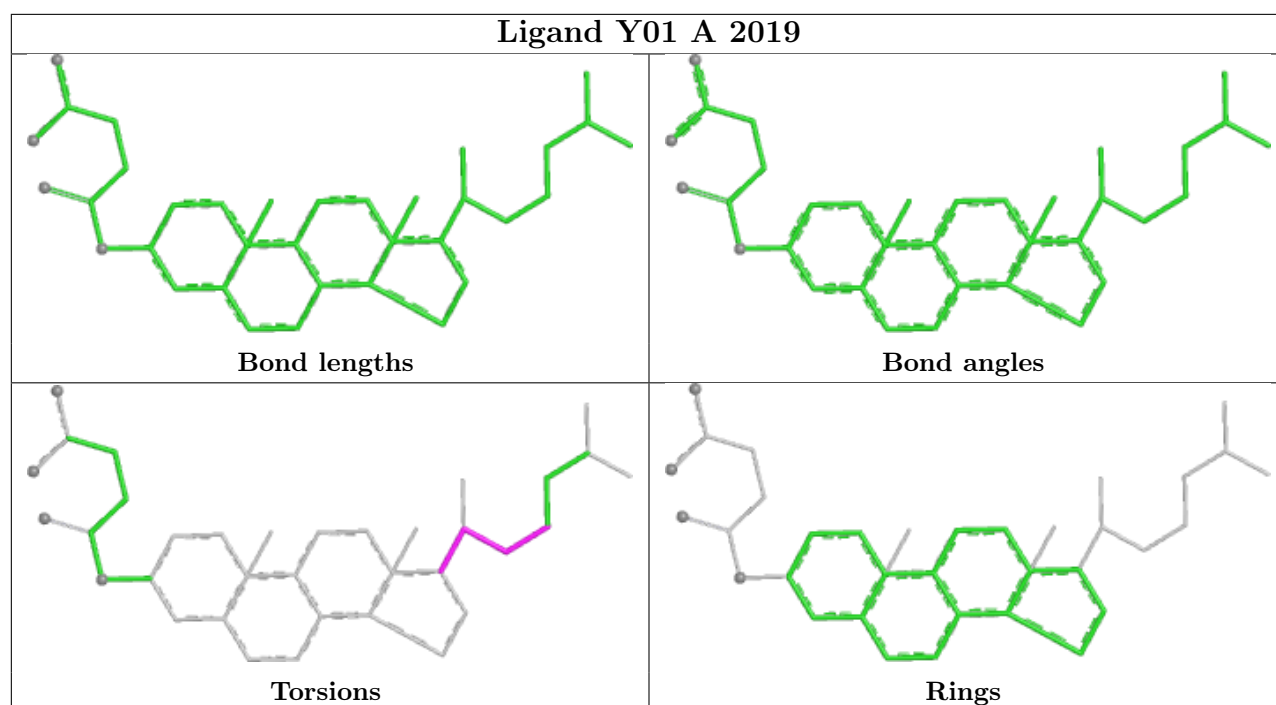


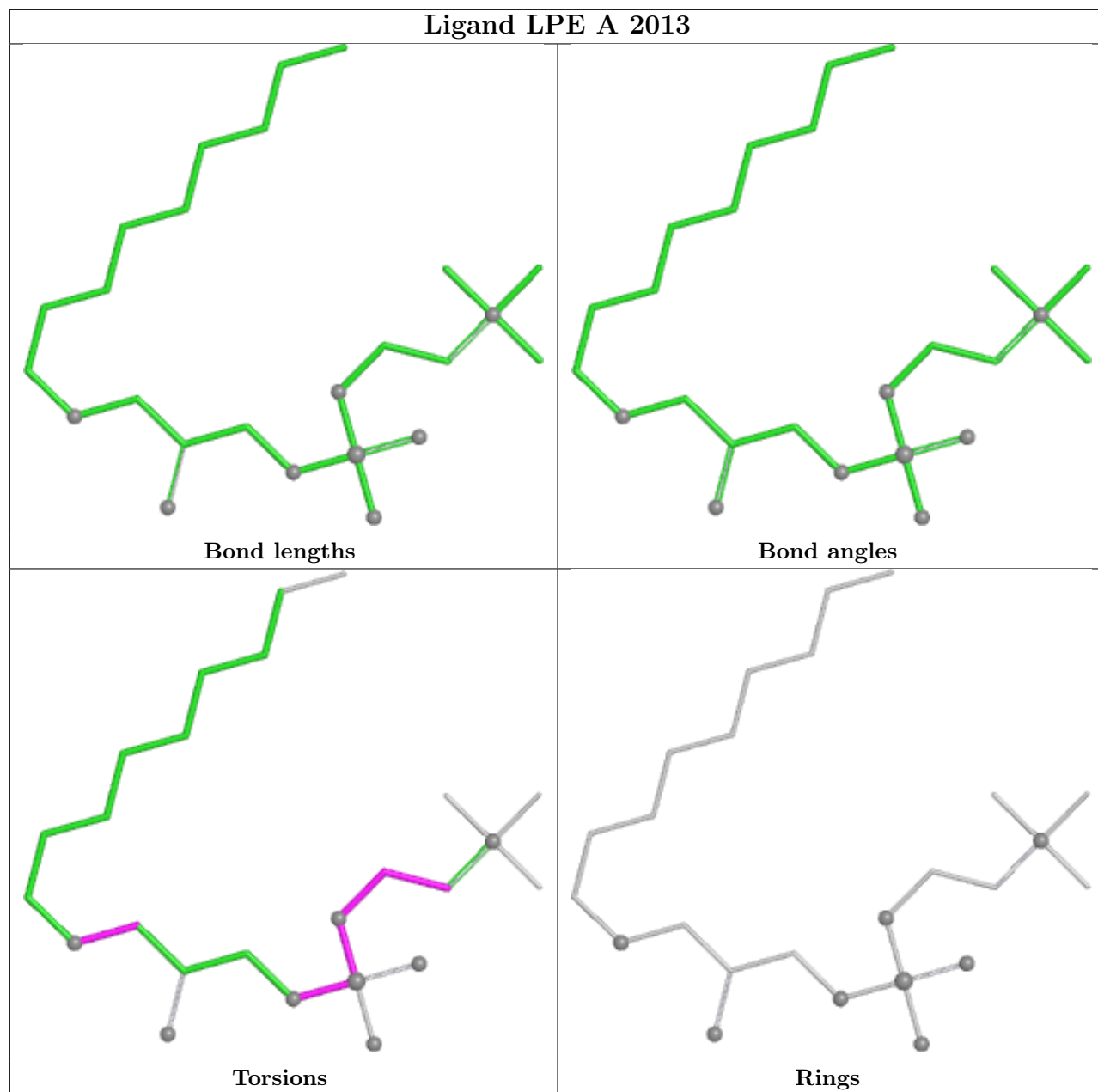


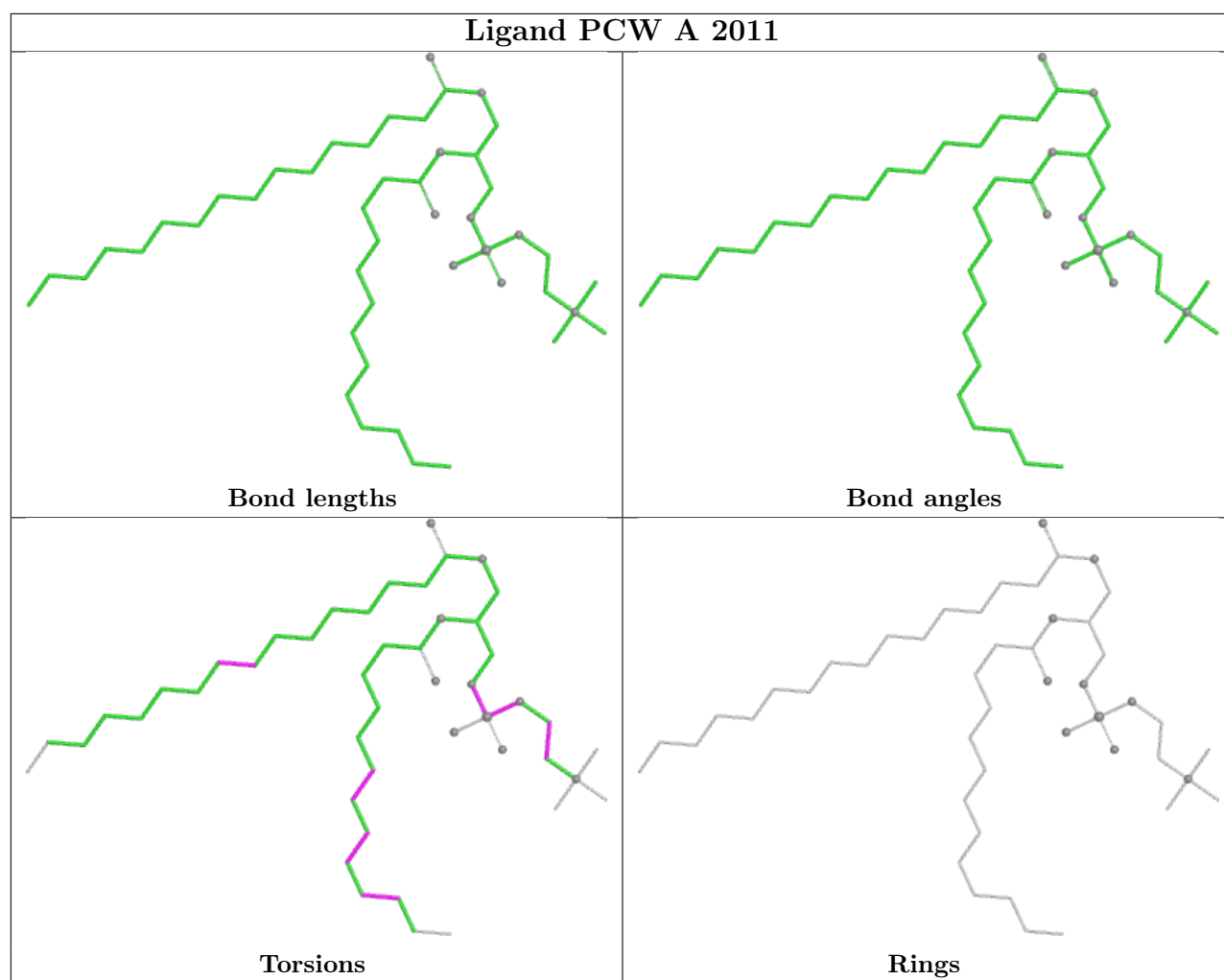


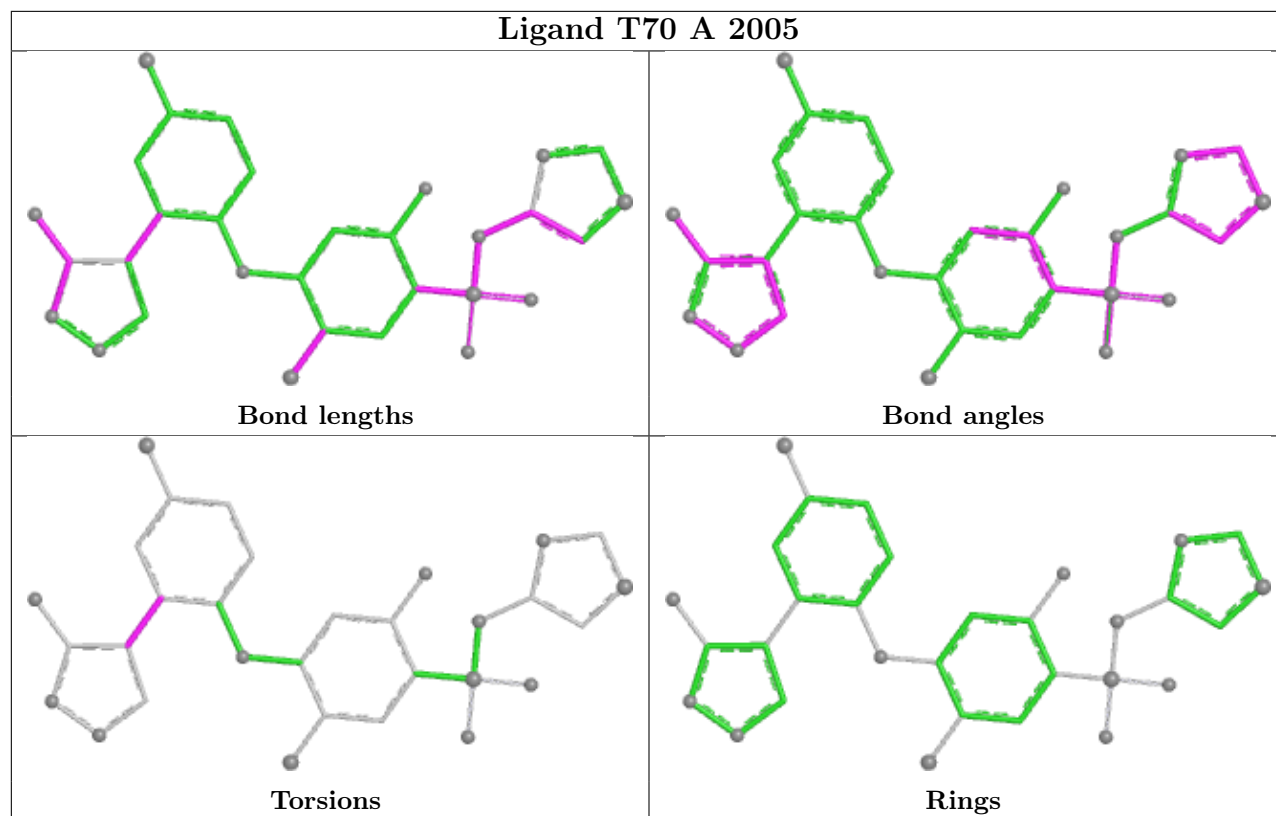


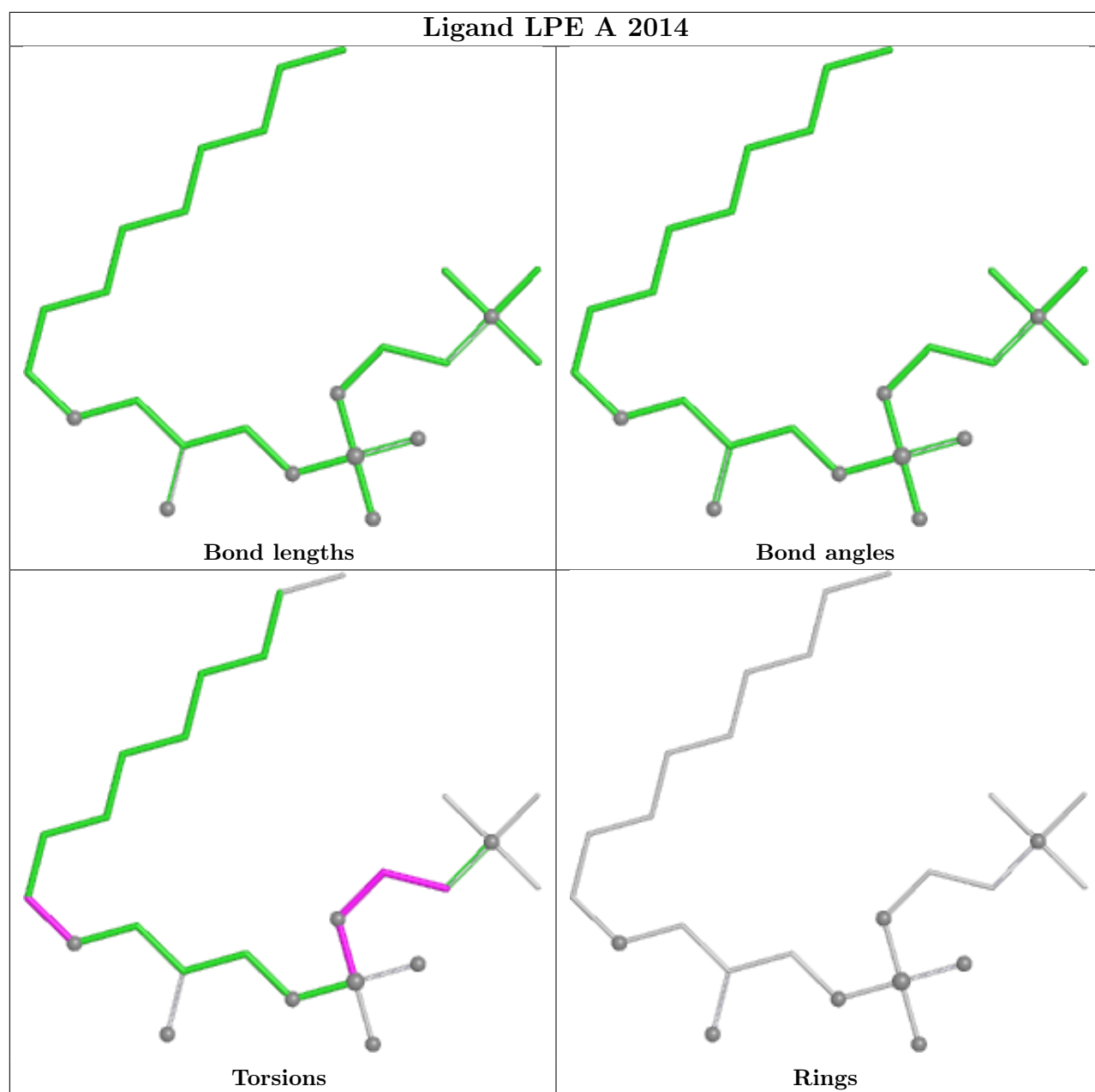


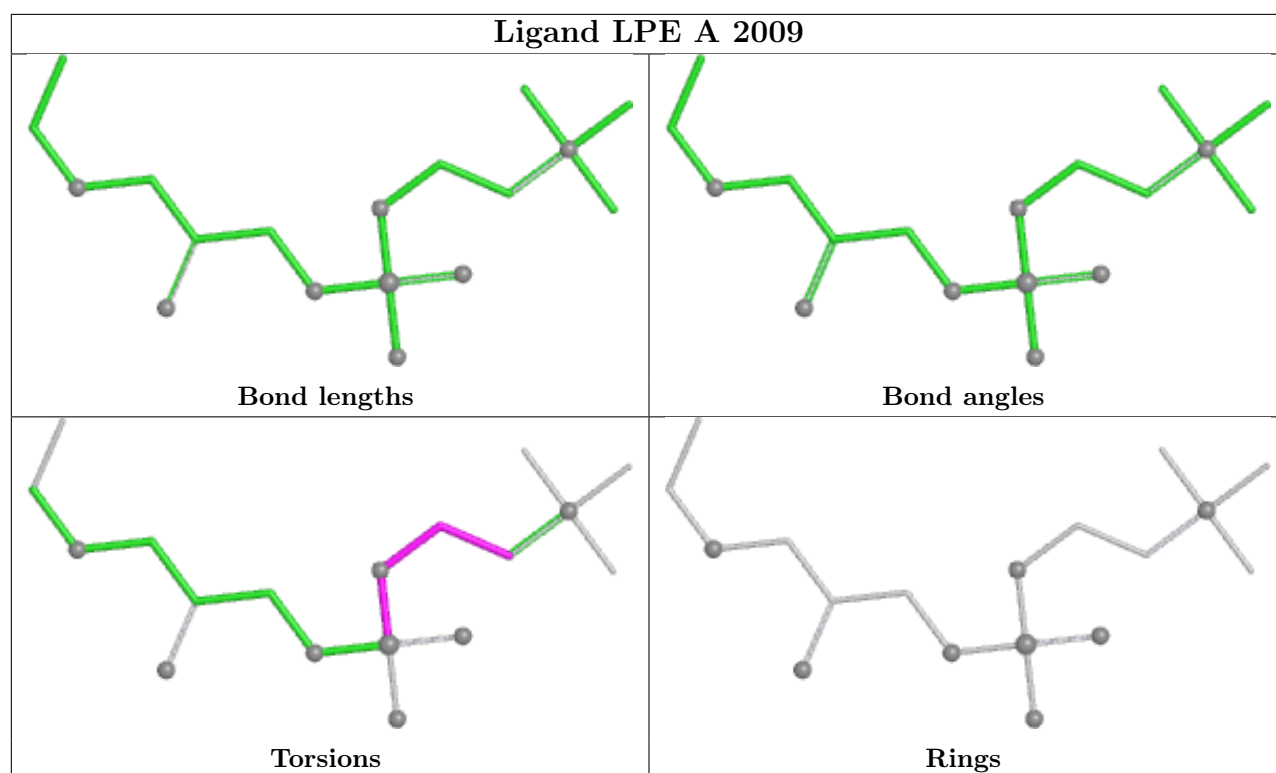












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

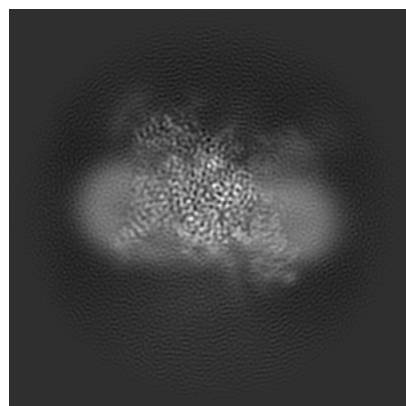
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-35194. These allow visual inspection of the internal detail of the map and identification of artifacts.

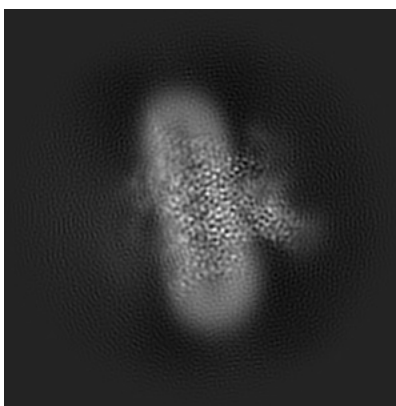
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

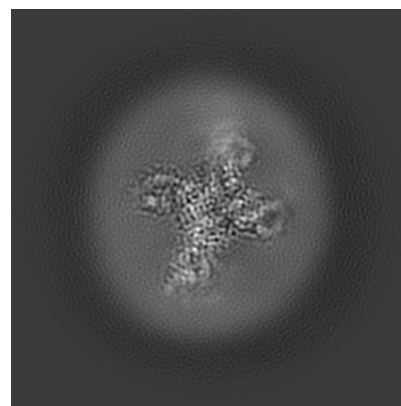
6.1.1 Primary map



X

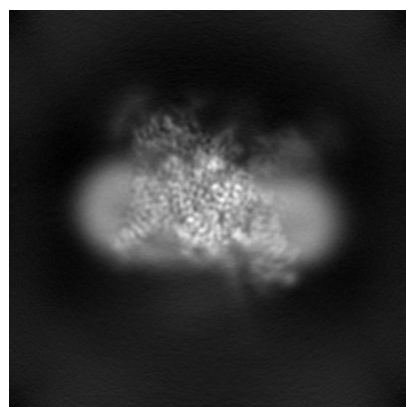


Y

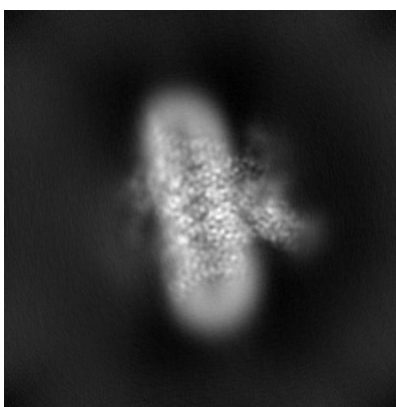


Z

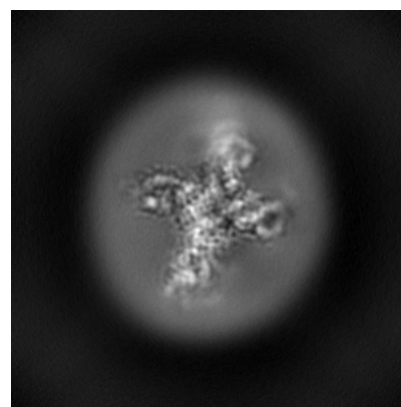
6.1.2 Raw map



X



Y

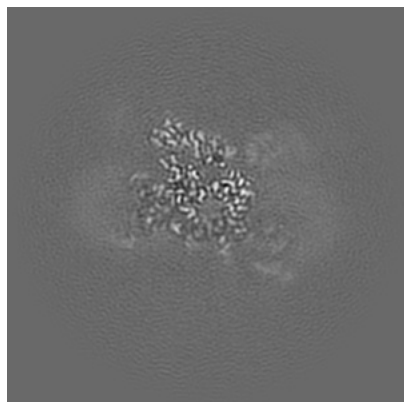


Z

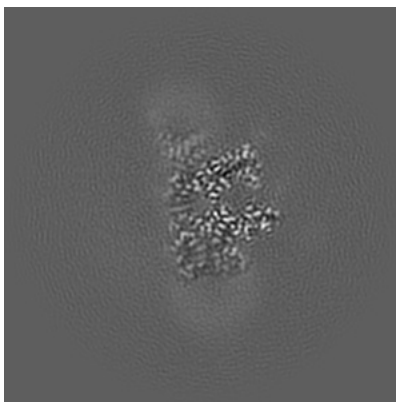
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

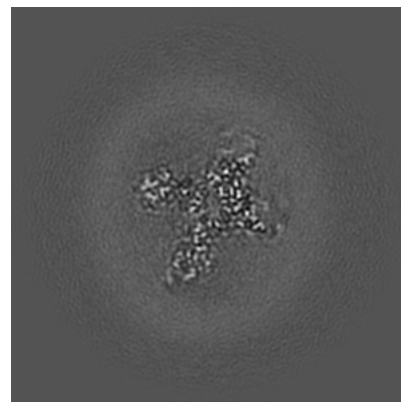
6.2.1 Primary map



X Index: 144

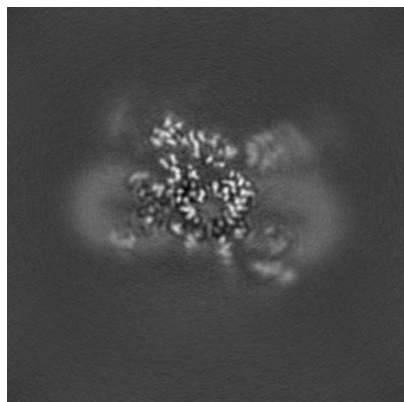


Y Index: 144

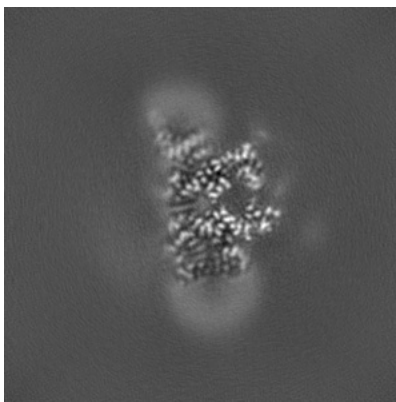


Z Index: 144

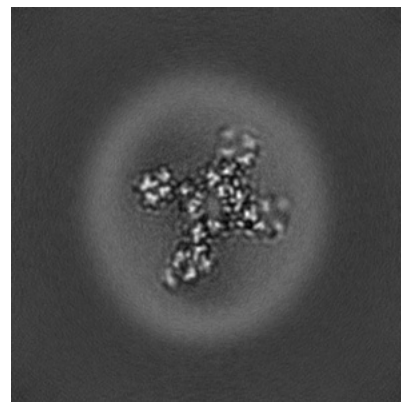
6.2.2 Raw map



X Index: 144



Y Index: 144

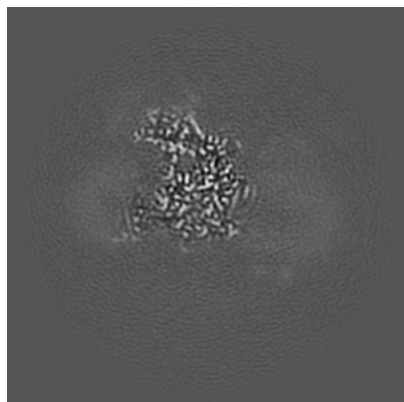


Z Index: 144

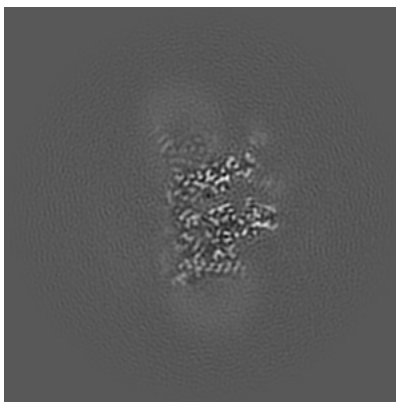
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

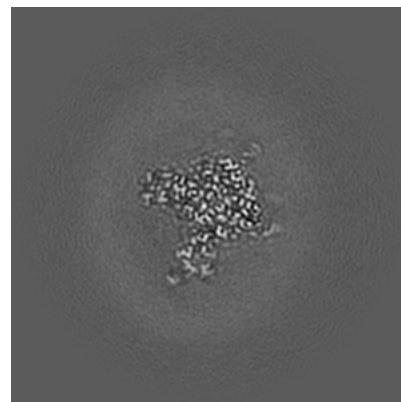
6.3.1 Primary map



X Index: 134

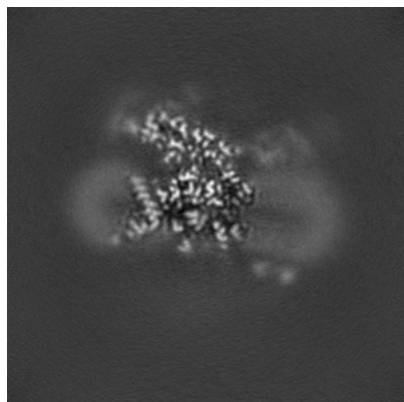


Y Index: 149

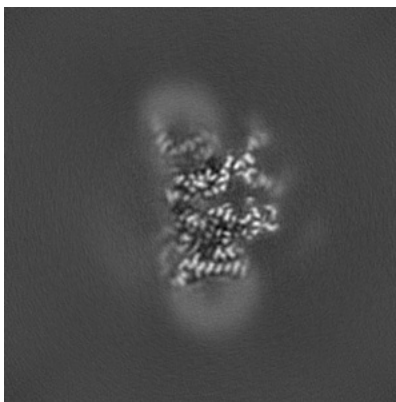


Z Index: 152

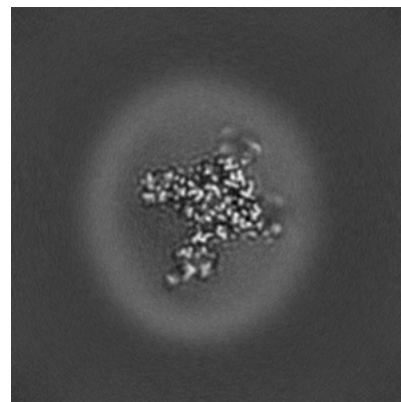
6.3.2 Raw map



X Index: 139



Y Index: 148

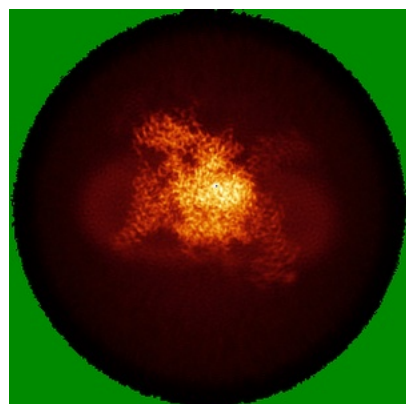


Z Index: 151

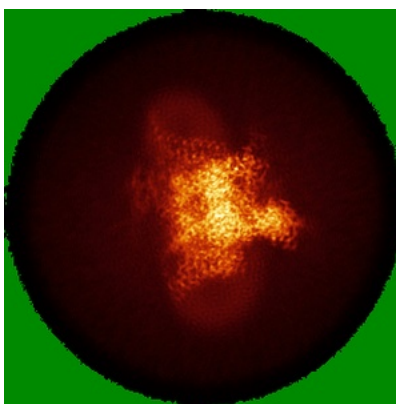
The images above show the largest variance slices of the map in three orthogonal directions.

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

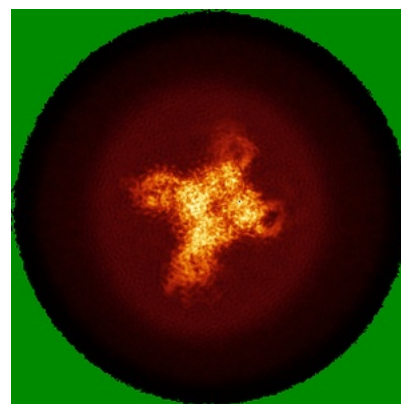
6.4.1 Primary map



X

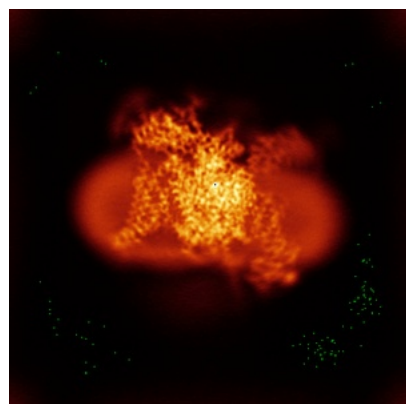


Y

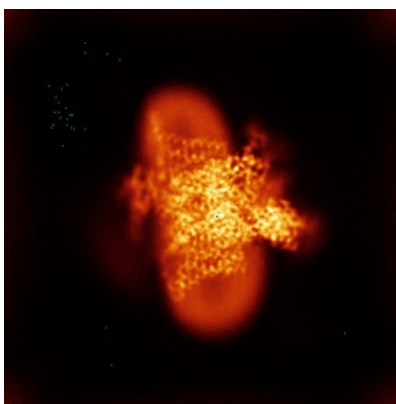


Z

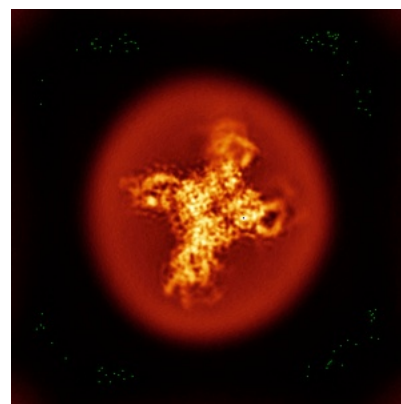
6.4.2 Raw map



X



Y



Z

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

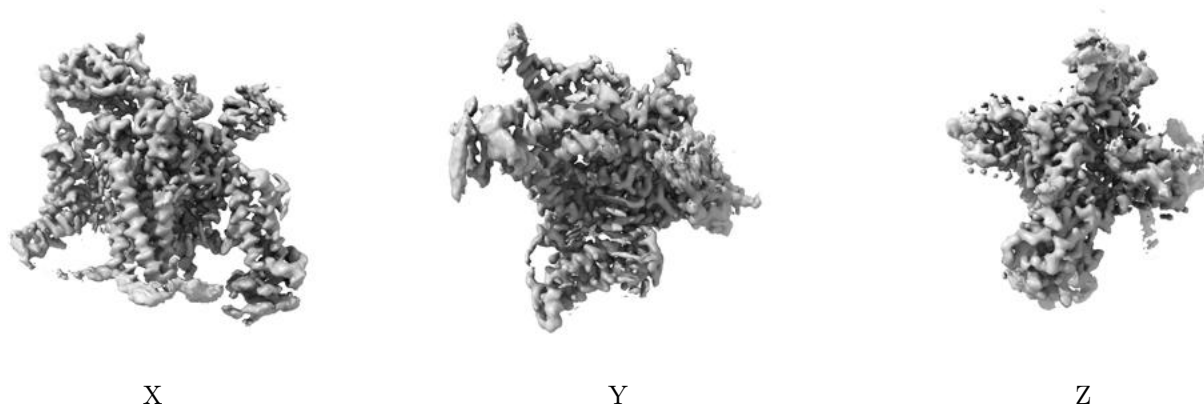
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.35. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

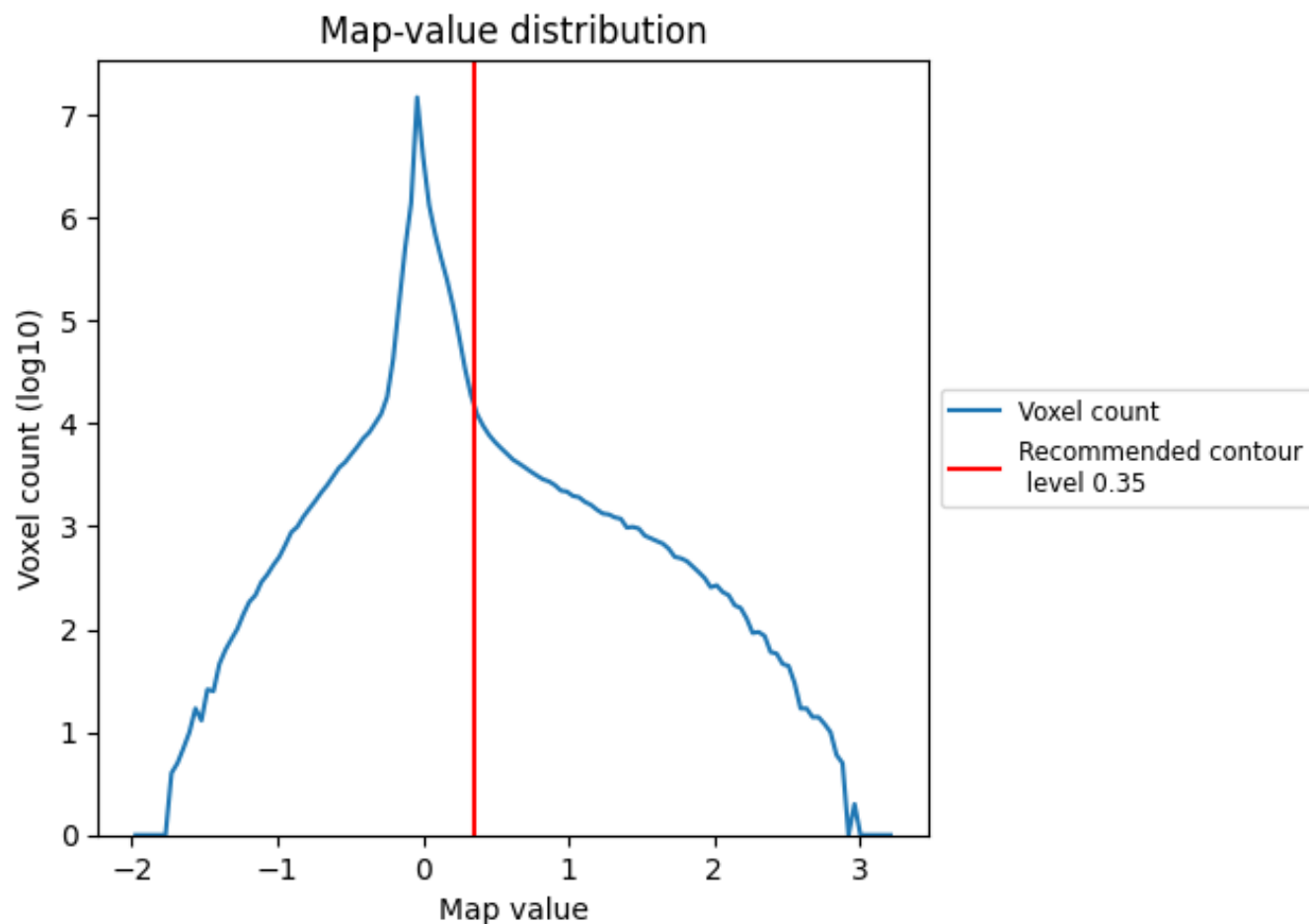
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

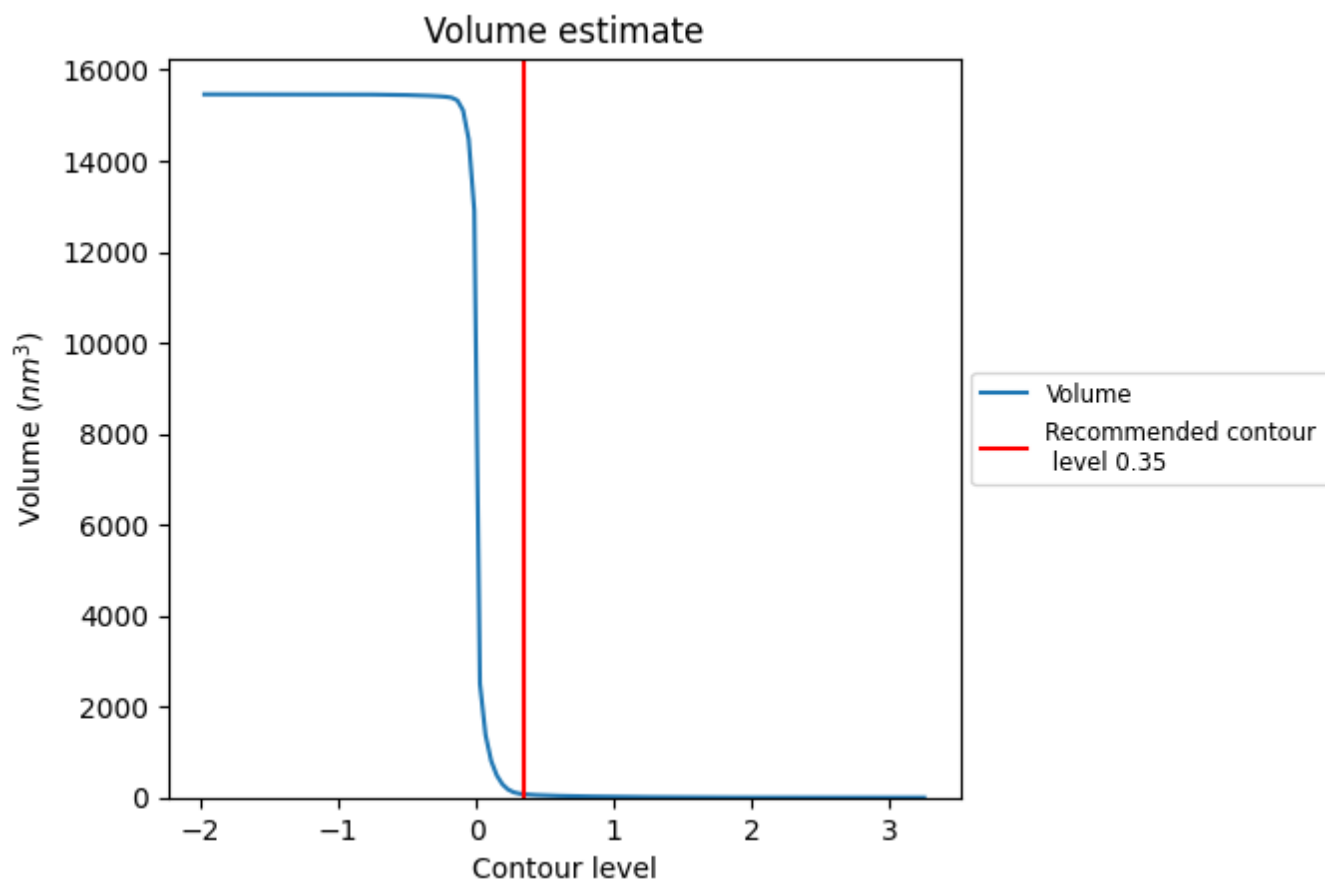
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

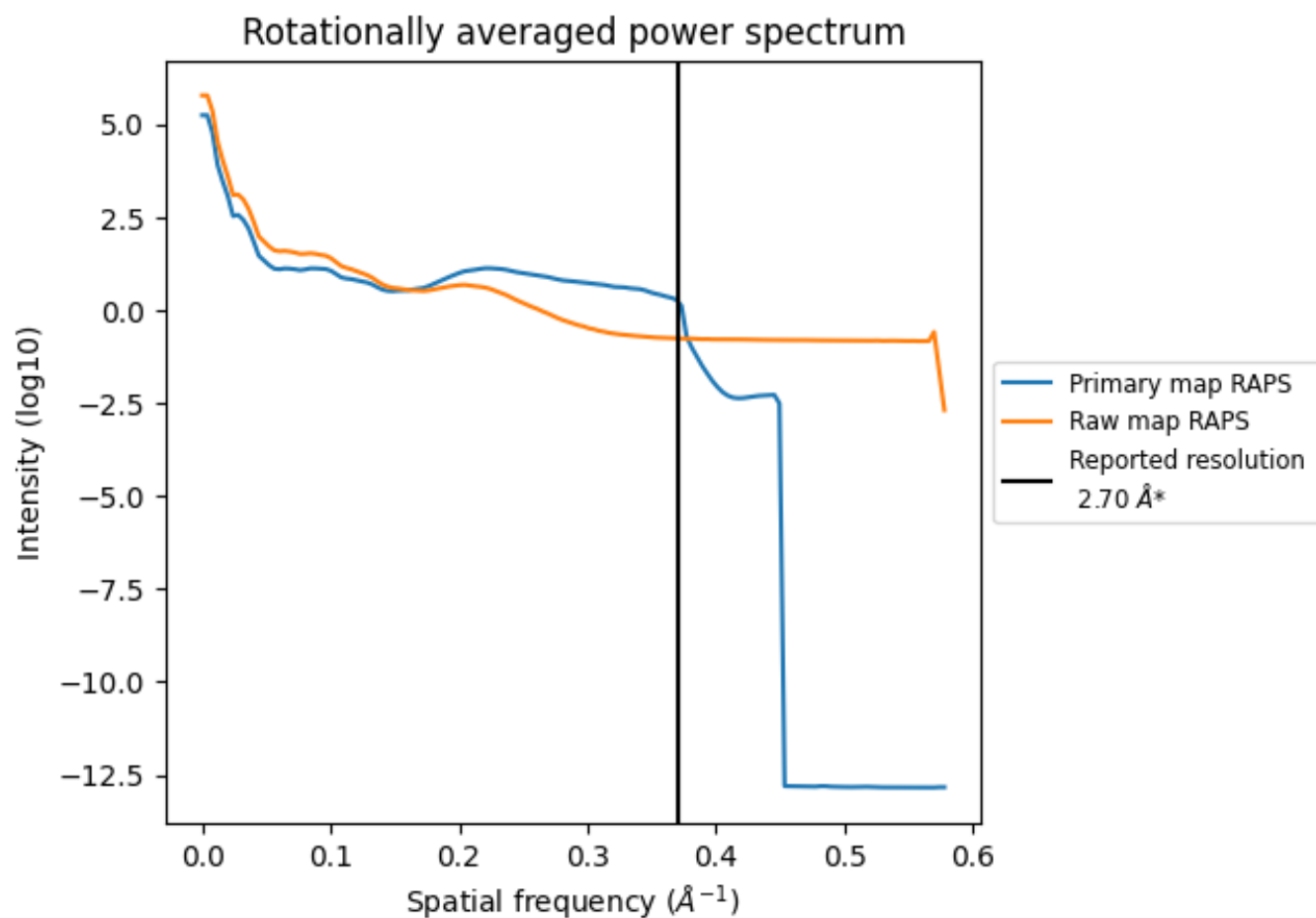
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 73 nm³; this corresponds to an approximate mass of 66 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

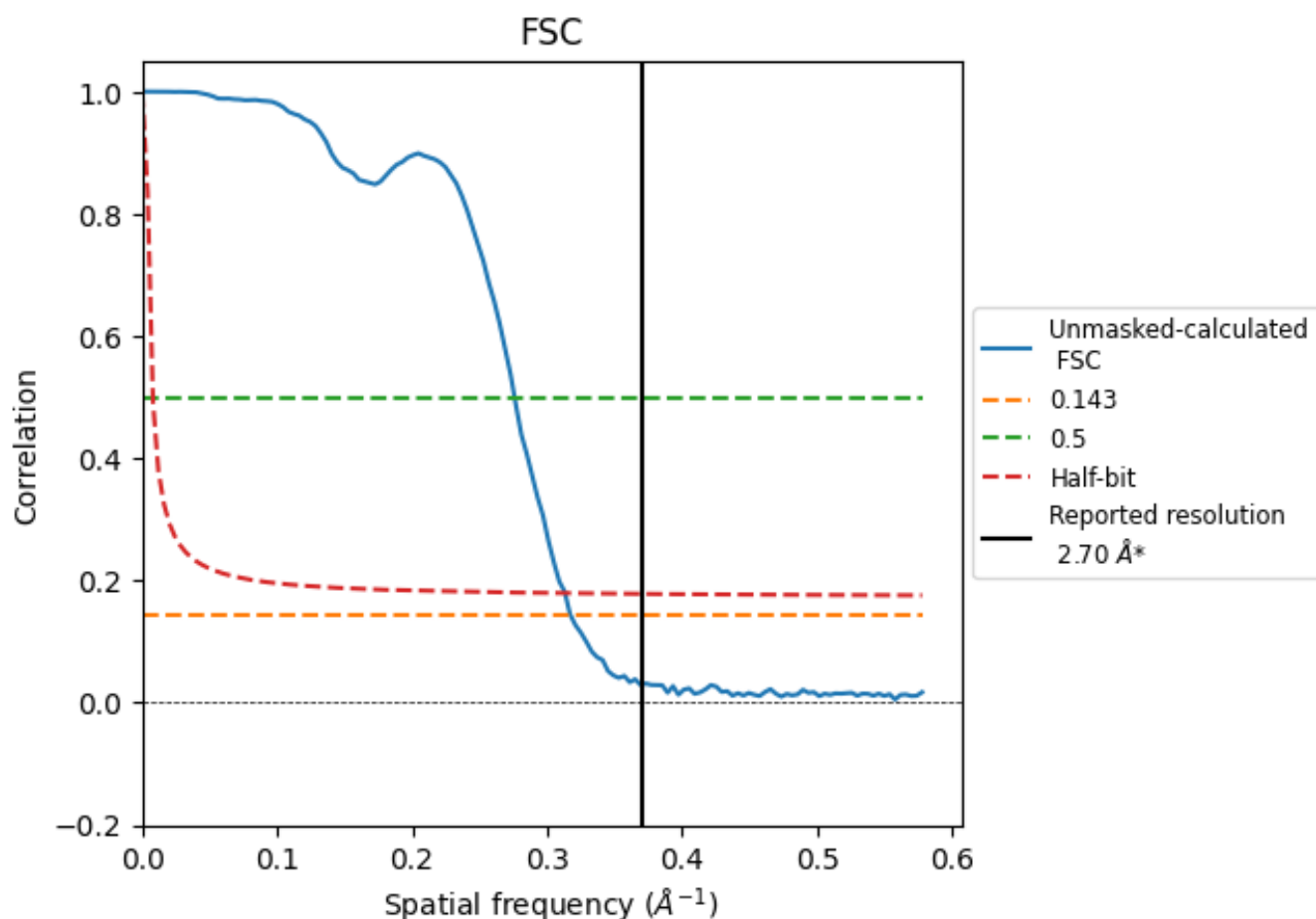


*Reported resolution corresponds to spatial frequency of 0.370 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.370 Å⁻¹

8.2 Resolution estimates [i](#)

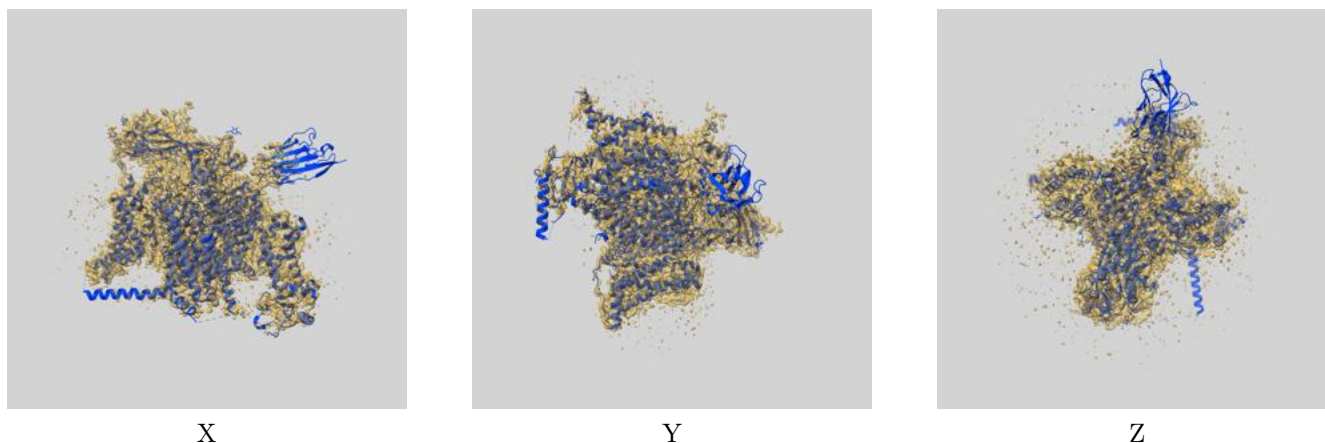
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.70	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.15	3.62	3.19

*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 3.15 differs from the reported value 2.7 by more than 10 %

9 Map-model fit [i](#)

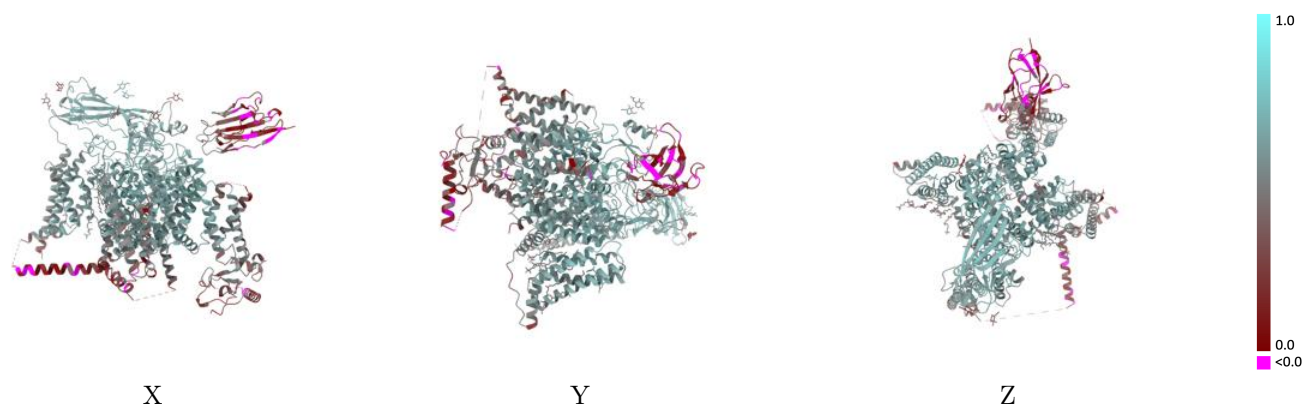
This section contains information regarding the fit between EMDB map EMD-35194 and PDB model 8I5G. Per-residue inclusion information can be found in section 3 on page 10.

9.1 Map-model overlay [i](#)



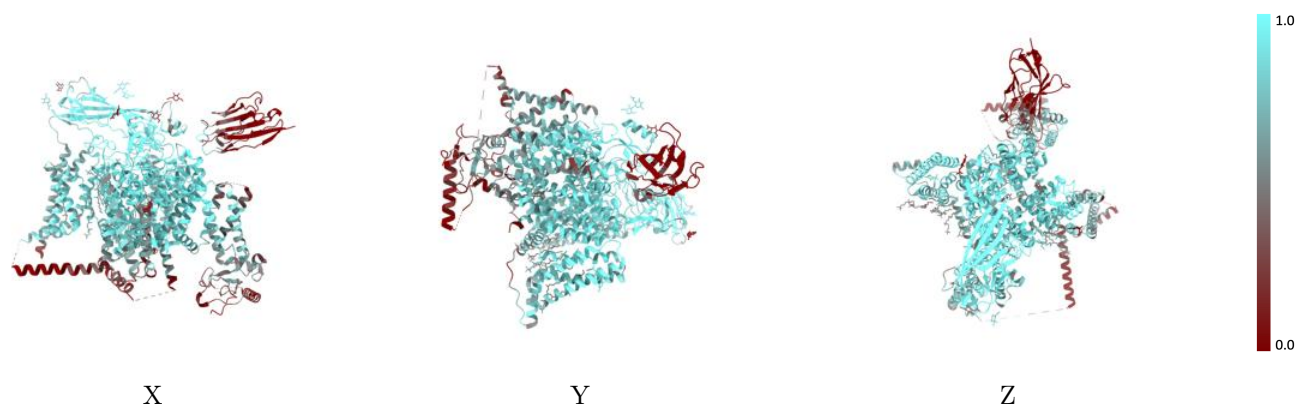
The images above show the 3D surface view of the map at the recommended contour level 0.35 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



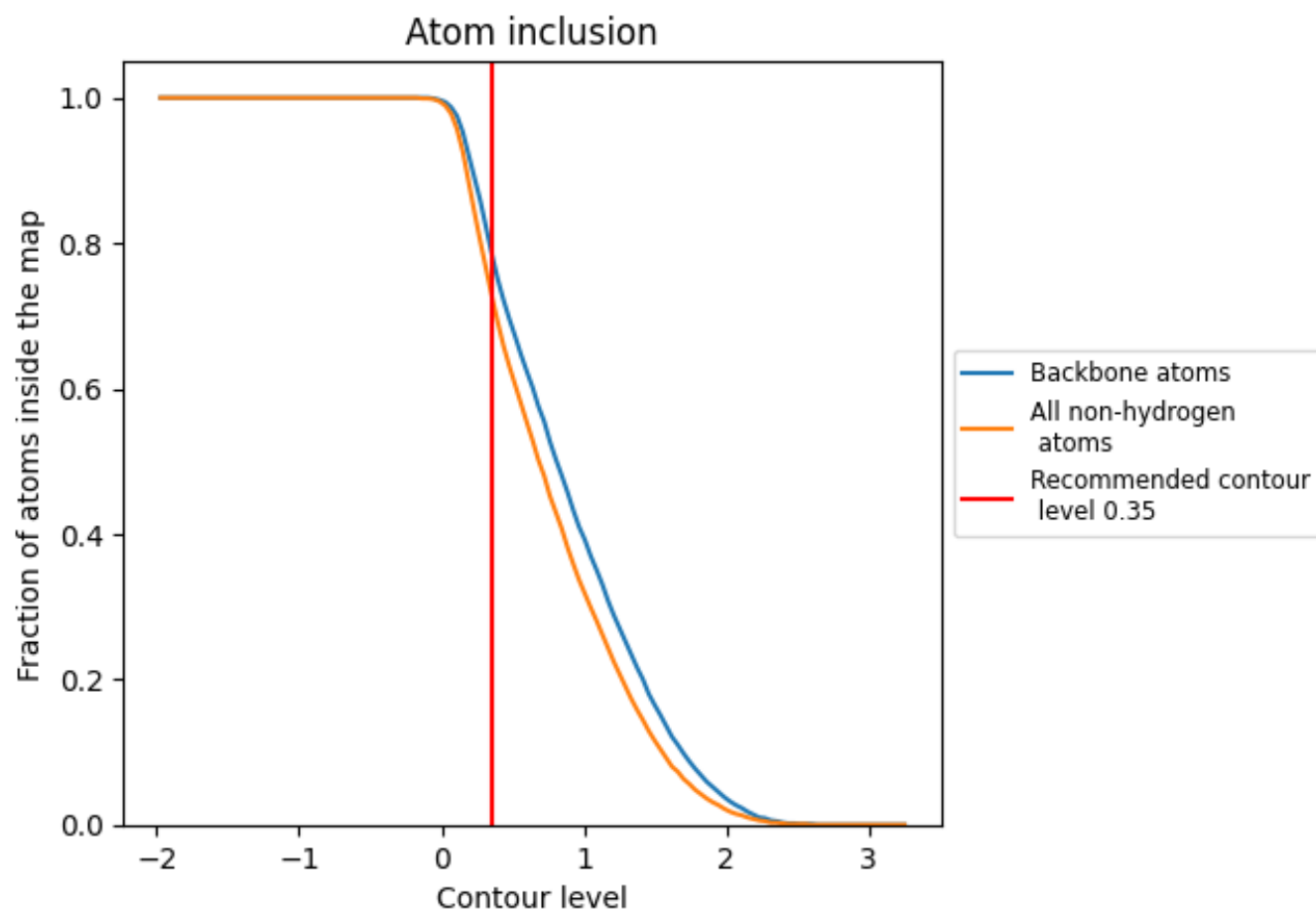
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.35).

9.4 Atom inclusion [i](#)



At the recommended contour level, 79% of all backbone atoms, 73% 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 (0.35) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7290	0.5160
A	0.7640	0.5360
B	0.8470	0.5850
C	0.1510	0.1900
D	0.9640	0.6110
E	0.5710	0.4120
F	0.8210	0.5170

