



Full wwPDB EM Validation Report ⓘ

Mar 23, 2026 – 07:24 AM UTC

PDB ID : 9DXR / pdb_00009dxr
EMDB ID : EMD-47296
Title : Ligand-binding and transmembrane domains of kainate receptor GluK2 in complex with positive allosteric modulator BPAM-344 and channel blocker Nephilatoxin-8
Authors : Gangwar, S.P.; Yen, L.Y.; Newton, T.P.; Yelshanskaya, M.V.; Sobolevsky, A.I.
Deposited on : 2024-10-11
Resolution : 3.10 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:

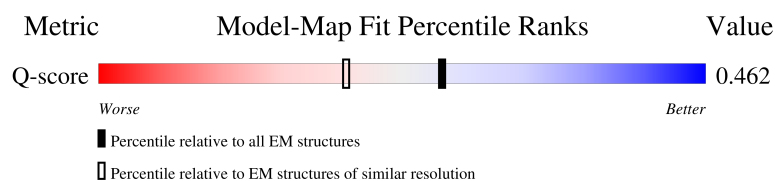
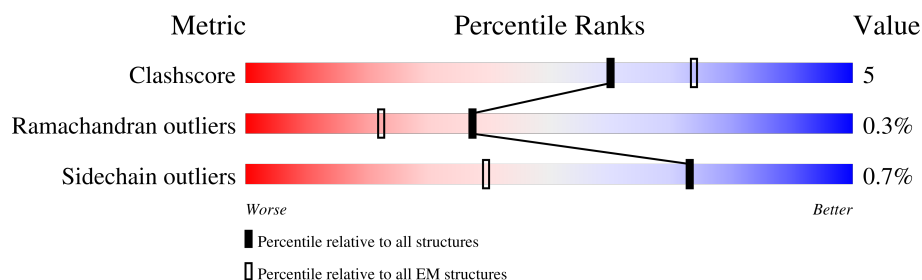
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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 3.10 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.



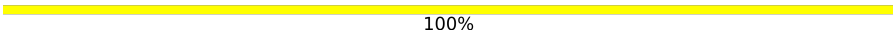
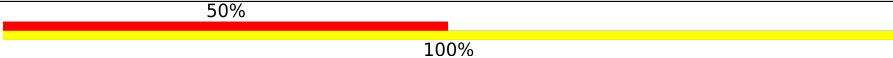
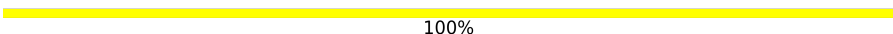
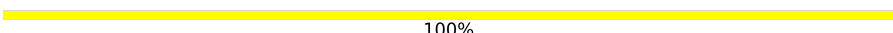
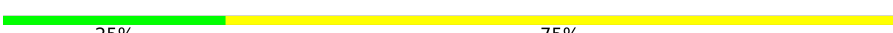
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	14724 (2.60 - 3.60)

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	A	908	43% 6% 51%
1	B	908	43% 6% 51%
1	C	908	43% 5% 51%
1	D	908	42% 7% 51%

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Mol	Chain	Length	Quality of chain
2	E	2	 50% 50%
2	F	2	 100%
2	H	2	 50% 50%
2	I	2	 50% 100%
2	J	2	 100%
2	L	2	 100%
3	G	4	 50% 50%
3	K	4	 25% 75%

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 15333 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 Glutamate receptor ionotropic, kainate 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	446	Total	C	N	O	S	0	0
			3532	2274	581	654	23		
1	B	446	Total	C	N	O	S	0	0
			3532	2274	581	654	23		
1	C	446	Total	C	N	O	S	0	0
			3532	2274	581	654	23		
1	D	446	Total	C	N	O	S	0	0
			3532	2274	581	654	23		

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	567	VAL	ILE	engineered mutation	UNP P42260
A	571	CYS	TYR	engineered mutation	UNP P42260
B	567	VAL	ILE	engineered mutation	UNP P42260
B	571	CYS	TYR	engineered mutation	UNP P42260
C	567	VAL	ILE	engineered mutation	UNP P42260
C	571	CYS	TYR	engineered mutation	UNP P42260
D	567	VAL	ILE	engineered mutation	UNP P42260
D	571	CYS	TYR	engineered mutation	UNP P42260

- Molecule 2 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
2	E	2	Total	C	N	O	0	0
			28	16	2	10		
2	F	2	Total	C	N	O	0	0
			28	16	2	10		

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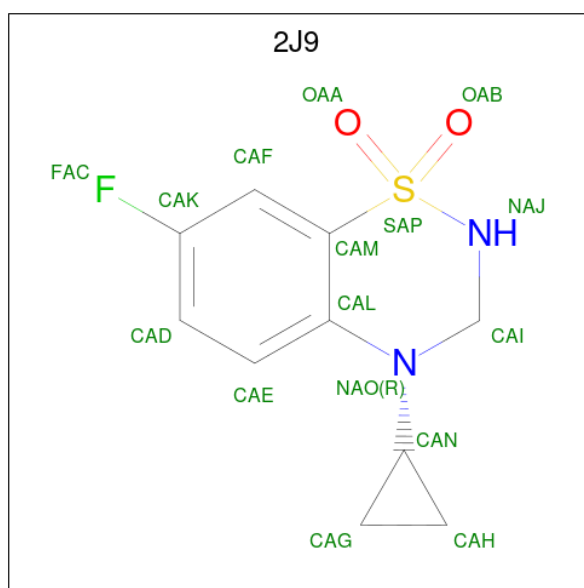
Mol	Chain	Residues	Atoms				AltConf	Trace
2	H	2	Total	C	N	O	0	0
			28	16	2	10		
2	I	2	Total	C	N	O	0	0
			28	16	2	10		
2	J	2	Total	C	N	O	0	0
			28	16	2	10		
2	L	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 3 is an oligosaccharide called beta-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



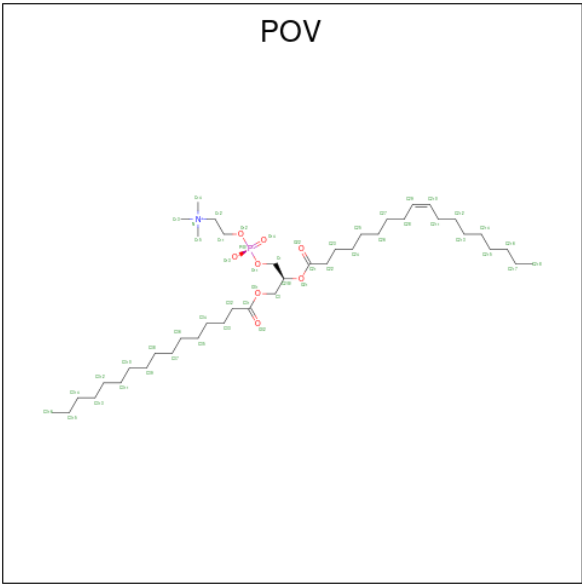
Mol	Chain	Residues	Atoms				AltConf	Trace
3	G	4	Total	C	N	O	0	0
			50	28	2	20		
3	K	4	Total	C	N	O	0	0
			50	28	2	20		

- Molecule 4 is 4-cyclopropyl-7-fluoro-3,4-dihydro-2H-1,2,4-benzothiadiazine 1,1-dioxide (CCD ID: 2J9) (formula: C₁₀H₁₁FN₂O₂S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						AltConf
4	A	1	Total	C	F	N	O	S	0
			16	10	1	2	2	1	
4	A	1	Total	C	F	N	O	S	0
			16	10	1	2	2	1	
4	B	1	Total	C	F	N	O	S	0
			16	10	1	2	2	1	
4	C	1	Total	C	F	N	O	S	0
			16	10	1	2	2	1	

- Molecule 5 is (2S)-3-(hexadecanoyloxy)-2-[(9Z)-octadec-9-enoyloxy]propyl 2-(trimethylamm onio)ethyl phosphate (CCD ID: POV) (formula: C₄₂H₈₂NO₈P).



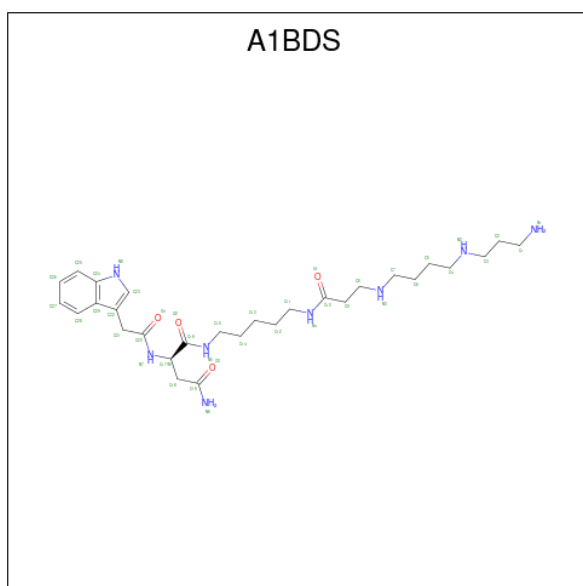
Mol	Chain	Residues	Atoms					AltConf
5	A	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	A	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	A	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	A	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	A	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	A	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	B	1	Total	C	N	O	P	0
			52	42	1	8	1	

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Mol	Chain	Residues	Atoms					AltConf
5	B	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	C	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	C	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	C	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	C	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	C	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	D	1	Total	C	N	O	P	0
			52	42	1	8	1	
5	D	1	Total	C	N	O	P	0
			52	42	1	8	1	

- Molecule 6 is N 1 -{5-[(N-{4-[(3-aminopropyl)amino]butyl}-beta-alanyl)amino]pentyl}-N 2 -[(1H-indol-3-yl)acetyl]-D-aspartamide (CCD ID: A1BDS) (formula: C₂₉H₄₈N₈O₄) (labeled as "Ligand of Interest" by depositor).

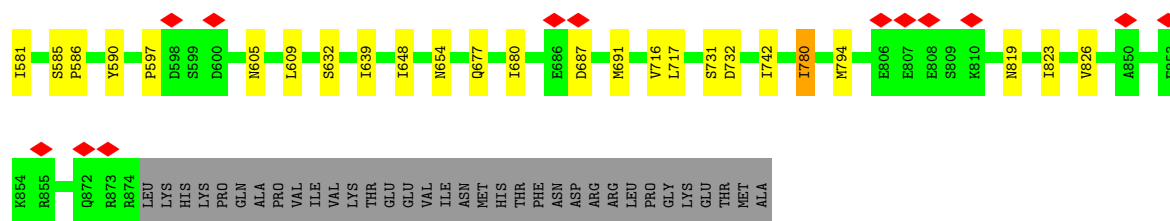


Mol	Chain	Residues	Atoms				AltConf
6	A	1	Total	C	N	O	0
			41	29	8	4	

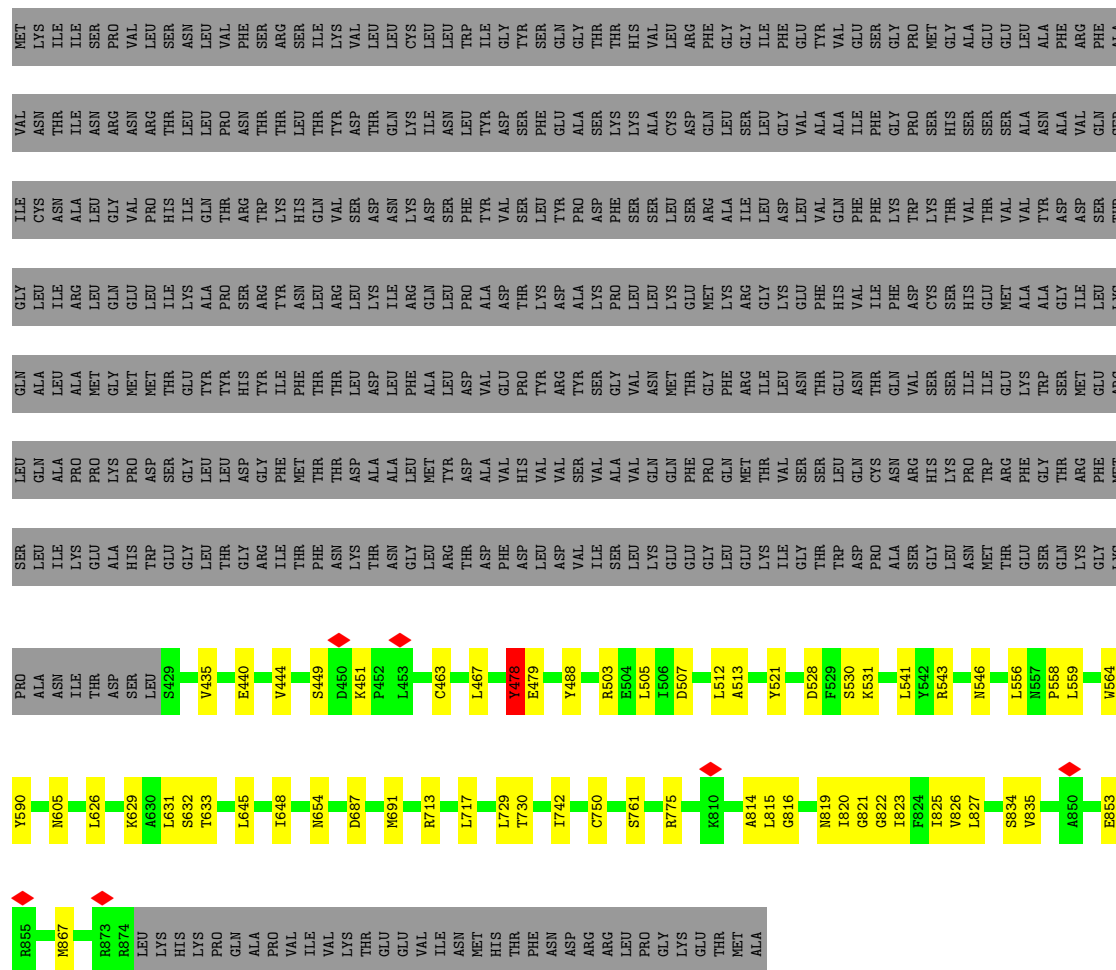


Frequency	Percentage
Daily	43%
Sometimes	5%
Never	51%





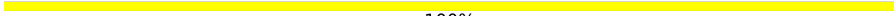
- Molecule 1: Glutamate receptor ionotropic, kainate 2



- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:  100%

MAG1
MAG2

- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:  50% 50%

MAG1
MAG2

- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:  50% 100%

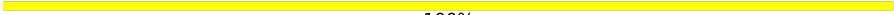

MAG1
MAG2

- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:  100%

MAG1
MAG2

- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain L:  100%

MAG1
MAG2

- Molecule 3: beta-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:  50% 50%

MAG1
MAG2
BMA3
BMA4

- Molecule 3: beta-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:  25% 75%

MAG1
MAG2
BMA3
BMA4

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	199303	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	4.351	Depositor
Minimum map value	-1.998	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.056	Depositor
Recommended contour level	0.36	Depositor
Map size ($\text{\AA}$)	379.8, 379.8, 379.8	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	1.055, 1.055, 1.055	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 2J9, A1BDS, NAG, BMA, POV

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.23	0/3610	0.58	4/4883 (0.1%)
1	B	0.22	0/3610	0.60	2/4883 (0.0%)
1	C	0.23	0/3610	0.58	4/4883 (0.1%)
1	D	0.22	0/3610	0.60	2/4883 (0.0%)
All	All	0.23	0/14440	0.59	12/19532 (0.1%)

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

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

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	547	GLY	CA-C-N	5.38	131.82	121.54
1	A	547	GLY	C-N-CA	5.38	131.82	121.54
1	C	547	GLY	CA-C-N	5.37	131.80	121.54
1	C	547	GLY	C-N-CA	5.37	131.80	121.54
1	D	478	TYR	CA-C-N	5.29	131.64	121.54
1	D	478	TYR	C-N-CA	5.29	131.64	121.54
1	B	478	TYR	CA-C-N	5.26	131.58	121.54
1	B	478	TYR	C-N-CA	5.26	131.58	121.54
1	A	597	PRO	CA-C-N	5.12	131.32	121.54
1	A	597	PRO	C-N-CA	5.12	131.32	121.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	597	PRO	CA-C-N	5.11	131.30	121.54
1	C	597	PRO	C-N-CA	5.11	131.30	121.54

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	478	TYR	Peptide
1	D	478	TYR	Peptide

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3532	0	3534	34	0
1	B	3532	0	3534	39	0
1	C	3532	0	3534	33	0
1	D	3532	0	3534	38	0
2	E	28	0	25	1	0
2	F	28	0	25	0	0
2	H	28	0	25	0	0
2	I	28	0	25	1	0
2	J	28	0	25	0	0
2	L	28	0	25	1	0
3	G	50	0	43	1	0
3	K	50	0	43	2	0
4	A	32	0	20	1	0
4	B	16	0	10	0	0
4	C	16	0	10	0	0
5	A	312	0	492	8	0
5	B	104	0	164	3	0
5	C	312	0	492	8	0
5	D	104	0	164	5	0
6	A	41	0	0	1	0
All	All	15333	0	15724	140	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 5.

All (140) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:639:ILE:HD13	5:A:1005:POV:H39	1.83	0.61
1:C:506:ILE:HD12	1:C:526:VAL:HG23	1.86	0.57
1:D:590:TYR:OH	1:D:605:ASN:ND2	2.38	0.57
1:A:506:ILE:HD12	1:A:526:VAL:HG23	1.86	0.56
1:D:713:ARG:HG3	1:D:717:LEU:HD12	1.88	0.56
1:D:505:LEU:HD21	1:D:513:ALA:HB2	1.87	0.56
1:C:455:GLY:O	1:C:458:ARG:NH1	2.39	0.56
1:B:590:TYR:OH	1:B:605:ASN:ND2	2.38	0.55
1:B:531:LYS:NZ	1:C:530:SER:O	2.39	0.55
1:B:713:ARG:HG3	1:B:717:LEU:HD12	1.88	0.55
1:B:815:LEU:HD12	1:B:820:ILE:HG23	1.88	0.55
1:B:505:LEU:HD21	1:B:513:ALA:HB2	1.88	0.55
1:B:543:ARG:NH2	1:B:729:LEU:O	2.40	0.55
1:A:455:GLY:O	1:A:458:ARG:NH1	2.39	0.55
1:A:834:SER:OG	1:D:632:SER:O	2.23	0.54
1:D:543:ARG:NH2	1:D:729:LEU:O	2.40	0.54
1:D:815:LEU:HD12	1:D:820:ILE:HG23	1.88	0.54
1:B:631:LEU:HD13	1:C:609:LEU:HD11	1.88	0.53
1:A:541:LEU:HG	1:A:742:ILE:HG12	1.90	0.53
1:B:541:LEU:HG	1:B:742:ILE:HG12	1.91	0.53
1:B:530:SER:O	1:C:531:LYS:NZ	2.42	0.52
1:A:554:SER:OG	1:A:819:ASN:O	2.28	0.52
1:B:629:LYS:O	1:B:633:THR:OG1	2.28	0.52
1:A:440:GLU:OE1	1:A:488:TYR:OH	2.27	0.52
1:C:541:LEU:HG	1:C:742:ILE:HG12	1.90	0.52
1:C:554:SER:OG	1:C:819:ASN:O	2.28	0.52
1:D:629:LYS:O	1:D:633:THR:OG1	2.28	0.52
1:B:590:TYR:HB2	5:C:1005:POV:H14	1.91	0.52
1:C:440:GLU:OE1	1:C:488:TYR:OH	2.27	0.52
1:A:584:PHE:HD1	1:B:867:MET:HG2	1.75	0.52
1:D:867:MET:SD	1:D:867:MET:N	2.83	0.51
1:A:677:GLN:OE1	1:A:680:ILE:N	2.40	0.51
1:A:436:THR:HG21	1:A:504:GLU:HG2	1.93	0.51
1:D:444:VAL:HG23	1:D:463:CYS:HB2	1.93	0.51
1:D:541:LEU:HG	1:D:742:ILE:HG12	1.91	0.51
1:B:872:GLN:HE22	5:B:1001:POV:H3	1.75	0.51
1:B:645:LEU:HD21	1:C:648:ILE:HD12	1.93	0.51
1:C:436:THR:HG21	1:C:504:GLU:HG2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:867:MET:SD	1:B:867:MET:N	2.83	0.50
1:D:816:GLY:H	1:D:819:ASN:HD22	1.59	0.50
1:C:632:SER:O	1:D:834:SER:OG	2.25	0.50
1:B:816:GLY:H	1:B:819:ASN:HD22	1.59	0.50
1:B:444:VAL:HG23	1:B:463:CYS:HB2	1.93	0.50
1:C:546:ASN:HB3	2:I:1:NAG:HN2	1.77	0.50
1:C:654:ASN:HD21	1:D:814:ALA:HA	1.75	0.49
1:D:503:ARG:NH2	1:D:507:ASP:OD2	2.35	0.49
1:B:449:SER:HB3	1:B:451:LYS:HE2	1.95	0.49
1:B:467:LEU:O	1:B:478:TYR:OH	2.31	0.49
1:C:677:GLN:OE1	1:C:680:ILE:N	2.40	0.49
1:D:823:ILE:HA	1:D:826:VAL:HG22	1.95	0.49
1:C:435:VAL:HG11	1:C:467:LEU:HD21	1.95	0.48
1:A:435:VAL:HG11	1:A:467:LEU:HD21	1.95	0.48
1:D:467:LEU:O	1:D:478:TYR:OH	2.30	0.48
1:D:528:ASP:HB3	1:D:775:ARG:HD3	1.95	0.48
1:D:556:LEU:O	1:D:564:TRP:NE1	2.47	0.48
1:A:780:ILE:HG23	1:D:521:TYR:HE1	1.78	0.47
1:B:559:LEU:HB2	1:B:564:TRP:CE2	2.49	0.47
1:D:440:GLU:OE1	1:D:488:TYR:OH	2.32	0.47
1:B:440:GLU:OE1	1:B:488:TYR:OH	2.32	0.47
1:C:639:ILE:HG23	1:D:827:LEU:HD12	1.96	0.47
1:D:449:SER:HB3	1:D:451:LYS:HE2	1.95	0.47
1:B:823:ILE:HA	1:B:826:VAL:HG22	1.95	0.47
1:C:823:ILE:HA	1:C:826:VAL:HG22	1.97	0.47
6:A:1009:A1BDS:N3	6:A:1009:A1BDS:O1	2.45	0.47
1:A:556:LEU:HD21	5:A:1002:POV:H23A	1.96	0.47
1:A:435:VAL:HG13	1:A:480:ILE:HA	1.98	0.46
1:A:823:ILE:HA	1:A:826:VAL:HG22	1.97	0.46
1:B:528:ASP:HB3	1:B:775:ARG:HD3	1.95	0.46
5:B:1003:POV:H23	5:B:1003:POV:H26	1.62	0.46
1:D:559:LEU:HB2	1:D:564:TRP:CE2	2.49	0.46
1:B:816:GLY:H	1:B:819:ASN:HB2	1.80	0.46
1:D:816:GLY:H	1:D:819:ASN:HB2	1.80	0.46
1:A:530:SER:O	1:D:531:LYS:NZ	2.49	0.46
5:A:1002:POV:H39	5:A:1002:POV:H28	1.98	0.46
1:C:465:ASP:OD1	1:C:468:ARG:NH1	2.48	0.45
1:A:648:ILE:HD12	1:D:645:LEU:HD21	1.98	0.45
1:D:687:ASP:N	1:D:691:MET:SD	2.89	0.45
1:D:750:CYS:H	2:L:1:NAG:H82	1.82	0.45
1:B:687:ASP:N	1:B:691:MET:SD	2.89	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:820:ILE:O	1:D:822:GLY:N	2.50	0.45
1:A:546:ASN:HB3	2:E:1:NAG:HN2	1.82	0.45
1:B:783:LEU:HD21	1:C:519:ILE:HG22	1.98	0.45
1:C:435:VAL:HG13	1:C:480:ILE:HA	1.98	0.45
5:D:1001:POV:H23	5:D:1001:POV:H26	1.60	0.45
1:B:820:ILE:O	1:B:822:GLY:N	2.50	0.45
1:D:558:PRO:HB3	1:D:654:ASN:HB3	1.99	0.45
1:D:853:GLU:HG3	1:D:854:LYS:H	1.82	0.45
1:C:590:TYR:OH	1:C:605:ASN:ND2	2.48	0.44
1:B:680:ILE:H	1:B:680:ILE:HG13	1.67	0.44
1:B:556:LEU:O	1:B:564:TRP:NE1	2.47	0.44
5:C:1002:POV:H39	5:C:1002:POV:H28	1.99	0.44
1:C:498:TRP:HB3	1:C:502:VAL:HG23	1.99	0.44
1:A:564:TRP:HB3	5:A:1002:POV:H27A	2.00	0.44
1:A:641:TRP:CG	1:B:622:GLN:HG3	2.52	0.44
1:A:590:TYR:OH	1:A:605:ASN:ND2	2.48	0.44
1:B:853:GLU:HG3	1:B:854:LYS:H	1.83	0.44
1:B:558:PRO:HB3	1:B:654:ASN:HB3	1.99	0.44
1:A:498:TRP:HB3	1:A:502:VAL:HG23	1.99	0.43
1:C:558:PRO:HB3	1:C:654:ASN:HB3	2.00	0.43
1:A:465:ASP:OD1	1:A:468:ARG:NH1	2.48	0.43
1:A:558:PRO:HB3	1:A:654:ASN:HB3	2.00	0.43
1:A:716:VAL:HG23	1:A:717:LEU:HD12	2.01	0.43
1:C:445:LEU:N	1:C:460:GLU:O	2.52	0.43
1:A:445:LEU:N	1:A:460:GLU:O	2.52	0.43
5:A:1007:POV:H33	5:A:1007:POV:H36A	1.86	0.43
5:C:1005:POV:H211	5:C:1005:POV:H21D	1.82	0.43
1:A:531:LYS:NZ	1:D:530:SER:O	2.51	0.43
5:A:1007:POV:H25A	5:A:1007:POV:H28	1.85	0.43
5:C:1005:POV:H210	5:C:1005:POV:H27	1.89	0.43
1:A:577:VAL:HG21	1:B:831:LEU:HD23	2.00	0.42
1:D:826:VAL:HG11	5:D:1001:POV:H39A	2.01	0.42
1:A:687:ASP:N	1:A:691:MET:SD	2.87	0.42
1:C:731:SER:OG	1:C:732:ASP:N	2.52	0.42
5:C:1006:POV:H33A	5:D:1001:POV:H31A	2.02	0.42
1:A:731:SER:OG	1:A:732:ASP:N	2.52	0.42
1:B:503:ARG:NH2	1:B:507:ASP:OD2	2.35	0.42
1:C:687:ASP:N	1:C:691:MET:SD	2.88	0.42
5:C:1003:POV:H11	5:C:1003:POV:H15A	1.86	0.42
1:A:794:MET:HB3	1:A:794:MET:HE2	1.82	0.42
1:C:794:MET:HE2	1:C:794:MET:HB3	1.82	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:716:VAL:HG23	1:C:717:LEU:HD12	2.01	0.42
1:A:645:LEU:HD11	1:B:648:ILE:HG12	2.02	0.41
5:A:1002:POV:H29	5:A:1002:POV:H26	1.69	0.41
5:A:1005:POV:H31A	5:B:1003:POV:H31G	2.02	0.41
1:B:521:TYR:HE1	1:C:780:ILE:HG23	1.85	0.41
1:C:495:ASN:HB3	1:C:497:GLN:HG2	2.01	0.41
1:D:730:THR:O	3:K:2:NAG:O4	2.38	0.41
5:D:1002:POV:H36A	5:D:1002:POV:H33	1.84	0.41
1:C:585:SER:HA	1:C:586:PRO:HD3	1.94	0.41
1:A:495:ASN:HB3	1:A:497:GLN:HG2	2.01	0.41
1:C:680:ILE:HG13	1:C:732:ASP:HB3	2.03	0.41
5:C:1002:POV:H14A	5:C:1002:POV:H11	1.91	0.41
1:D:435:VAL:HG22	1:D:512:LEU:HB2	2.03	0.41
4:A:1001:2J9:H1	1:D:761:SER:HB2	2.03	0.41
1:A:621:GLN:HA	1:B:622:GLN:HE22	1.85	0.41
5:C:1006:POV:H31A	5:D:1001:POV:H31G	2.02	0.40
1:D:546:ASN:HD21	3:K:1:NAG:C7	2.35	0.40
1:B:435:VAL:HG22	1:B:512:LEU:HB2	2.03	0.40
1:B:546:ASN:HD21	3:G:1:NAG:C7	2.34	0.40
1:C:581:ILE:HD11	1:D:835:VAL:HG22	2.02	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	444/908 (49%)	395 (89%)	49 (11%)	0	100	100
1	B	444/908 (49%)	399 (90%)	42 (10%)	3 (1%)	18	49
1	C	444/908 (49%)	396 (89%)	48 (11%)	0	100	100
1	D	444/908 (49%)	398 (90%)	43 (10%)	3 (1%)	18	49
All	All	1776/3632 (49%)	1588 (89%)	182 (10%)	6 (0%)	37	67

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	479	GLU
1	D	479	GLU
1	B	631	LEU
1	B	821	GLY
1	D	631	LEU
1	D	821	GLY

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	387/794 (49%)	384 (99%)	3 (1%)	73	81
1	B	387/794 (49%)	385 (100%)	2 (0%)	81	85
1	C	387/794 (49%)	384 (99%)	3 (1%)	73	81
1	D	387/794 (49%)	384 (99%)	3 (1%)	73	81
All	All	1548/3176 (49%)	1537 (99%)	11 (1%)	73	82

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	435	VAL
1	A	526	VAL
1	A	780	ILE
1	B	648	ILE
1	B	825	ILE
1	C	435	VAL
1	C	526	VAL
1	C	780	ILE
1	D	626	LEU
1	D	648	ILE
1	D	825	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	430	ASN
1	A	495	ASN
1	A	604	ASN
1	A	726	GLN
1	A	754	GLN
1	A	849	ASN
1	A	872	GLN
1	B	604	ASN
1	B	605	ASN
1	B	622	GLN
1	B	784	GLN
1	B	819	ASN
1	B	849	ASN
1	C	430	ASN
1	C	495	ASN
1	C	604	ASN
1	C	726	GLN
1	C	754	GLN
1	C	849	ASN
1	C	872	GLN
1	D	604	ASN
1	D	605	ASN
1	D	784	GLN
1	D	819	ASN
1	D	849	ASN
1	D	872	GLN

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 ⓘ

20 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$
2	NAG	E	1	2,1	14,14,15	0.51	0	17,19,21	0.68	1 (5%)
2	NAG	E	2	2	14,14,15	0.96	1 (7%)	17,19,21	2.41	4 (23%)
2	NAG	F	1	2,1	14,14,15	1.69	2 (14%)	17,19,21	1.70	1 (5%)
2	NAG	F	2	2	14,14,15	1.23	1 (7%)	17,19,21	1.38	1 (5%)
3	NAG	G	1	3,1	14,14,15	0.26	0	17,19,21	0.46	0
3	NAG	G	2	3	14,14,15	0.23	0	17,19,21	0.58	0
3	BMA	G	3	3	11,11,12	1.39	1 (9%)	15,15,17	1.38	2 (13%)
3	BMA	G	4	3	11,11,12	0.80	0	15,15,17	0.72	0
2	NAG	H	1	2,1	14,14,15	0.34	0	17,19,21	0.65	0
2	NAG	H	2	2	14,14,15	0.59	0	17,19,21	1.25	4 (23%)
2	NAG	I	1	2,1	14,14,15	0.57	0	17,19,21	0.67	0
2	NAG	I	2	2	14,14,15	0.95	1 (7%)	17,19,21	2.39	4 (23%)
2	NAG	J	1	2,1	14,14,15	1.78	2 (14%)	17,19,21	1.68	1 (5%)
2	NAG	J	2	2	14,14,15	1.24	1 (7%)	17,19,21	1.43	1 (5%)
3	NAG	K	1	3,1	14,14,15	0.20	0	17,19,21	0.54	0
3	NAG	K	2	3	14,14,15	0.26	0	17,19,21	0.60	0
3	BMA	K	3	3	11,11,12	1.40	2 (18%)	15,15,17	1.40	2 (13%)
3	BMA	K	4	3	11,11,12	0.78	0	15,15,17	0.73	0
2	NAG	L	1	2,1	14,14,15	0.34	0	17,19,21	0.69	0
2	NAG	L	2	2	14,14,15	0.62	0	17,19,21	1.25	4 (23%)

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
2	NAG	E	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	E	2	2	-	6/6/23/26	0/1/1/1
2	NAG	F	1	2,1	-	1/6/23/26	0/1/1/1
2	NAG	F	2	2	-	3/6/23/26	0/1/1/1
3	NAG	G	1	3,1	-	1/6/23/26	0/1/1/1
3	NAG	G	2	3	-	1/6/23/26	0/1/1/1
3	BMA	G	3	3	-	2/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	BMA	G	4	3	-	2/2/19/22	0/1/1/1
2	NAG	H	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	H	2	2	-	3/6/23/26	0/1/1/1
2	NAG	I	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	I	2	2	-	6/6/23/26	0/1/1/1
2	NAG	J	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	J	2	2	-	4/6/23/26	0/1/1/1
3	NAG	K	1	3,1	-	1/6/23/26	0/1/1/1
3	NAG	K	2	3	-	0/6/23/26	0/1/1/1
3	BMA	K	3	3	-	2/2/19/22	0/1/1/1
3	BMA	K	4	3	-	2/2/19/22	0/1/1/1
2	NAG	L	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	L	2	2	-	4/6/23/26	0/1/1/1

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	1	NAG	O5-C1	6.04	1.53	1.43
2	F	1	NAG	O5-C1	5.73	1.53	1.43
2	J	2	NAG	O5-C1	4.14	1.50	1.43
2	F	2	NAG	O5-C1	4.13	1.50	1.43
2	E	2	NAG	C1-C2	3.03	1.56	1.52
2	I	2	NAG	C1-C2	2.97	1.56	1.52
3	G	3	BMA	C1-C2	2.67	1.58	1.52
2	J	1	NAG	C1-C2	2.63	1.55	1.52
2	F	1	NAG	C1-C2	2.51	1.55	1.52
3	K	3	BMA	C1-C2	2.47	1.58	1.52
3	K	3	BMA	C4-C5	2.11	1.57	1.53

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	2	NAG	C2-N2-C7	8.23	133.93	122.90
2	I	2	NAG	C2-N2-C7	8.22	133.92	122.90
2	F	1	NAG	C1-O5-C5	6.69	121.15	112.19
2	J	1	NAG	C1-O5-C5	6.60	121.03	112.19
2	J	2	NAG	C1-O5-C5	5.57	119.65	112.19
2	F	2	NAG	C1-O5-C5	5.30	119.29	112.19
2	E	2	NAG	C1-C2-N2	4.10	116.90	110.43
2	I	2	NAG	C1-C2-N2	4.02	116.78	110.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	K	3	BMA	C1-C2-C3	-3.62	104.37	109.64
3	G	3	BMA	C1-C2-C3	-3.47	104.59	109.64
2	H	2	NAG	C2-N2-C7	3.24	127.24	122.90
2	L	2	NAG	C2-N2-C7	3.19	127.17	122.90
3	G	3	BMA	O2-C2-C3	-2.82	104.32	110.15
3	K	3	BMA	O2-C2-C3	-2.73	104.49	110.15
2	E	2	NAG	C1-O5-C5	2.47	115.49	112.19
2	I	2	NAG	C1-O5-C5	2.22	115.16	112.19
2	E	2	NAG	C8-C7-N2	2.18	119.73	116.12
2	I	2	NAG	C8-C7-N2	2.17	119.71	116.12
2	L	2	NAG	C3-C4-C5	2.12	114.08	110.23
2	H	2	NAG	C3-C4-C5	2.12	114.07	110.23
2	L	2	NAG	C4-C3-C2	2.09	114.09	111.02
2	H	2	NAG	C4-C3-C2	2.08	114.07	111.02
2	L	2	NAG	C1-C2-N2	2.07	113.69	110.43
2	E	1	NAG	C1-O5-C5	2.03	114.91	112.19
2	H	2	NAG	C1-C2-N2	2.02	113.62	110.43

There are no chirality outliers.

All (42) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	G	3	BMA	O5-C5-C6-O6
2	J	2	NAG	O5-C5-C6-O6
3	G	4	BMA	O5-C5-C6-O6
2	L	2	NAG	O5-C5-C6-O6
3	K	3	BMA	O5-C5-C6-O6
2	L	2	NAG	C4-C5-C6-O6
3	K	3	BMA	C4-C5-C6-O6
3	G	4	BMA	C4-C5-C6-O6
2	E	2	NAG	C8-C7-N2-C2
2	E	2	NAG	O7-C7-N2-C2
2	F	2	NAG	C8-C7-N2-C2
2	F	2	NAG	O7-C7-N2-C2
2	I	2	NAG	C8-C7-N2-C2
2	I	2	NAG	O7-C7-N2-C2
2	J	2	NAG	C8-C7-N2-C2
2	J	2	NAG	O7-C7-N2-C2
2	E	2	NAG	C4-C5-C6-O6
2	F	2	NAG	O5-C5-C6-O6
2	H	2	NAG	O5-C5-C6-O6
3	K	4	BMA	C4-C5-C6-O6

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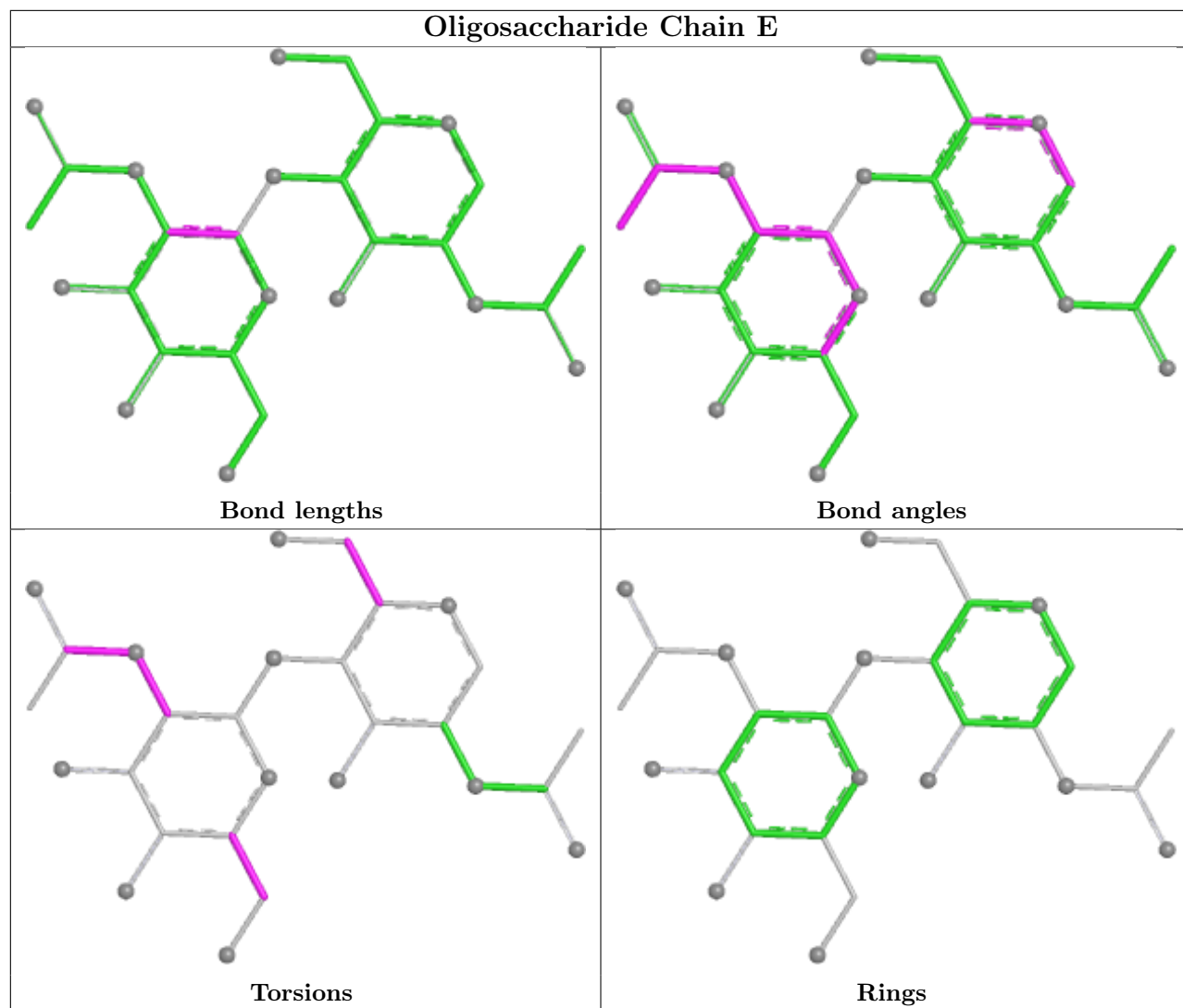
Mol	Chain	Res	Type	Atoms
3	K	4	BMA	O5-C5-C6-O6
2	I	2	NAG	C4-C5-C6-O6
3	G	3	BMA	C4-C5-C6-O6
2	E	2	NAG	O5-C5-C6-O6
3	K	1	NAG	O5-C5-C6-O6
3	G	1	NAG	O5-C5-C6-O6
2	J	2	NAG	C4-C5-C6-O6
2	I	2	NAG	O5-C5-C6-O6
2	E	1	NAG	C4-C5-C6-O6
2	E	2	NAG	C3-C2-N2-C7
2	H	2	NAG	C3-C2-N2-C7
2	L	2	NAG	C3-C2-N2-C7
2	F	1	NAG	C4-C5-C6-O6
2	I	1	NAG	C4-C5-C6-O6
3	G	2	NAG	O5-C5-C6-O6
2	E	1	NAG	O5-C5-C6-O6
2	E	2	NAG	C1-C2-N2-C7
2	H	2	NAG	C1-C2-N2-C7
2	I	2	NAG	C1-C2-N2-C7
2	L	2	NAG	C1-C2-N2-C7
2	I	2	NAG	C3-C2-N2-C7
2	I	1	NAG	O5-C5-C6-O6

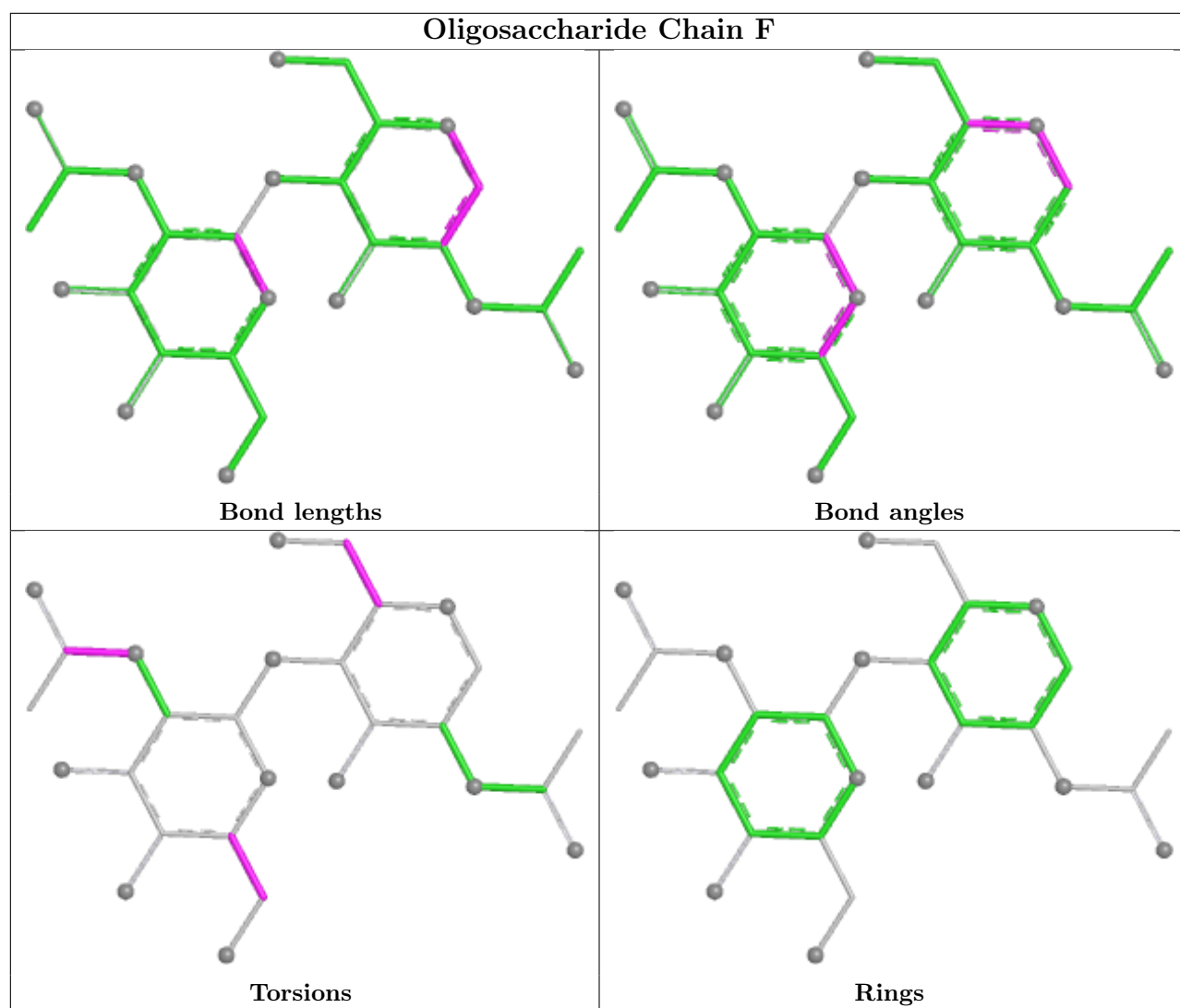
There are no ring outliers.

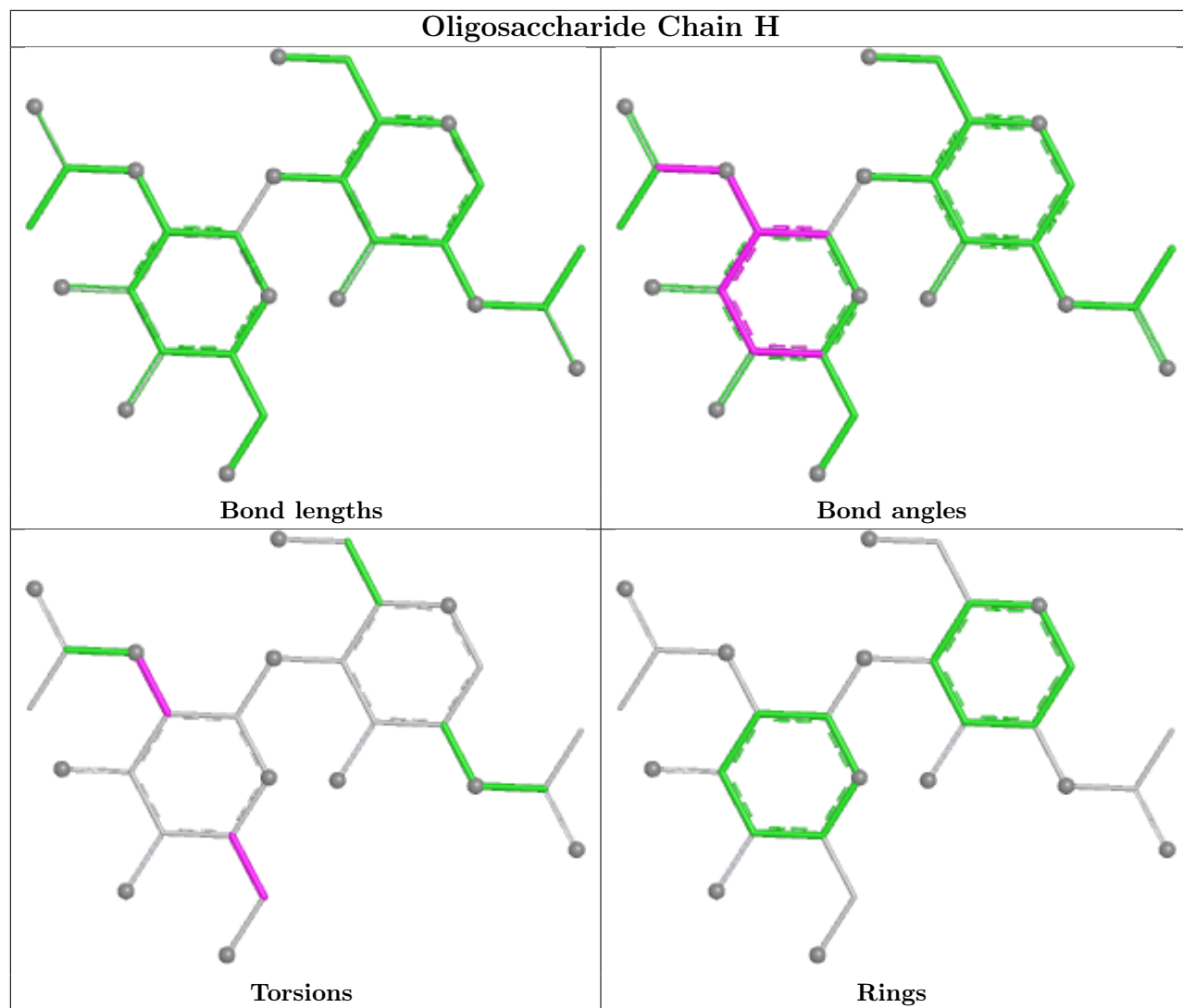
6 monomers are involved in 6 short contacts:

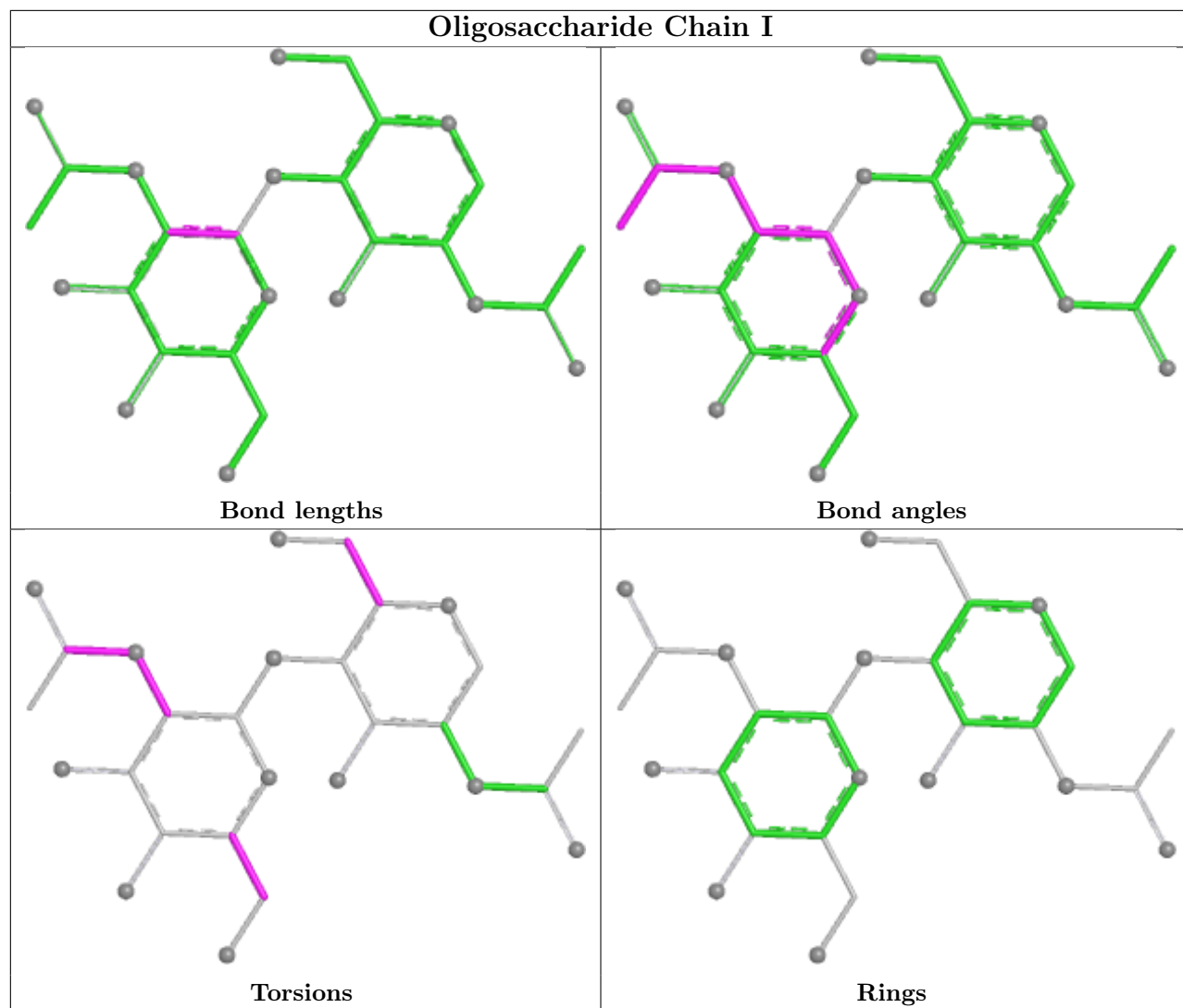
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	I	1	NAG	1	0
3	G	1	NAG	1	0
2	E	1	NAG	1	0
3	K	1	NAG	1	0
3	K	2	NAG	1	0
2	L	1	NAG	1	0

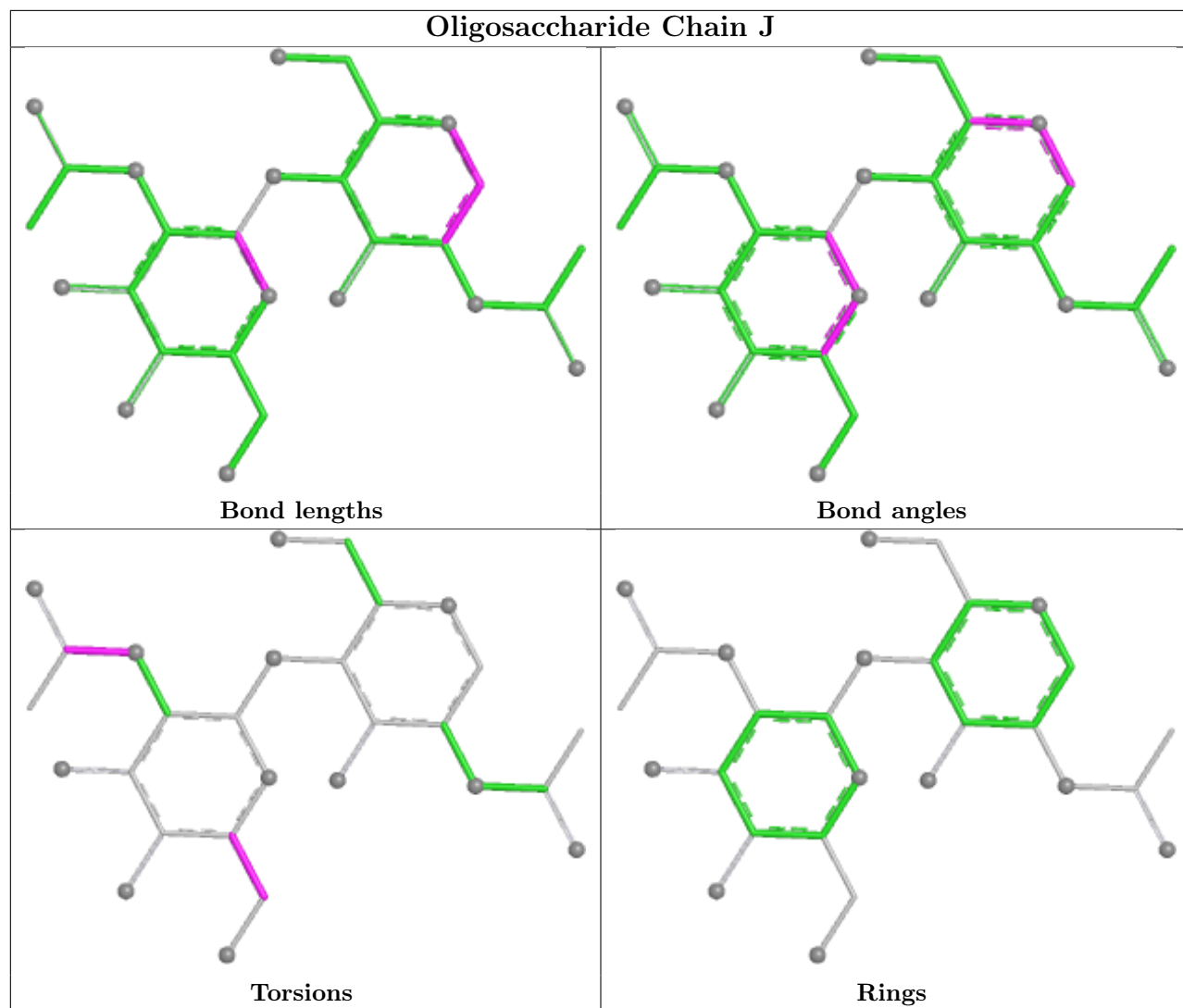
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

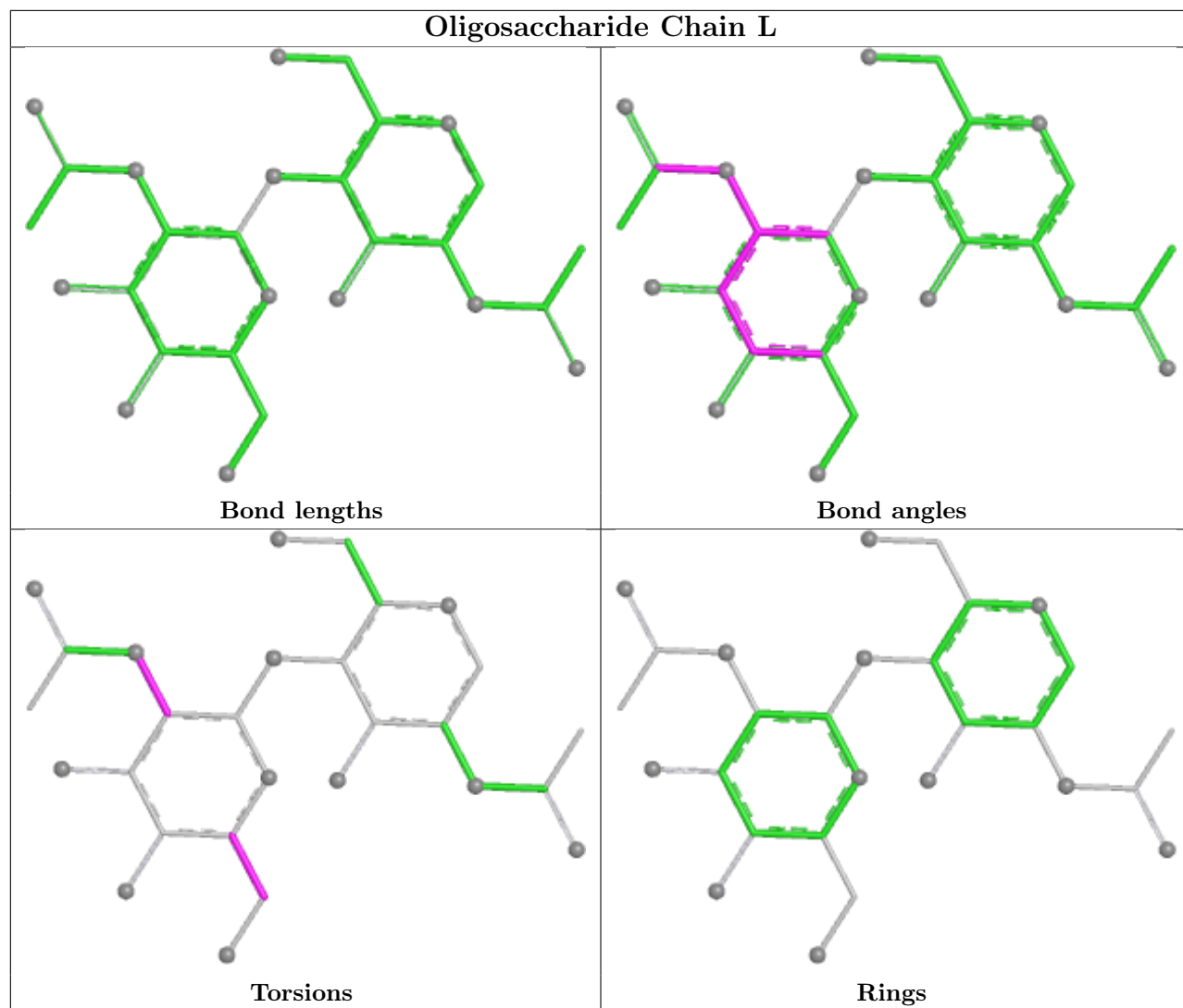


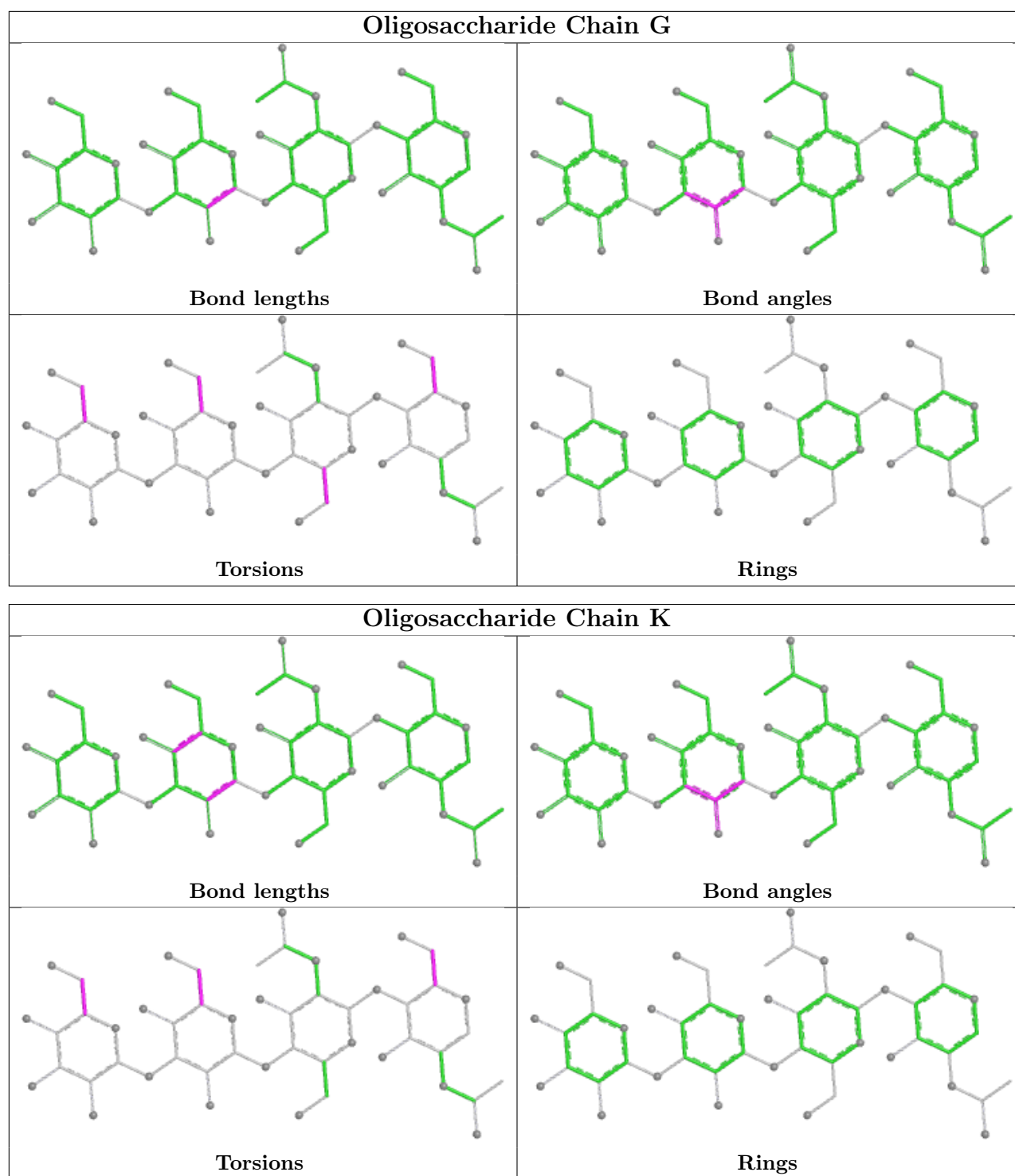












5.6 Ligand geometry [i](#)

21 ligands 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	2J9	A	1008	-	17,18,18	7.17	8 (47%)	24,28,28	6.72	8 (33%)
6	A1BDS	A	1009	-	42,42,42	0.23	0	51,51,51	0.84	4 (7%)
5	POV	D	1002	-	51,51,51	1.09	3 (5%)	57,59,59	0.92	3 (5%)
5	POV	D	1001	-	51,51,51	1.09	3 (5%)	57,59,59	0.91	3 (5%)
5	POV	C	1002	-	51,51,51	1.08	3 (5%)	57,59,59	0.91	3 (5%)
5	POV	C	1005	-	51,51,51	1.10	3 (5%)	57,59,59	0.93	3 (5%)
5	POV	A	1007	-	51,51,51	1.09	3 (5%)	57,59,59	0.92	3 (5%)
5	POV	C	1006	-	51,51,51	1.11	4 (7%)	57,59,59	0.95	3 (5%)
5	POV	A	1006	-	51,51,51	1.10	3 (5%)	57,59,59	0.90	3 (5%)
5	POV	C	1003	-	51,51,51	1.09	3 (5%)	57,59,59	0.92	3 (5%)
4	2J9	C	1001	-	17,18,18	7.15	8 (47%)	24,28,28	6.88	8 (33%)
5	POV	A	1004	-	51,51,51	1.09	3 (5%)	57,59,59	0.90	3 (5%)
5	POV	C	1004	-	51,51,51	1.09	3 (5%)	57,59,59	0.90	3 (5%)
5	POV	A	1003	-	51,51,51	1.09	3 (5%)	57,59,59	0.91	3 (5%)
5	POV	B	1003	-	51,51,51	1.09	3 (5%)	57,59,59	0.94	3 (5%)
4	2J9	A	1001	-	17,18,18	7.13	8 (47%)	24,28,28	6.78	8 (33%)
5	POV	A	1002	-	51,51,51	1.08	3 (5%)	57,59,59	0.90	3 (5%)
5	POV	C	1007	-	51,51,51	1.10	3 (5%)	57,59,59	0.89	3 (5%)
4	2J9	B	1002	-	17,18,18	7.18	8 (47%)	24,28,28	6.63	9 (37%)
5	POV	B	1001	-	51,51,51	1.10	3 (5%)	57,59,59	0.95	3 (5%)
5	POV	A	1005	-	51,51,51	1.11	3 (5%)	57,59,59	0.94	3 (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	2J9	A	1008	-	-	2/4/22/22	0/3/3/3
6	A1BDS	A	1009	-	-	12/38/38/38	0/2/2/2
5	POV	D	1002	-	-	24/55/55/55	-
5	POV	D	1001	-	-	34/55/55/55	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	POV	C	1002	-	-	31/55/55/55	-
5	POV	C	1005	-	-	20/55/55/55	-
5	POV	A	1007	-	-	22/55/55/55	-
5	POV	C	1006	-	-	18/55/55/55	-
5	POV	A	1006	-	-	32/55/55/55	-
5	POV	C	1003	-	-	19/55/55/55	-
4	2J9	C	1001	-	-	2/4/22/22	0/3/3/3
5	POV	A	1004	-	-	29/55/55/55	-
5	POV	C	1004	-	-	29/55/55/55	-
5	POV	A	1003	-	-	20/55/55/55	-
5	POV	B	1003	-	-	31/55/55/55	-
4	2J9	A	1001	-	-	1/4/22/22	0/3/3/3
5	POV	A	1002	-	-	27/55/55/55	-
5	POV	C	1007	-	-	31/55/55/55	-
4	2J9	B	1002	-	-	2/4/22/22	0/3/3/3
5	POV	B	1001	-	-	18/55/55/55	-
5	POV	A	1005	-	-	18/55/55/55	-

All (81) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	1002	2J9	OAA-SAP	19.50	1.66	1.43
4	A	1008	2J9	OAB-SAP	19.46	1.66	1.43
4	A	1001	2J9	OAA-SAP	19.42	1.66	1.43
4	C	1001	2J9	OAA-SAP	19.41	1.66	1.43
4	A	1008	2J9	OAA-SAP	19.40	1.66	1.43
4	C	1001	2J9	OAB-SAP	19.28	1.65	1.43
4	B	1002	2J9	OAB-SAP	19.16	1.65	1.43
4	A	1001	2J9	OAB-SAP	19.13	1.65	1.43
4	B	1002	2J9	CAL-NAO	6.52	1.55	1.40
4	A	1008	2J9	CAL-NAO	6.18	1.54	1.40
4	A	1001	2J9	CAL-NAO	6.06	1.54	1.40
4	C	1001	2J9	CAL-NAO	6.02	1.54	1.40
4	C	1001	2J9	CAH-CAN	-4.69	1.38	1.48
4	A	1001	2J9	CAH-CAN	-4.66	1.38	1.48
4	A	1001	2J9	CAG-CAN	-4.62	1.39	1.48
4	A	1008	2J9	CAH-CAN	-4.58	1.39	1.48
4	C	1001	2J9	CAG-CAN	-4.57	1.39	1.48
4	B	1002	2J9	CAG-CAN	-4.56	1.39	1.48

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	1002	2J9	CAH-CAN	-4.55	1.39	1.48
4	A	1008	2J9	CAG-CAN	-4.54	1.39	1.48
4	A	1001	2J9	CAL-CAM	-3.77	1.35	1.40
4	B	1002	2J9	CAM-SAP	-3.73	1.72	1.75
4	C	1001	2J9	CAL-CAM	-3.72	1.35	1.40
4	B	1002	2J9	CAL-CAM	-3.62	1.35	1.40
4	A	1008	2J9	CAL-CAM	-3.52	1.35	1.40
4	A	1008	2J9	CAM-SAP	-3.21	1.72	1.75
5	B	1001	POV	O21-C21	3.14	1.43	1.34
5	C	1005	POV	O21-C21	3.10	1.43	1.34
5	C	1004	POV	O21-C21	3.05	1.42	1.34
5	A	1004	POV	O21-C21	3.04	1.42	1.34
4	C	1001	2J9	CAM-SAP	-2.97	1.73	1.75
5	C	1006	POV	O21-C21	2.94	1.42	1.34
5	A	1005	POV	O21-C21	2.93	1.42	1.34
5	A	1003	POV	O21-C21	2.87	1.42	1.34
4	A	1001	2J9	CAM-SAP	-2.87	1.73	1.75
5	C	1003	POV	O21-C21	2.87	1.42	1.34
5	B	1003	POV	O21-C21	2.86	1.42	1.34
5	D	1001	POV	O21-C21	2.82	1.42	1.34
5	C	1007	POV	O21-C21	2.79	1.42	1.34
5	A	1006	POV	O21-C21	2.79	1.42	1.34
5	B	1001	POV	O31-C31	2.79	1.41	1.33
5	A	1005	POV	O31-C31	2.79	1.41	1.33
5	C	1006	POV	O31-C31	2.79	1.41	1.33
5	C	1005	POV	O31-C31	2.78	1.41	1.33
5	D	1002	POV	O31-C31	2.78	1.41	1.33
5	A	1007	POV	O31-C31	2.78	1.41	1.33
5	A	1004	POV	O31-C31	2.77	1.41	1.33
5	A	1002	POV	O21-C21	2.77	1.42	1.34
5	D	1002	POV	O21-C21	2.77	1.42	1.34
5	A	1007	POV	O21-C21	2.77	1.42	1.34
5	A	1006	POV	O31-C31	2.76	1.41	1.33
4	A	1001	2J9	CAH-CAG	-2.76	1.39	1.48
5	C	1002	POV	O21-C21	2.75	1.42	1.34
5	C	1007	POV	O31-C31	2.75	1.41	1.33
4	C	1001	2J9	CAH-CAG	-2.74	1.39	1.48
5	C	1004	POV	O31-C31	2.74	1.41	1.33
4	A	1008	2J9	CAH-CAG	-2.74	1.39	1.48
4	B	1002	2J9	CAH-CAG	-2.73	1.39	1.48
5	C	1003	POV	O31-C31	2.72	1.41	1.33
5	A	1003	POV	O31-C31	2.70	1.41	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	1002	POV	O31-C31	2.68	1.41	1.33
5	D	1001	POV	O31-C31	2.66	1.41	1.33
5	A	1002	POV	O31-C31	2.65	1.41	1.33
5	B	1003	POV	O31-C31	2.64	1.41	1.33
5	C	1002	POV	O21-C2	-2.58	1.40	1.46
5	D	1001	POV	O21-C2	-2.58	1.40	1.46
5	D	1002	POV	O21-C2	-2.58	1.40	1.46
5	A	1006	POV	O21-C2	-2.58	1.40	1.46
5	A	1007	POV	O21-C2	-2.57	1.40	1.46
5	C	1007	POV	O21-C2	-2.57	1.40	1.46
5	A	1002	POV	O21-C2	-2.56	1.40	1.46
5	B	1003	POV	O21-C2	-2.50	1.40	1.46
5	A	1005	POV	O21-C2	-2.49	1.40	1.46
5	C	1003	POV	O21-C2	-2.47	1.40	1.46
5	C	1006	POV	O21-C2	-2.47	1.40	1.46
5	A	1003	POV	O21-C2	-2.47	1.40	1.46
5	C	1004	POV	O21-C2	-2.04	1.41	1.46
5	B	1001	POV	O21-C2	-2.04	1.41	1.46
5	A	1004	POV	O21-C2	-2.01	1.41	1.46
5	C	1005	POV	O21-C2	-2.01	1.41	1.46
5	C	1006	POV	P-O12	2.00	1.67	1.59

All (85) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	1001	2J9	CAI-NAO-CAL	18.96	121.38	110.17
4	A	1008	2J9	CAI-NAO-CAL	17.58	120.57	110.17
4	A	1001	2J9	CAI-NAO-CAL	17.17	120.33	110.17
4	A	1008	2J9	CAG-CAN-NAO	16.60	150.54	118.82
4	B	1002	2J9	CAH-CAN-NAO	16.50	150.34	118.82
4	A	1001	2J9	CAH-CAN-NAO	16.43	150.21	118.82
4	C	1001	2J9	CAH-CAN-NAO	16.40	150.15	118.82
4	B	1002	2J9	CAI-NAO-CAL	16.37	119.85	110.17
4	C	1001	2J9	CAG-CAN-NAO	16.23	149.82	118.82
4	A	1001	2J9	CAG-CAN-NAO	16.20	149.77	118.82
4	B	1002	2J9	CAG-CAN-NAO	16.16	149.70	118.82
4	A	1008	2J9	CAH-CAN-NAO	16.05	149.48	118.82
4	A	1001	2J9	CAM-SAP-NAJ	12.56	112.40	102.40
4	C	1001	2J9	CAM-SAP-NAJ	11.49	111.55	102.40
4	B	1002	2J9	CAM-SAP-NAJ	10.70	110.92	102.40
4	A	1008	2J9	CAM-SAP-NAJ	10.67	110.90	102.40
4	B	1002	2J9	OAB-SAP-OAA	-8.33	109.96	118.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1008	2J9	OAB-SAP-OAA	-8.25	110.04	118.44
4	A	1001	2J9	OAB-SAP-OAA	-8.23	110.06	118.44
4	C	1001	2J9	OAB-SAP-OAA	-8.00	110.30	118.44
4	A	1008	2J9	CAK-CAF-CAM	5.36	120.13	116.92
4	B	1002	2J9	CAK-CAF-CAM	5.13	119.99	116.92
4	A	1001	2J9	CAK-CAF-CAM	4.96	119.89	116.92
4	C	1001	2J9	CAK-CAF-CAM	4.84	119.81	116.92
5	B	1001	POV	O21-C21-C22	4.19	120.55	111.48
4	B	1002	2J9	OAB-SAP-NAJ	4.17	111.76	107.92
5	C	1006	POV	O21-C21-C22	4.03	120.20	111.48
5	A	1005	POV	O21-C21-C22	4.00	120.13	111.48
5	C	1005	POV	O21-C21-C22	3.99	120.12	111.48
5	C	1003	POV	O21-C21-C22	3.90	119.92	111.48
5	A	1002	POV	O21-C21-C22	3.88	119.88	111.48
5	C	1002	POV	O21-C21-C22	3.86	119.83	111.48
5	A	1003	POV	O21-C21-C22	3.85	119.82	111.48
5	B	1003	POV	O21-C21-C22	3.82	119.75	111.48
5	C	1007	POV	O21-C21-C22	3.78	119.67	111.48
5	A	1006	POV	O21-C21-C22	3.77	119.64	111.48
5	D	1001	POV	O21-C21-C22	3.76	119.61	111.48
5	A	1007	POV	O21-C21-C22	3.74	119.57	111.48
5	D	1002	POV	O21-C21-C22	3.73	119.55	111.48
5	A	1004	POV	O21-C21-C22	3.47	118.98	111.48
5	C	1004	POV	O21-C21-C22	3.46	118.96	111.48
6	A	1009	A1BDS	C20-C21-C22	-3.05	108.10	114.52
4	A	1008	2J9	OAB-SAP-NAJ	2.99	110.67	107.92
4	B	1002	2J9	CAD-CAK-CAF	-2.82	119.51	123.23
5	C	1006	POV	O31-C31-C32	2.72	120.12	111.83
5	B	1003	POV	O31-C31-C32	2.69	120.04	111.83
5	A	1005	POV	O31-C31-C32	2.67	119.98	111.83
5	A	1003	POV	O31-C31-C32	2.66	119.95	111.83
4	A	1008	2J9	CAD-CAK-CAF	-2.64	119.74	123.23
5	C	1003	POV	O31-C31-C32	2.64	119.89	111.83
5	B	1001	POV	O31-C31-C32	2.64	119.88	111.83
5	A	1007	POV	O31-C31-C32	2.64	119.87	111.83
5	D	1002	POV	O31-C31-C32	2.62	119.83	111.83
5	C	1005	POV	O31-C31-C32	2.61	119.79	111.83
5	C	1004	POV	O31-C31-C32	2.60	119.78	111.83
5	D	1001	POV	O31-C31-C32	2.60	119.75	111.83
5	A	1006	POV	O31-C31-C32	2.57	119.69	111.83
5	A	1004	POV	O31-C31-C32	2.57	119.67	111.83
6	A	1009	A1BDS	C17-N7-C20	2.57	128.12	121.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C	1007	POV	O31-C31-C32	2.55	119.61	111.83
5	C	1002	POV	C14-N-C12	2.54	119.99	109.91
4	C	1001	2J9	OAB-SAP-NAJ	2.49	110.21	107.92
5	A	1002	POV	C14-N-C12	2.45	119.63	109.91
4	B	1002	2J9	OAB-SAP-CAM	-2.40	106.30	109.30
4	A	1001	2J9	CAD-CAK-CAF	-2.39	120.07	123.23
5	C	1002	POV	O31-C31-C32	2.35	119.00	111.83
5	C	1004	POV	C14-N-C12	2.35	119.24	109.91
5	A	1004	POV	C14-N-C12	2.34	119.23	109.91
5	A	1005	POV	C14-N-C12	2.34	119.20	109.91
5	A	1002	POV	O31-C31-C32	2.33	118.94	111.83
5	C	1006	POV	C14-N-C12	2.32	119.13	109.91
5	D	1001	POV	C14-N-C12	2.30	119.06	109.91
5	B	1003	POV	C14-N-C12	2.30	119.06	109.91
5	D	1002	POV	C14-N-C12	2.30	119.06	109.91
5	A	1007	POV	C14-N-C12	2.26	118.90	109.91
4	C	1001	2J9	CAD-CAK-CAF	-2.25	120.26	123.23
5	B	1001	POV	C14-N-C12	2.22	118.74	109.91
4	A	1001	2J9	OAB-SAP-NAJ	2.18	109.93	107.92
5	C	1005	POV	C14-N-C12	2.18	118.58	109.91
5	A	1003	POV	C14-N-C12	2.15	118.47	109.91
5	C	1003	POV	C14-N-C12	2.15	118.44	109.91
5	A	1006	POV	C14-N-C12	2.11	118.31	109.91
5	C	1007	POV	C14-N-C12	2.11	118.31	109.91
6	A	1009	A1BDS	C8-C9-C10	-2.09	108.91	112.39
6	A	1009	A1BDS	C17-C18-C19	2.02	116.27	112.21

There are no chirality outliers.

All (422) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	1002	2J9	CAH-CAN-NAO-CAL
4	C	1001	2J9	CAG-CAN-NAO-CAI
5	A	1002	POV	O12-C11-C12-N
5	A	1002	POV	O22-C21-O21-C2
5	A	1003	POV	C11-O12-P-O13
5	A	1003	POV	O12-C11-C12-N
5	A	1003	POV	C22-C21-O21-C2
5	A	1004	POV	O12-C11-C12-N
5	A	1006	POV	C1-O11-P-O14
5	A	1006	POV	C11-O12-P-O11
5	A	1006	POV	C11-O12-P-O13

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Mol	Chain	Res	Type	Atoms
5	A	1006	POV	O12-C11-C12-N
5	A	1007	POV	C11-O12-P-O11
5	A	1007	POV	C22-C21-O21-C2
5	B	1001	POV	C11-O12-P-O11
5	B	1001	POV	C11-O12-P-O13
5	B	1001	POV	C11-O12-P-O14
5	B	1001	POV	O12-C11-C12-N
5	B	1001	POV	O22-C21-O21-C2
5	B	1003	POV	C11-O12-P-O11
5	B	1003	POV	C11-O12-P-O13
5	B	1003	POV	C11-O12-P-O14
5	C	1002	POV	O12-C11-C12-N
5	C	1002	POV	O22-C21-O21-C2
5	C	1003	POV	C11-O12-P-O13
5	C	1003	POV	O12-C11-C12-N
5	C	1003	POV	C22-C21-O21-C2
5	C	1004	POV	O12-C11-C12-N
5	C	1005	POV	C11-O12-P-O11
5	C	1005	POV	C11-O12-P-O13
5	C	1005	POV	C11-O12-P-O14
5	C	1007	POV	C1-O11-P-O12
5	C	1007	POV	C1-O11-P-O14
5	C	1007	POV	C11-O12-P-O11
5	C	1007	POV	C11-O12-P-O13
5	C	1007	POV	O12-C11-C12-N
5	D	1001	POV	C1-O11-P-O12
5	D	1001	POV	C1-O11-P-O13
5	D	1001	POV	C1-O11-P-O14
5	D	1001	POV	C11-O12-P-O11
5	D	1001	POV	C11-O12-P-O13
5	D	1001	POV	C11-O12-P-O14
5	D	1002	POV	C11-O12-P-O11
5	D	1002	POV	C22-C21-O21-C2
6	A	1009	A1BDS	C17-C18-C19-O3
5	C	1002	POV	O32-C31-O31-C3
5	A	1002	POV	O32-C31-O31-C3
5	A	1003	POV	O22-C21-O21-C2
5	A	1007	POV	O22-C21-O21-C2
5	C	1003	POV	O22-C21-O21-C2
5	C	1005	POV	O22-C21-O21-C2
5	D	1002	POV	O22-C21-O21-C2
5	A	1002	POV	C32-C31-O31-C3

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Mol	Chain	Res	Type	Atoms
5	C	1002	POV	C32-C31-O31-C3
5	A	1002	POV	C22-C21-O21-C2
5	B	1001	POV	C22-C21-O21-C2
5	C	1002	POV	C22-C21-O21-C2
6	A	1009	A1BDS	C9-C10-N4-C11
5	D	1001	POV	C23-C24-C25-C26
5	C	1005	POV	C22-C21-O21-C2
6	A	1009	A1BDS	O1-C10-N4-C11
5	B	1003	POV	C23-C24-C25-C26
5	A	1004	POV	C22-C21-O21-C2
5	C	1004	POV	C22-C21-O21-C2
5	A	1004	POV	O22-C21-O21-C2
5	C	1004	POV	O22-C21-O21-C2
5	B	1003	POV	C32-C31-O31-C3
5	B	1001	POV	C21-C22-C23-C24
4	C	1001	2J9	CAH-CAN-NAO-CAL
5	B	1003	POV	O32-C31-O31-C3
5	A	1006	POV	O21-C2-C3-O31
5	C	1007	POV	O21-C2-C3-O31
5	B	1003	POV	C21-C22-C23-C24
5	D	1001	POV	C21-C22-C23-C24
5	C	1007	POV	C21-C22-C23-C24
6	A	1009	A1BDS	C17-C18-C19-N6
5	A	1006	POV	C21-C22-C23-C24
5	C	1005	POV	C21-C22-C23-C24
5	A	1002	POV	C31-C32-C33-C34
5	C	1007	POV	C31-C32-C33-C34
4	A	1001	2J9	CAH-CAN-NAO-CAL
5	A	1006	POV	C31-C32-C33-C34
5	C	1007	POV	C312-C313-C314-C315
5	D	1001	POV	C213-C214-C215-C216
5	A	1003	POV	C34-C35-C36-C37
5	A	1004	POV	C22-C23-C24-C25
5	B	1003	POV	C213-C214-C215-C216
5	C	1003	POV	C34-C35-C36-C37
5	C	1004	POV	C22-C23-C24-C25
5	D	1001	POV	C32-C33-C34-C35
5	A	1003	POV	C211-C212-C213-C214
5	A	1002	POV	C34-C35-C36-C37
5	C	1003	POV	C211-C212-C213-C214
5	C	1006	POV	C23-C24-C25-C26
5	C	1002	POV	O11-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
5	D	1002	POV	C31-C32-C33-C34
5	B	1001	POV	C212-C213-C214-C215
5	C	1004	POV	C213-C214-C215-C216
5	C	1004	POV	C36-C37-C38-C39
5	C	1005	POV	C212-C213-C214-C215
5	D	1001	POV	C25-C26-C27-C28
5	A	1004	POV	C213-C214-C215-C216
5	C	1003	POV	C23-C24-C25-C26
5	B	1003	POV	C34-C35-C36-C37
5	C	1007	POV	C212-C213-C214-C215
5	A	1004	POV	C32-C31-O31-C3
5	C	1007	POV	C39-C310-C311-C312
5	A	1002	POV	C311-C312-C313-C314
5	A	1003	POV	C23-C24-C25-C26
5	A	1006	POV	C33-C34-C35-C36
5	C	1002	POV	C24-C25-C26-C27
5	C	1007	POV	C33-C34-C35-C36
5	A	1006	POV	C35-C36-C37-C38
5	C	1002	POV	C311-C312-C313-C314
5	D	1001	POV	C37-C38-C39-C310
5	A	1006	POV	C311-C312-C313-C314
5	A	1006	POV	C22-C21-O21-C2
5	B	1001	POV	C27-C28-C29-C210
5	C	1002	POV	C26-C27-C28-C29
5	C	1007	POV	C210-C211-C212-C213
5	A	1004	POV	C39-C310-C311-C312
5	D	1001	POV	C310-C311-C312-C313
5	C	1005	POV	C34-C35-C36-C37
5	B	1003	POV	C25-C26-C27-C28
5	D	1001	POV	C312-C313-C314-C315
5	A	1006	POV	C39-C310-C311-C312
5	B	1001	POV	C34-C35-C36-C37
5	C	1007	POV	C35-C36-C37-C38
5	D	1002	POV	C23-C24-C25-C26
5	C	1003	POV	C32-C31-O31-C3
5	C	1004	POV	C32-C31-O31-C3
5	C	1004	POV	C39-C310-C311-C312
5	A	1002	POV	C22-C23-C24-C25
5	A	1005	POV	C23-C24-C25-C26
5	A	1005	POV	C24-C25-C26-C27
5	C	1006	POV	C24-C25-C26-C27
5	C	1002	POV	C22-C23-C24-C25

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Mol	Chain	Res	Type	Atoms
5	A	1005	POV	C22-C23-C24-C25
5	B	1003	POV	C22-C21-O21-C2
5	C	1007	POV	C22-C21-O21-C2
5	D	1001	POV	C22-C21-O21-C2
5	A	1004	POV	C311-C310-C39-C38
5	B	1003	POV	O22-C21-O21-C2
5	A	1002	POV	C32-C33-C34-C35
5	C	1002	POV	C32-C33-C34-C35
5	A	1006	POV	C210-C211-C212-C213
5	A	1006	POV	C212-C213-C214-C215
5	A	1004	POV	C36-C37-C38-C39
5	C	1007	POV	C37-C38-C39-C310
5	A	1007	POV	C23-C24-C25-C26
5	A	1006	POV	C24-C25-C26-C27
5	A	1006	POV	C37-C38-C39-C310
5	A	1007	POV	C31-C32-C33-C34
5	A	1004	POV	O32-C31-O31-C3
5	C	1002	POV	C34-C35-C36-C37
5	C	1006	POV	C36-C37-C38-C39
5	B	1003	POV	C31-C32-C33-C34
5	C	1002	POV	C31-C32-C33-C34
5	C	1006	POV	C31-C32-C33-C34
5	B	1003	POV	C39-C310-C311-C312
5	A	1007	POV	C210-C211-C212-C213
5	D	1001	POV	C32-C31-O31-C3
5	C	1007	POV	C27-C28-C29-C210
5	C	1003	POV	C312-C313-C314-C315
5	C	1002	POV	C36-C37-C38-C39
5	A	1002	POV	C35-C36-C37-C38
5	A	1005	POV	C36-C37-C38-C39
5	D	1002	POV	C36-C37-C38-C39
5	C	1003	POV	O32-C31-O31-C3
5	C	1004	POV	O32-C31-O31-C3
5	C	1002	POV	C39-C310-C311-C312
5	A	1007	POV	C21-C22-C23-C24
5	A	1006	POV	C27-C28-C29-C210
5	A	1004	POV	C24-C25-C26-C27
5	C	1007	POV	C26-C27-C28-C29
5	A	1006	POV	C312-C313-C314-C315
5	A	1006	POV	C213-C214-C215-C216
5	C	1004	POV	C24-C25-C26-C27
5	A	1004	POV	O11-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
5	C	1004	POV	O11-C1-C2-C3
5	C	1006	POV	O11-C1-C2-C3
5	A	1006	POV	O22-C21-O21-C2
5	C	1007	POV	O22-C21-O21-C2
5	D	1001	POV	O22-C21-O21-C2
5	A	1002	POV	C39-C310-C311-C312
5	C	1007	POV	C24-C25-C26-C27
5	A	1005	POV	C31-C32-C33-C34
5	A	1002	POV	C36-C37-C38-C39
5	C	1007	POV	C213-C214-C215-C216
5	B	1003	POV	C22-C23-C24-C25
5	D	1002	POV	C311-C310-C39-C38
5	A	1007	POV	C36-C37-C38-C39
5	D	1002	POV	C32-C31-O31-C3
5	D	1001	POV	C27-C28-C29-C210
6	A	1009	A1BDS	N5-C16-C17-C18
5	A	1005	POV	C211-C212-C213-C214
5	B	1003	POV	C36-C37-C38-C39
5	A	1005	POV	C210-C211-C212-C213
5	A	1006	POV	C26-C27-C28-C29
5	A	1003	POV	C32-C31-O31-C3
5	A	1007	POV	C311-C310-C39-C38
5	C	1006	POV	C22-C23-C24-C25
5	D	1001	POV	O32-C31-O31-C3
5	C	1005	POV	C27-C28-C29-C210
5	A	1002	POV	C21-C22-C23-C24
5	A	1003	POV	C21-C22-C23-C24
5	B	1003	POV	C310-C311-C312-C313
5	A	1007	POV	C32-C31-O31-C3
5	A	1004	POV	C3-C2-O21-C21
5	C	1004	POV	C3-C2-O21-C21
5	A	1004	POV	C210-C211-C212-C213
5	C	1006	POV	C210-C211-C212-C213
5	D	1002	POV	C26-C27-C28-C29
5	C	1004	POV	C31-C32-C33-C34
5	C	1006	POV	C311-C310-C39-C38
5	D	1001	POV	C212-C213-C214-C215
5	A	1002	POV	C33-C34-C35-C36
5	A	1006	POV	C23-C24-C25-C26
5	C	1002	POV	C33-C34-C35-C36
5	C	1002	POV	C35-C36-C37-C38
5	C	1003	POV	C21-C22-C23-C24

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Mol	Chain	Res	Type	Atoms
5	C	1007	POV	C22-C23-C24-C25
5	C	1003	POV	C213-C214-C215-C216
5	C	1005	POV	C22-C23-C24-C25
5	C	1006	POV	C211-C212-C213-C214
5	A	1007	POV	C213-C214-C215-C216
5	A	1002	POV	C26-C27-C28-C29
5	C	1004	POV	C210-C211-C212-C213
5	A	1006	POV	C22-C23-C24-C25
5	A	1002	POV	O11-C1-C2-C3
5	A	1005	POV	O11-C1-C2-C3
5	A	1004	POV	C215-C216-C217-C218
5	B	1003	POV	C215-C216-C217-C218
5	C	1004	POV	C215-C216-C217-C218
5	A	1003	POV	O32-C31-O31-C3
5	D	1002	POV	O32-C31-O31-C3
5	C	1002	POV	C23-C24-C25-C26
5	A	1007	POV	O32-C31-O31-C3
5	D	1002	POV	C21-C22-C23-C24
5	C	1004	POV	C212-C213-C214-C215
6	A	1009	A1BDS	O2-C16-C17-N7
5	A	1003	POV	C312-C313-C314-C315
5	A	1004	POV	C212-C213-C214-C215
5	A	1006	POV	C1-C2-C3-O31
5	B	1001	POV	C1-C2-C3-O31
5	C	1005	POV	C1-C2-C3-O31
5	C	1007	POV	C1-C2-C3-O31
5	A	1003	POV	C213-C214-C215-C216
5	C	1002	POV	O11-C1-C2-O21
5	D	1001	POV	C22-C23-C24-C25
5	C	1002	POV	C25-C26-C27-C28
5	D	1001	POV	C2-C1-O11-P
5	A	1002	POV	C25-C26-C27-C28
5	A	1005	POV	C33-C34-C35-C36
5	A	1005	POV	O21-C2-C3-O31
5	C	1006	POV	O21-C2-C3-O31
5	A	1002	POV	C215-C216-C217-C218
5	B	1003	POV	C212-C213-C214-C215
5	A	1006	POV	C310-C311-C312-C313
5	D	1002	POV	C310-C311-C312-C313
5	A	1004	POV	C31-C32-C33-C34
5	D	1001	POV	C24-C25-C26-C27
5	C	1007	POV	C23-C24-C25-C26

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Mol	Chain	Res	Type	Atoms
5	A	1005	POV	C310-C311-C312-C313
5	B	1001	POV	C36-C37-C38-C39
5	A	1007	POV	C310-C311-C312-C313
5	C	1006	POV	C310-C311-C312-C313
5	A	1006	POV	C32-C31-O31-C3
5	D	1002	POV	O11-C1-C2-C3
5	B	1003	POV	C27-C28-C29-C210
4	B	1002	2J9	CAG-CAN-NAO-CAL
5	C	1007	POV	C32-C31-O31-C3
5	B	1001	POV	C3-C2-O21-C21
5	C	1005	POV	C3-C2-O21-C21
5	A	1007	POV	C26-C27-C28-C29
5	C	1005	POV	C36-C37-C38-C39
5	A	1007	POV	C37-C38-C39-C310
5	A	1002	POV	O11-C1-C2-O21
5	A	1004	POV	C1-C2-C3-O31
5	A	1005	POV	C1-C2-C3-O31
5	C	1004	POV	C1-C2-C3-O31
6	A	1009	A1BDS	O2-C16-C17-C18
5	A	1007	POV	C12-C11-O12-P
5	D	1002	POV	C12-C11-O12-P
5	B	1001	POV	O21-C2-C3-O31
5	A	1006	POV	O32-C31-O31-C3
5	D	1002	POV	C213-C214-C215-C216
5	C	1002	POV	C21-C22-C23-C24
5	A	1005	POV	O12-C11-C12-N
5	B	1003	POV	O12-C11-C12-N
5	C	1005	POV	O12-C11-C12-N
5	C	1006	POV	O12-C11-C12-N
5	D	1001	POV	O12-C11-C12-N
5	C	1007	POV	O32-C31-O31-C3
5	A	1003	POV	C33-C34-C35-C36
5	A	1007	POV	O11-C1-C2-C3
5	B	1001	POV	C22-C23-C24-C25
5	A	1007	POV	C2-C1-O11-P
5	A	1004	POV	O11-C1-C2-O21
5	A	1005	POV	O11-C1-C2-O21
5	C	1004	POV	O11-C1-C2-O21
5	C	1006	POV	O11-C1-C2-O21
5	D	1002	POV	O11-C1-C2-O21
5	D	1002	POV	C37-C38-C39-C310
5	A	1003	POV	C29-C210-C211-C212

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Mol	Chain	Res	Type	Atoms
5	A	1002	POV	C24-C25-C26-C27
5	A	1004	POV	O21-C2-C3-O31
5	C	1004	POV	O21-C2-C3-O31
5	C	1005	POV	O21-C2-C3-O31
5	A	1006	POV	C313-C314-C315-C316
5	C	1006	POV	C1-C2-C3-O31
5	C	1003	POV	C33-C34-C35-C36
5	C	1002	POV	C29-C210-C211-C212
5	A	1003	POV	C11-O12-P-O11
5	A	1003	POV	C11-O12-P-O14
5	A	1004	POV	C1-O11-P-O14
5	A	1004	POV	C11-O12-P-O14
5	A	1006	POV	C11-O12-P-O14
5	A	1007	POV	C11-O12-P-O14
5	B	1003	POV	C1-O11-P-O12
5	B	1003	POV	C1-O11-P-O13
5	B	1003	POV	C1-O11-P-O14
5	C	1003	POV	C11-O12-P-O11
5	C	1003	POV	C11-O12-P-O14
5	C	1004	POV	C1-O11-P-O14
5	C	1004	POV	C11-O12-P-O14
5	C	1007	POV	C11-O12-P-O14
5	D	1002	POV	C11-O12-P-O14
6	A	1009	A1BDS	C11-C12-C13-C14
5	A	1004	POV	C311-C312-C313-C314
5	B	1003	POV	C2-C1-O11-P
5	B	1003	POV	C24-C25-C26-C27
5	C	1006	POV	C33-C34-C35-C36
5	C	1003	POV	C29-C210-C211-C212
5	A	1007	POV	O11-C1-C2-O21
5	A	1005	POV	C311-C310-C39-C38
5	A	1003	POV	C36-C37-C38-C39
5	D	1002	POV	C2-C1-O11-P
5	C	1002	POV	O21-C2-C3-O31
6	A	1009	A1BDS	N5-C16-C17-N7
5	C	1002	POV	C215-C216-C217-C218
5	A	1002	POV	C29-C210-C211-C212
5	D	1002	POV	C29-C210-C211-C212
5	A	1003	POV	C313-C314-C315-C316
4	A	1008	2J9	CAH-CAN-NAO-CAI
5	C	1007	POV	C310-C311-C312-C313
5	A	1007	POV	C33-C34-C35-C36

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Mol	Chain	Res	Type	Atoms
5	B	1003	POV	C211-C212-C213-C214
5	A	1005	POV	C22-C21-O21-C2
5	C	1002	POV	C313-C314-C315-C316
5	A	1005	POV	O22-C21-O21-C2
5	A	1002	POV	C313-C314-C315-C316
5	D	1002	POV	C33-C34-C35-C36
5	A	1004	POV	C25-C26-C27-C28
5	B	1001	POV	O21-C21-C22-C23
4	A	1008	2J9	CAH-CAN-NAO-CAL
5	A	1002	POV	O21-C2-C3-O31
5	B	1003	POV	C32-C33-C34-C35
5	C	1005	POV	O21-C21-C22-C23
5	C	1003	POV	C313-C314-C315-C316
5	C	1006	POV	O22-C21-O21-C2
5	D	1001	POV	C311-C312-C313-C314
5	C	1003	POV	C36-C37-C38-C39
5	C	1004	POV	C311-C310-C39-C38
5	C	1007	POV	C32-C33-C34-C35
5	D	1001	POV	C33-C34-C35-C36
5	A	1004	POV	C34-C35-C36-C37
5	C	1004	POV	C34-C35-C36-C37
5	A	1007	POV	C29-C210-C211-C212
5	C	1004	POV	C311-C312-C313-C314
5	B	1001	POV	C211-C212-C213-C214
5	D	1001	POV	C311-C310-C39-C38
5	D	1001	POV	C211-C212-C213-C214
5	D	1001	POV	C39-C310-C311-C312
5	D	1001	POV	C210-C211-C212-C213
5	A	1002	POV	C37-C38-C39-C310
5	C	1002	POV	C11-C12-N-C14
5	A	1004	POV	C214-C215-C216-C217
6	A	1009	A1BDS	C6-C7-N3-C8
5	A	1005	POV	C25-C26-C27-C28
5	C	1004	POV	C23-C24-C25-C26
5	A	1004	POV	O21-C21-C22-C23
5	A	1003	POV	C24-C25-C26-C27
5	A	1006	POV	O21-C21-C22-C23
5	C	1007	POV	O21-C21-C22-C23
5	C	1004	POV	C214-C215-C216-C217
5	B	1003	POV	C311-C312-C313-C314
5	C	1004	POV	O21-C21-C22-C23
5	A	1003	POV	C27-C28-C29-C210

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Mol	Chain	Res	Type	Atoms
5	C	1006	POV	C22-C21-O21-C2
5	D	1002	POV	C210-C211-C212-C213
5	C	1002	POV	O21-C21-C22-C23
5	C	1005	POV	C211-C212-C213-C214
5	B	1001	POV	C24-C25-C26-C27
5	C	1005	POV	C213-C214-C215-C216
5	A	1002	POV	O21-C21-C22-C23
5	D	1002	POV	C24-C25-C26-C27
5	D	1002	POV	C32-C33-C34-C35
5	D	1001	POV	O31-C31-C32-C33
5	B	1003	POV	C37-C38-C39-C310
5	C	1005	POV	C31-C32-C33-C34
5	A	1006	POV	C214-C215-C216-C217
5	C	1007	POV	O22-C21-C22-C23
6	A	1009	A1BDS	N3-C8-C9-C10
5	C	1002	POV	O22-C21-C22-C23
5	C	1004	POV	C25-C26-C27-C28
5	C	1002	POV	C11-C12-N-C13
5	C	1002	POV	C11-C12-N-C15
5	C	1003	POV	C27-C28-C29-C210
5	A	1002	POV	O22-C21-C22-C23
5	C	1006	POV	C212-C213-C214-C215
5	A	1006	POV	O22-C21-C22-C23
5	C	1005	POV	C24-C25-C26-C27
5	A	1004	POV	O22-C21-C22-C23
5	A	1004	POV	C23-C24-C25-C26
5	C	1002	POV	C1-C2-C3-O31
5	C	1004	POV	O22-C21-C22-C23
6	A	1009	A1BDS	N4-C11-C12-C13
5	D	1001	POV	O21-C21-C22-C23
5	D	1001	POV	O32-C31-C32-C33
5	D	1001	POV	C31-C32-C33-C34
5	B	1003	POV	O21-C21-C22-C23

There are no ring outliers.

13 monomers are involved in 23 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	1009	A1BDS	1	0
5	D	1002	POV	1	0
5	D	1001	POV	4	0
5	C	1002	POV	2	0

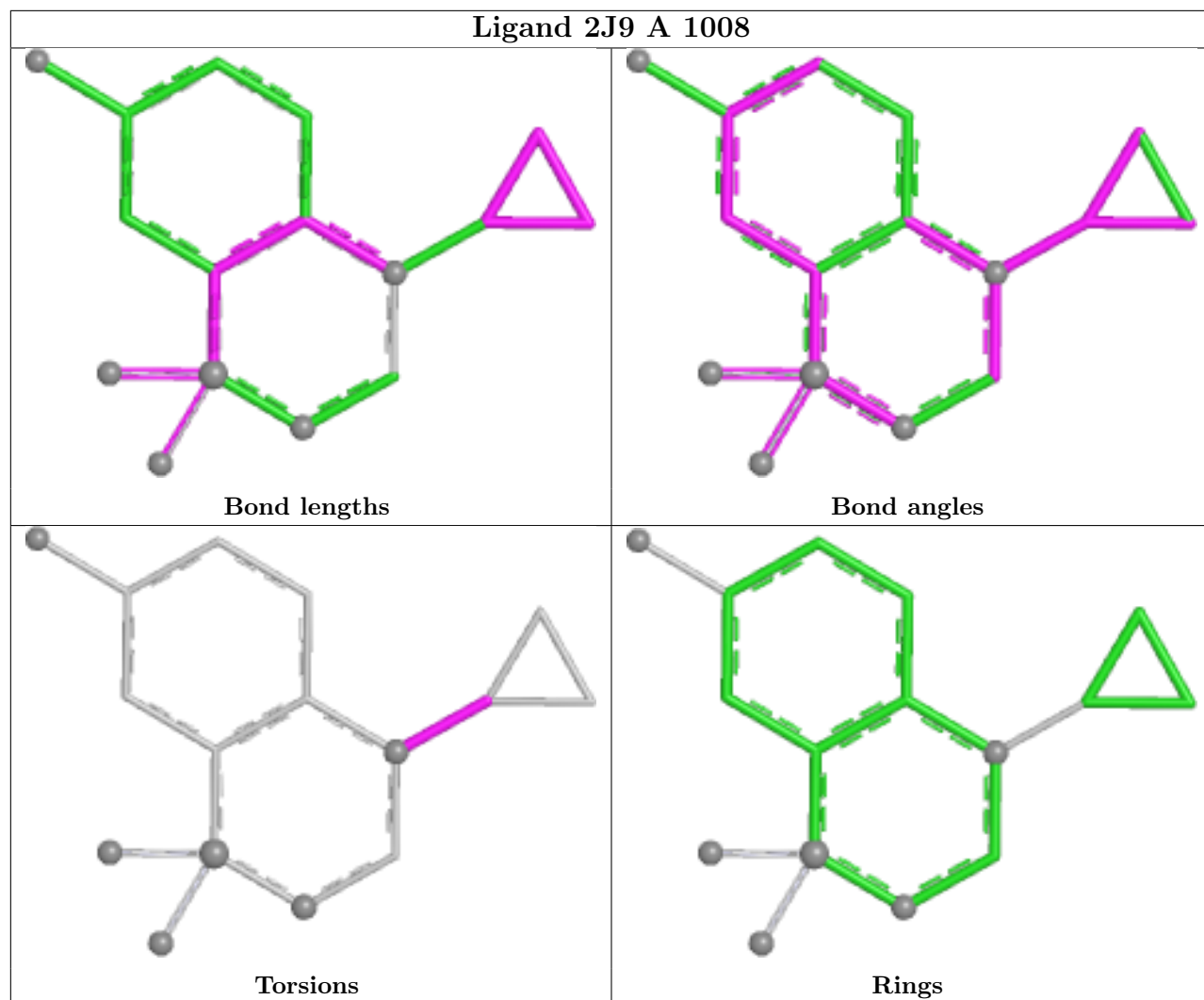
Continued on next page...

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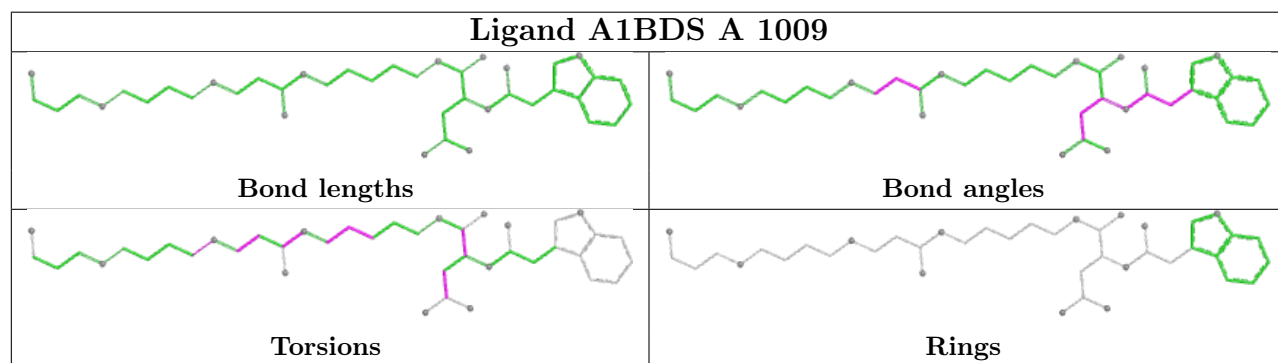
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	1005	POV	3	0
5	A	1007	POV	2	0
5	C	1006	POV	2	0
5	C	1003	POV	1	0
5	B	1003	POV	2	0
4	A	1001	2J9	1	0
5	A	1002	POV	4	0
5	B	1001	POV	1	0
5	A	1005	POV	2	0

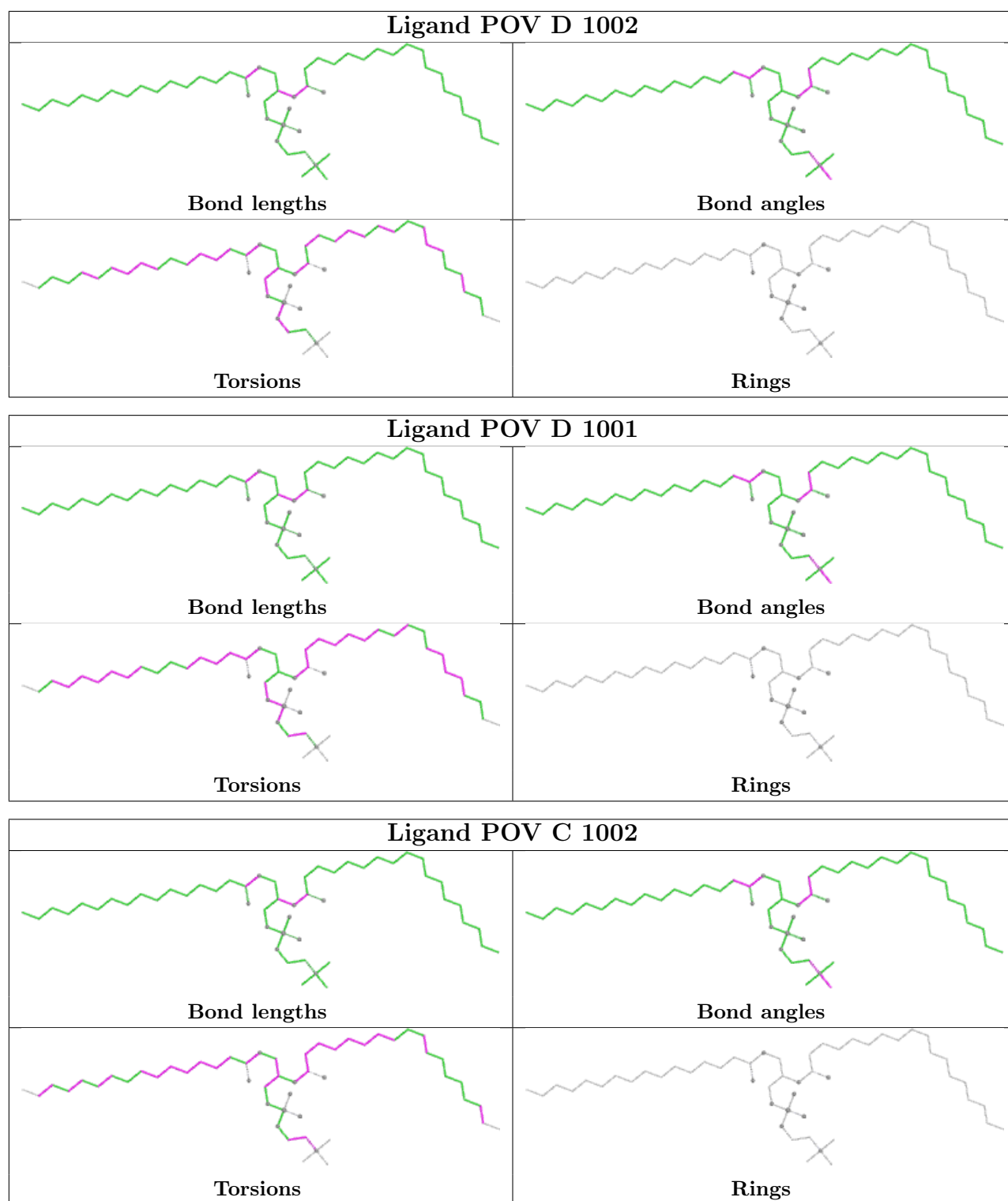
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.

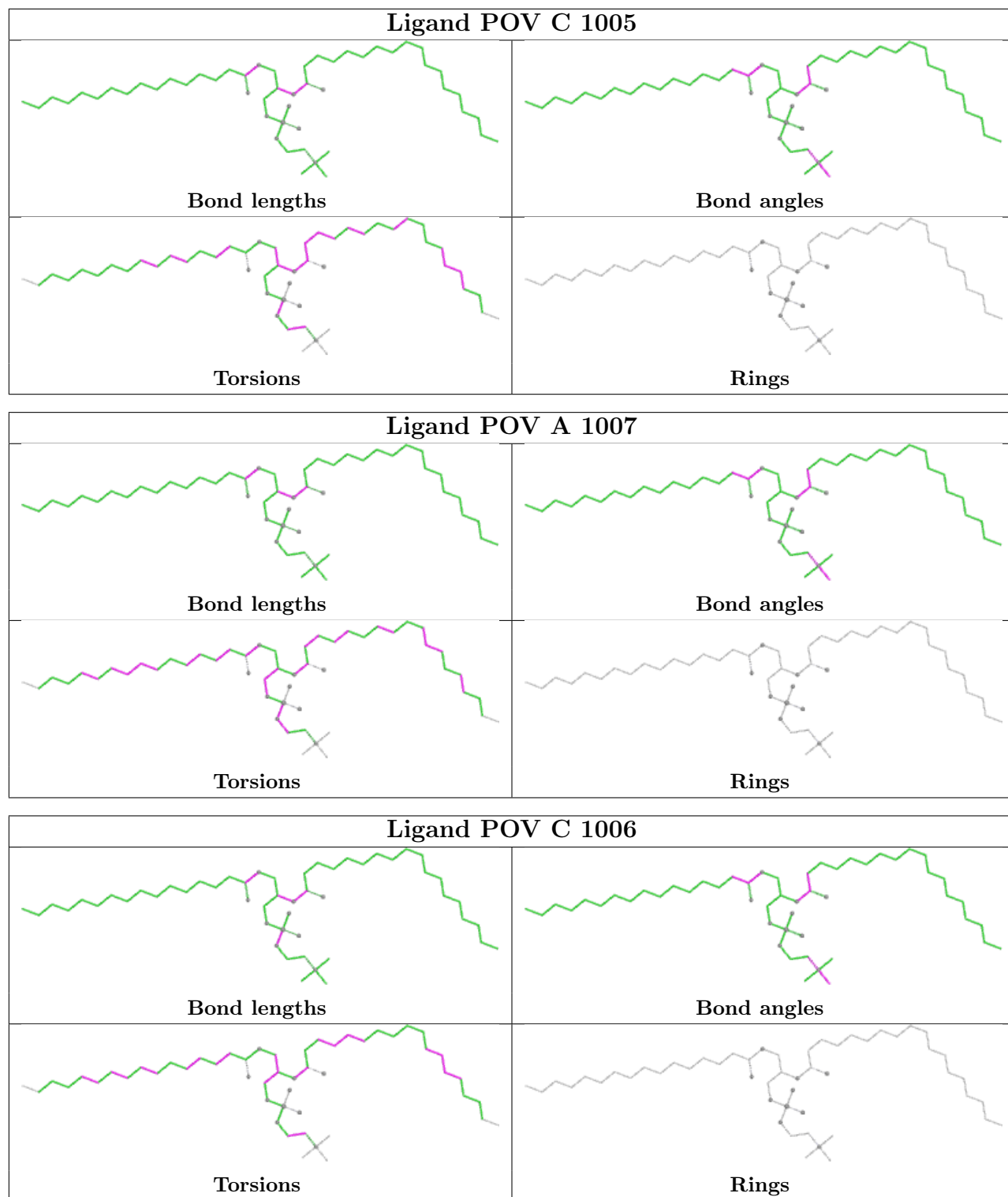
Ligand 2J9 A 1008

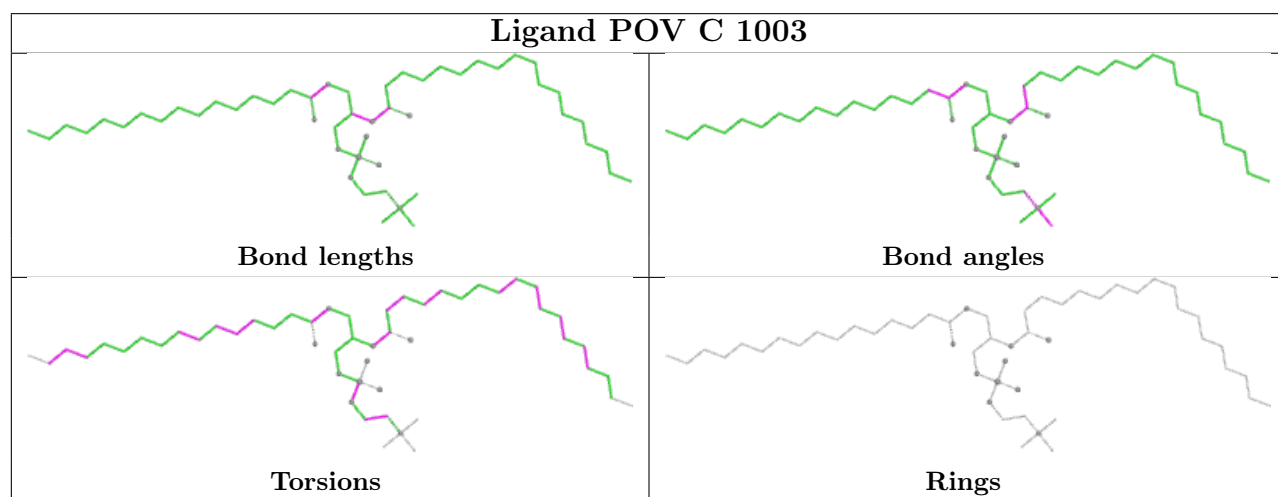
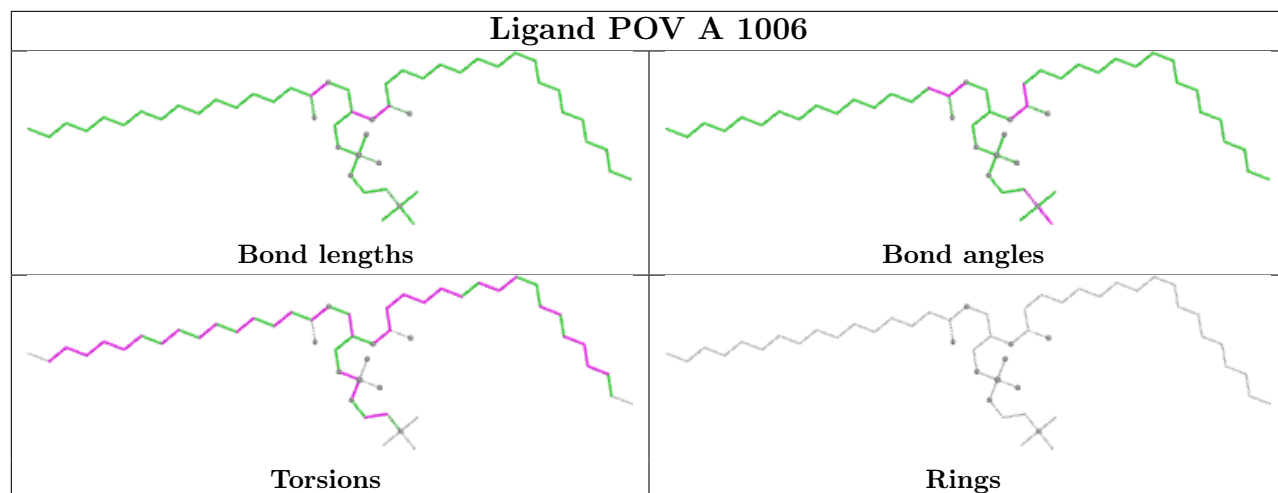


Ligand A1BDS A 1009

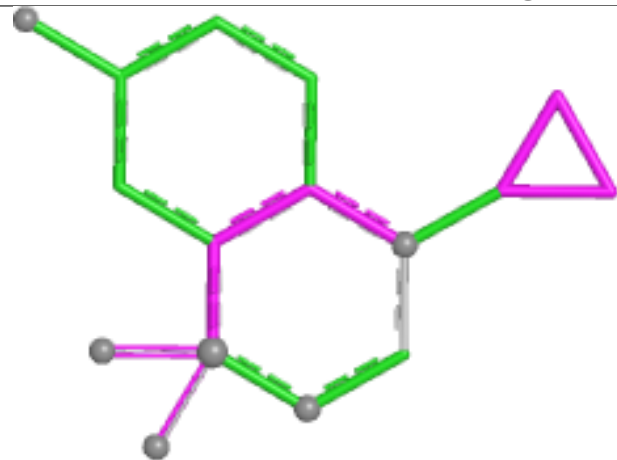




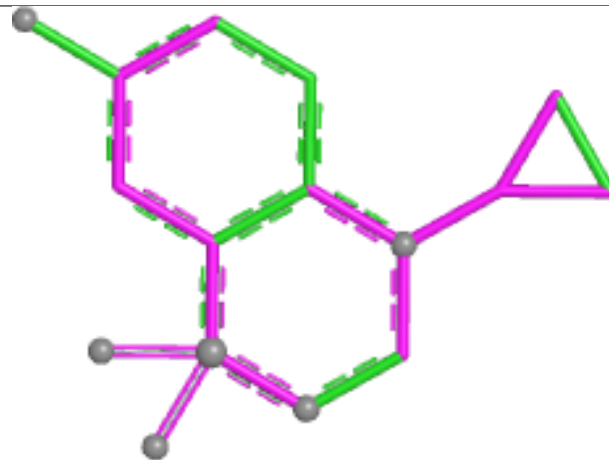




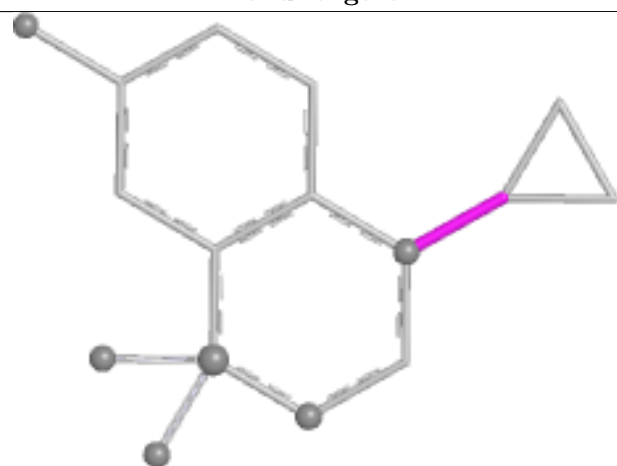
Ligand 2J9 C 1001



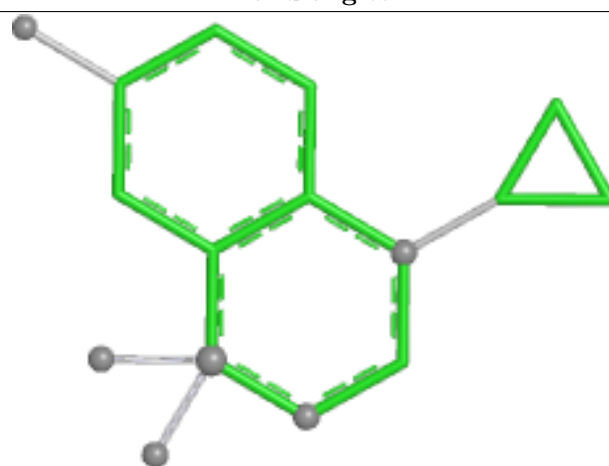
Bond lengths



Bond angles

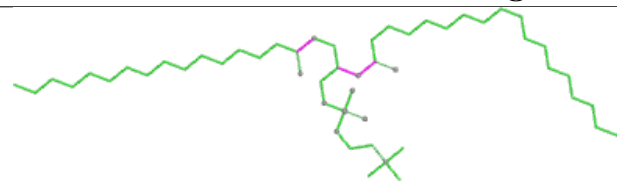


Torsions

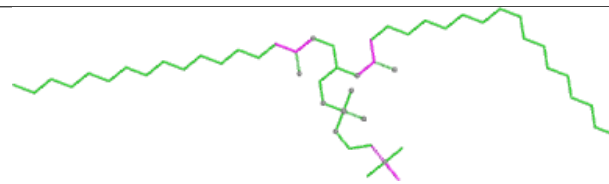


Rings

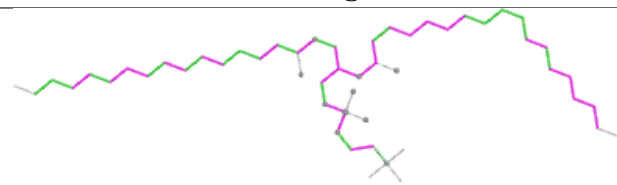
Ligand POV A 1004



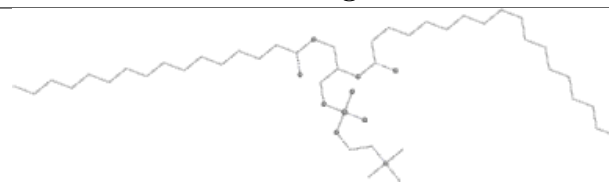
Bond lengths



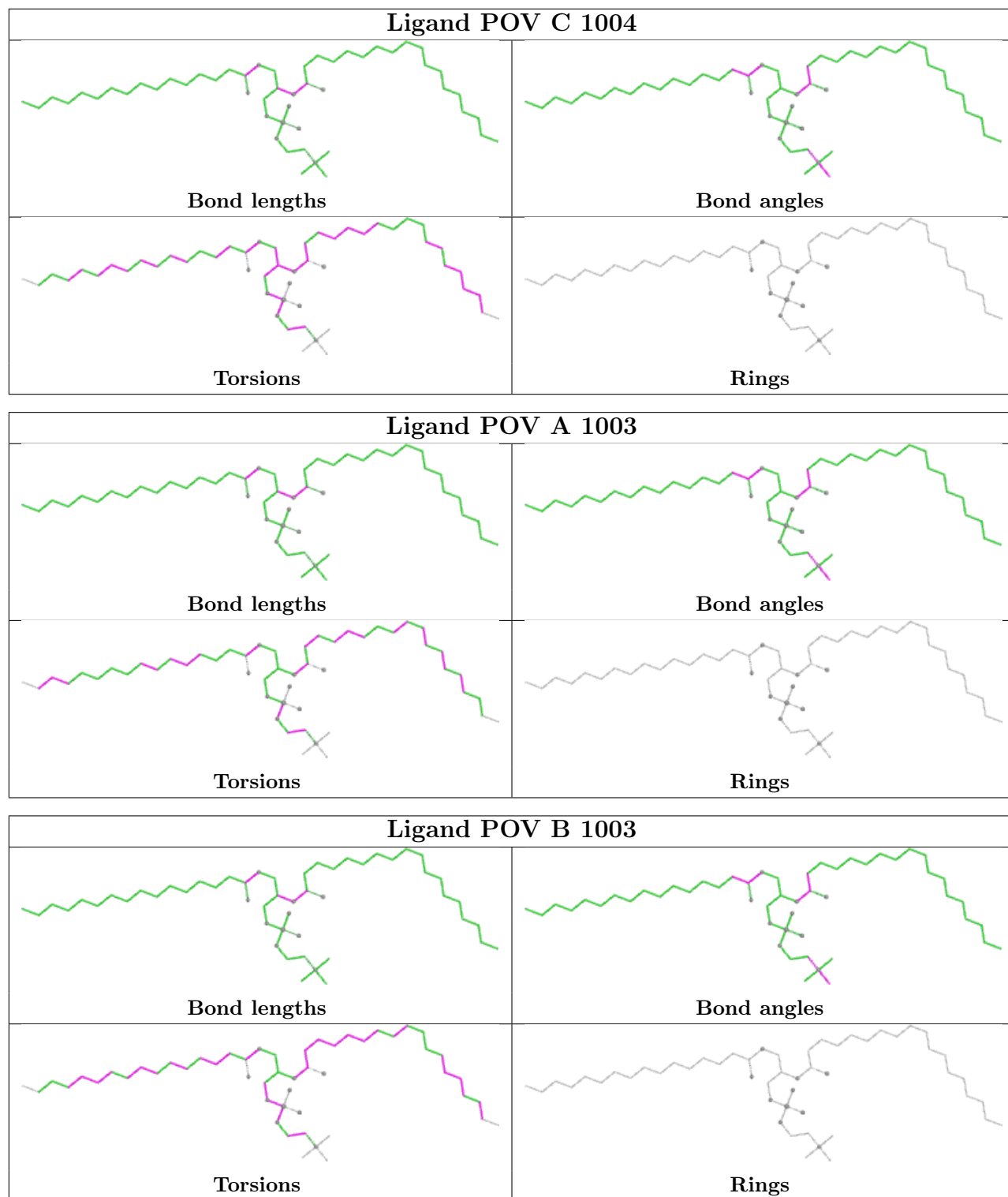
Bond angles



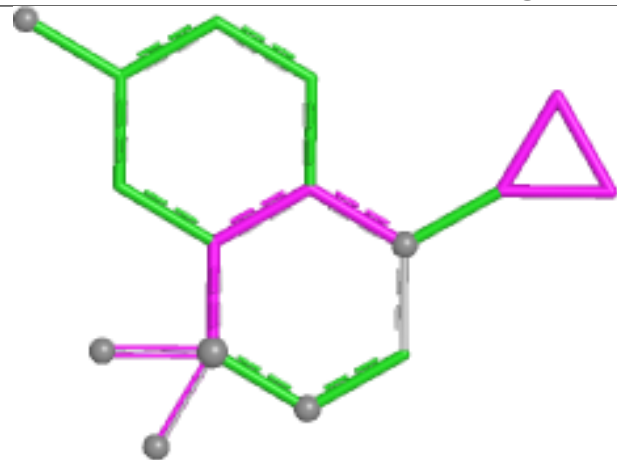
Torsions



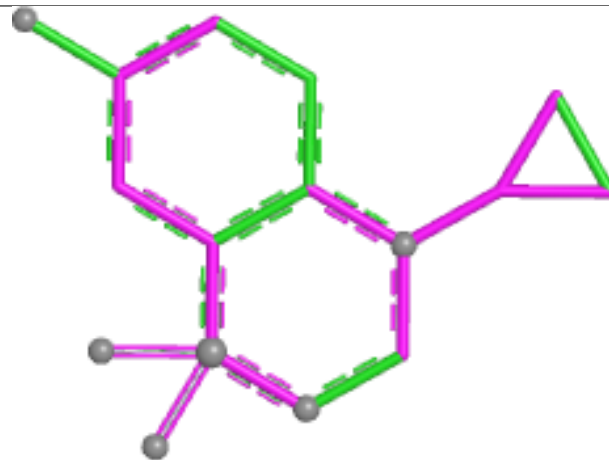
Rings



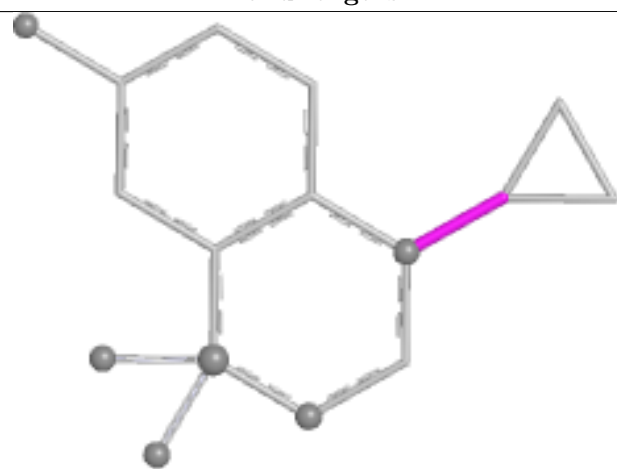
Ligand 2J9 A 1001



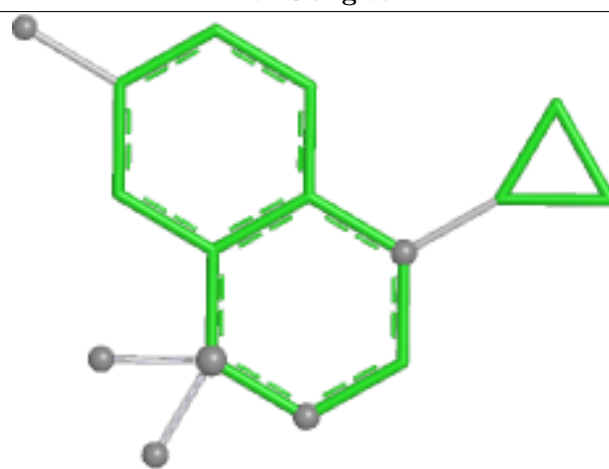
Bond lengths



Bond angles

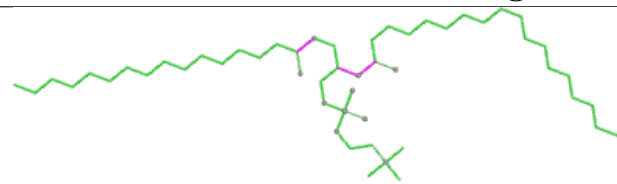


Torsions

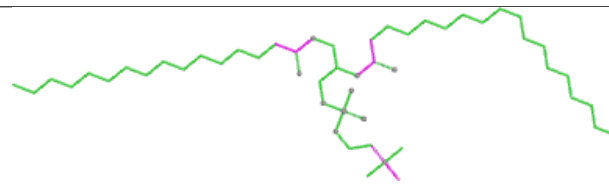


Rings

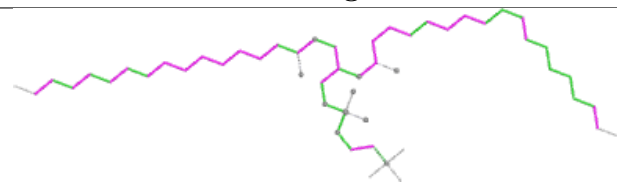
Ligand POV A 1002



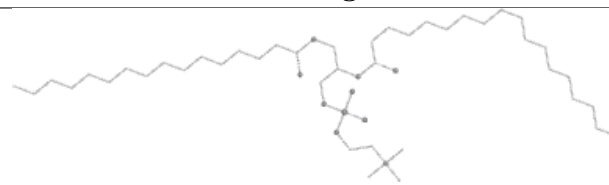
Bond lengths



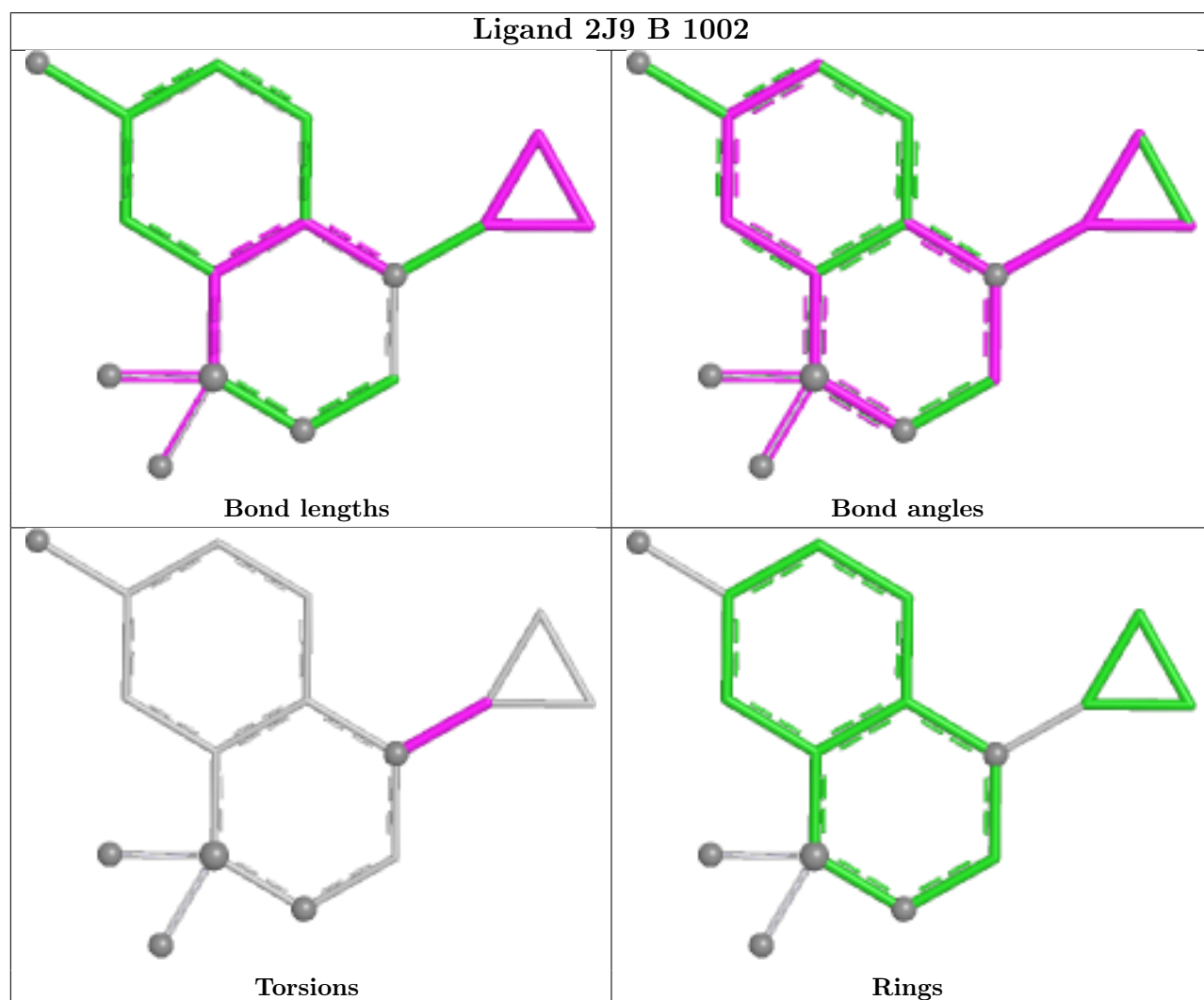
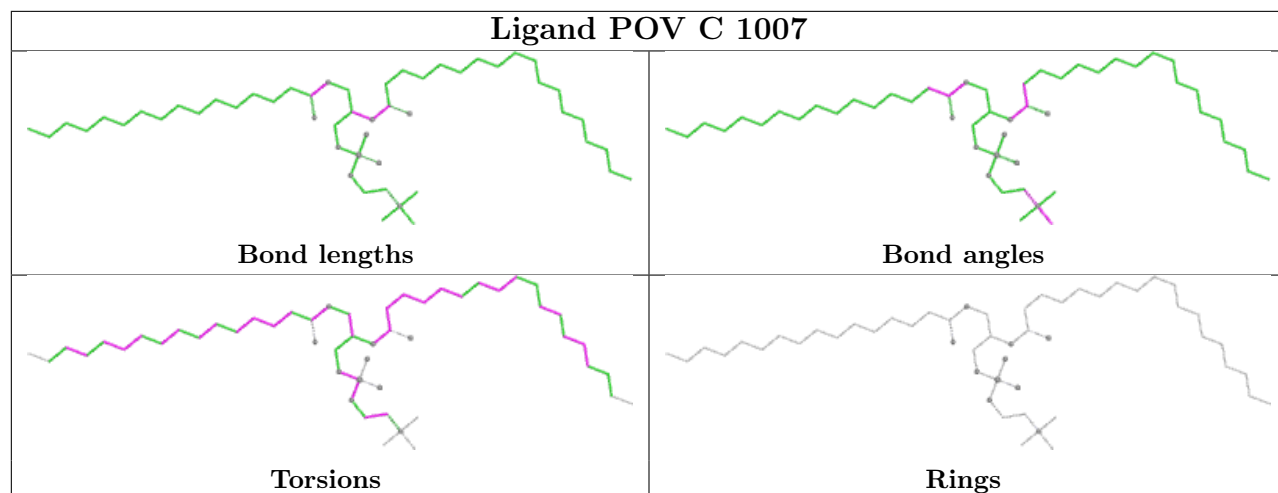
Bond angles

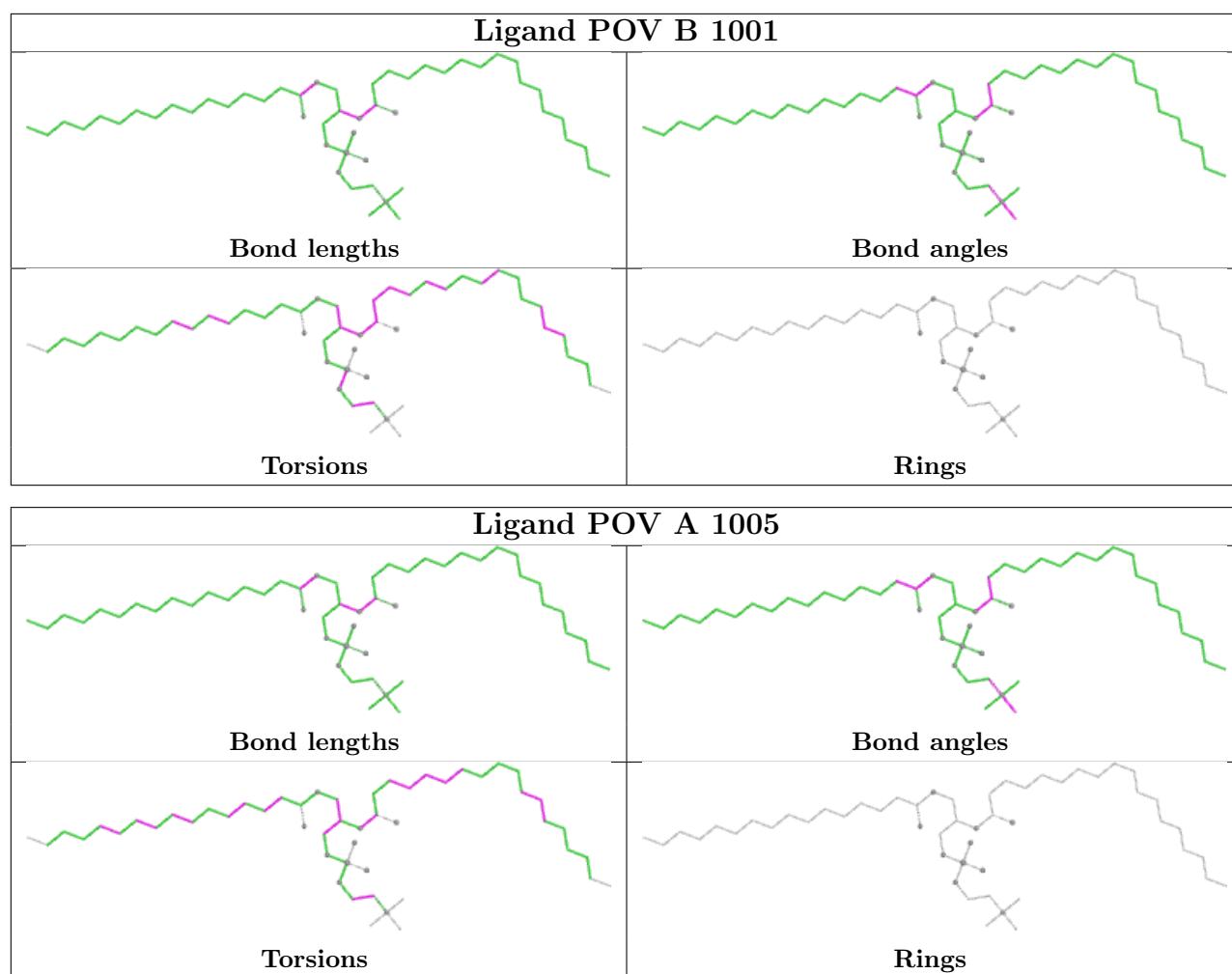


Torsions



Rings





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.

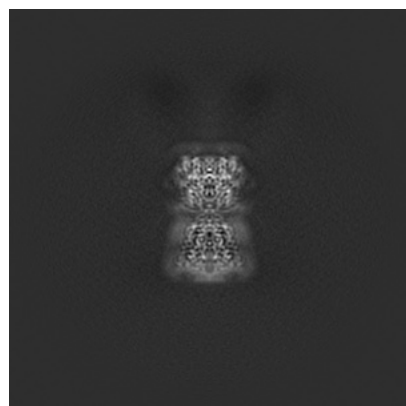
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-47296. These allow visual inspection of the internal detail of the map and identification of artifacts.

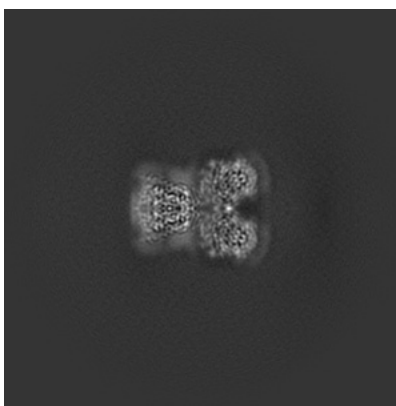
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

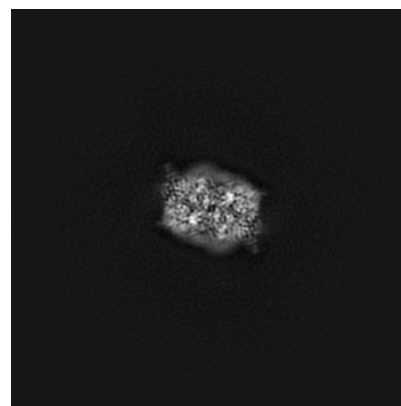
6.1.1 Primary map



X

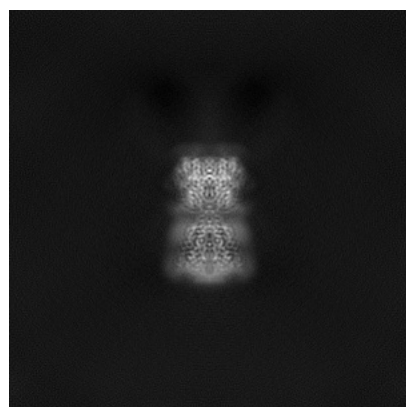


Y

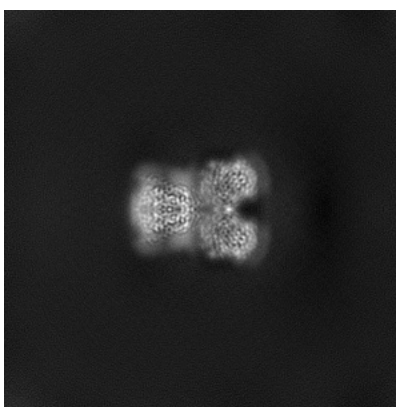


Z

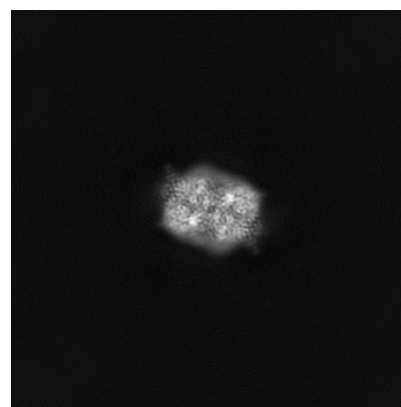
6.1.2 Raw map



X



Y

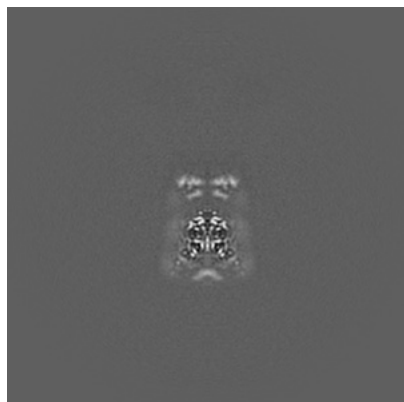


Z

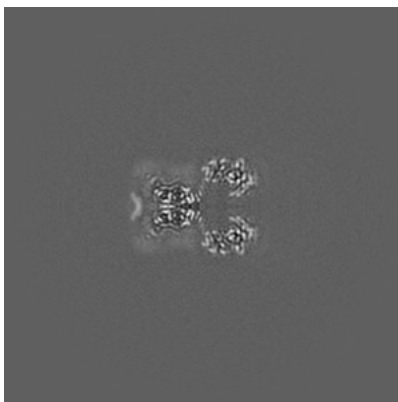
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

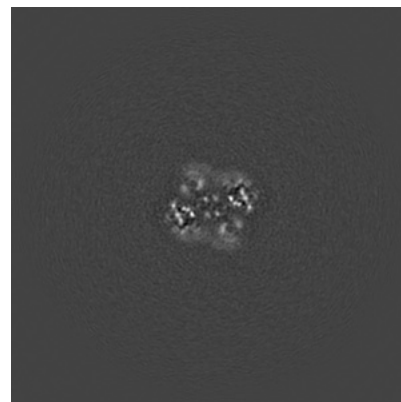
6.2.1 Primary map



X Index: 180

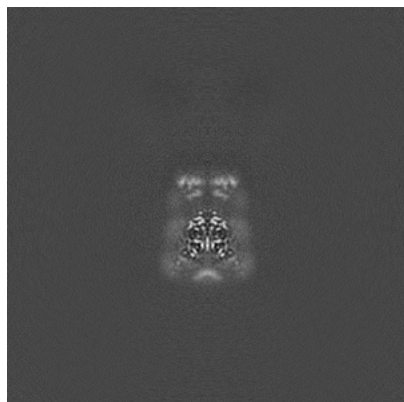


Y Index: 180

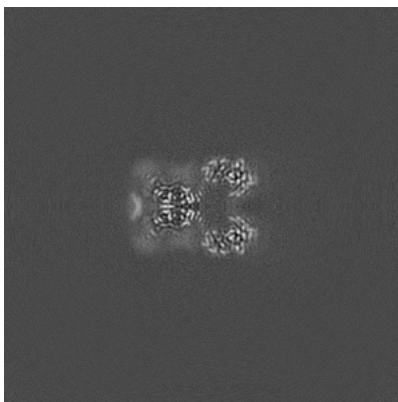


Z Index: 180

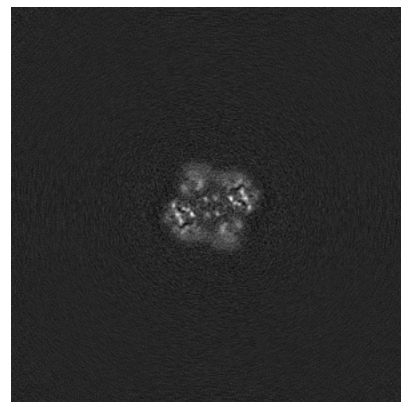
6.2.2 Raw map



X Index: 180



Y Index: 180

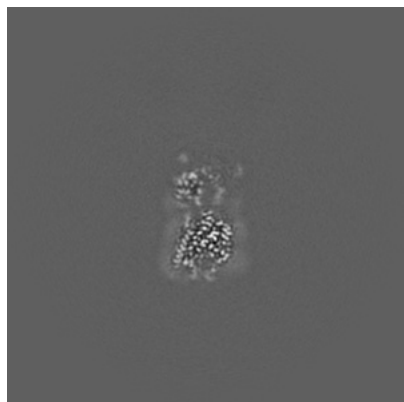


Z Index: 180

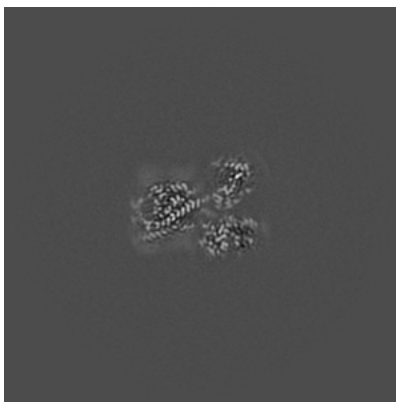
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

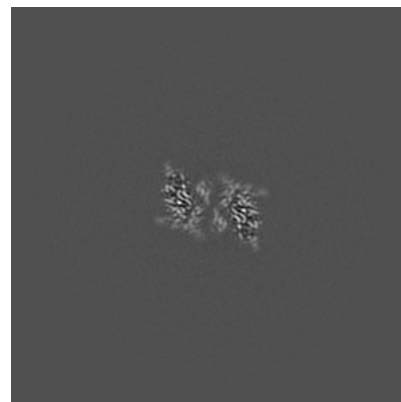
6.3.1 Primary map



X Index: 188

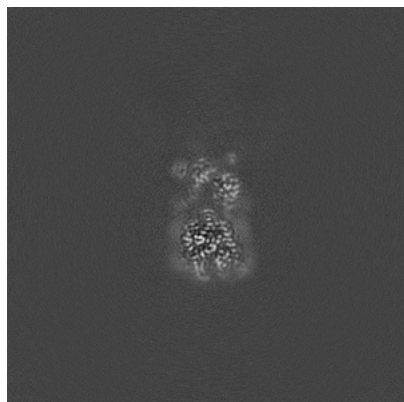


Y Index: 173

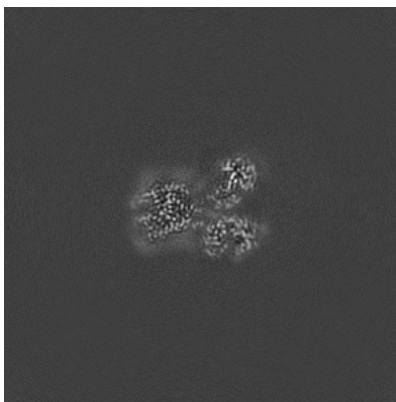


Z Index: 208

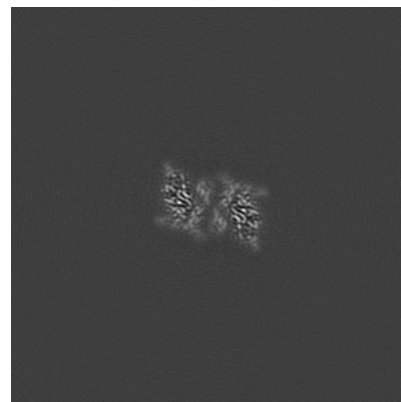
6.3.2 Raw map



X Index: 169



Y Index: 170

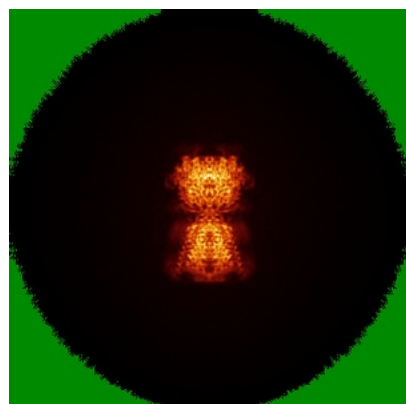


Z Index: 208

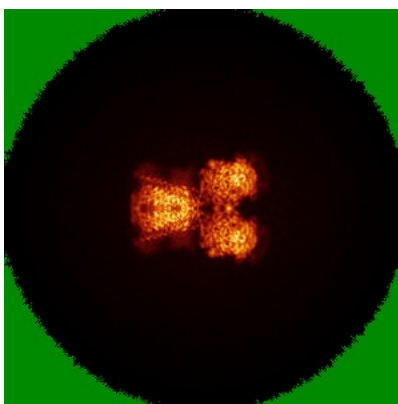
The images above show the largest variance slices of the map in three orthogonal directions.

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

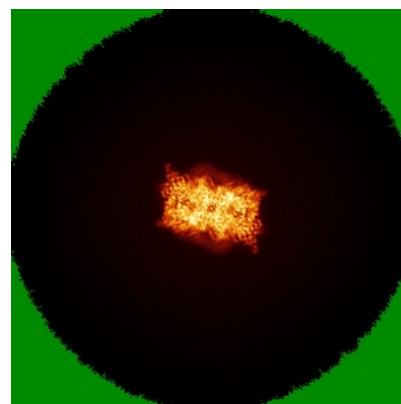
6.4.1 Primary map



X

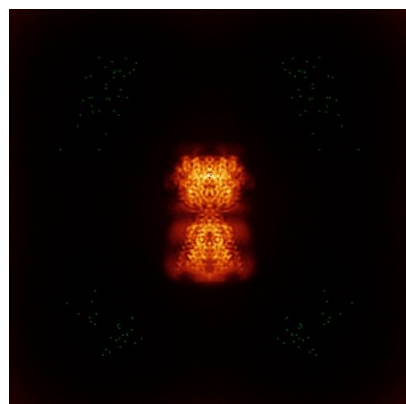


Y

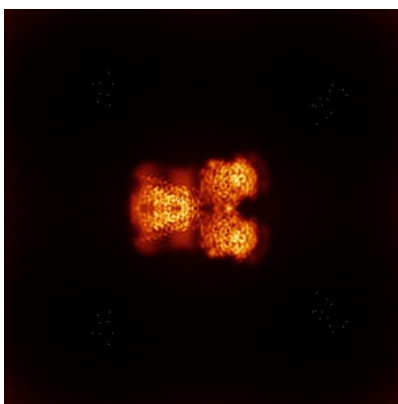


Z

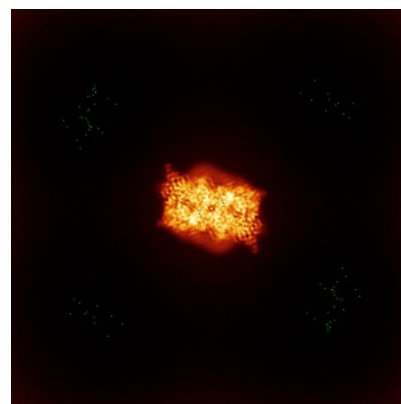
6.4.2 Raw map



X



Y

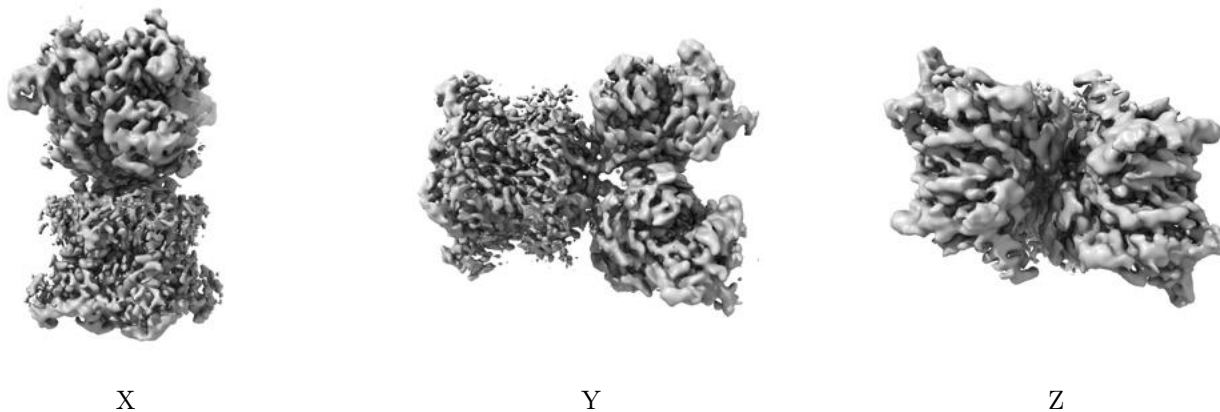


Z

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.

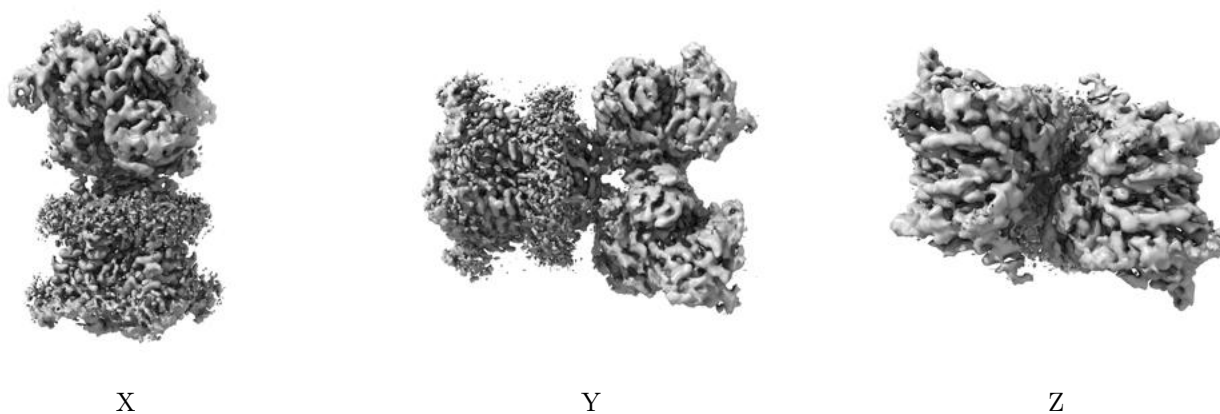
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.36. 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.

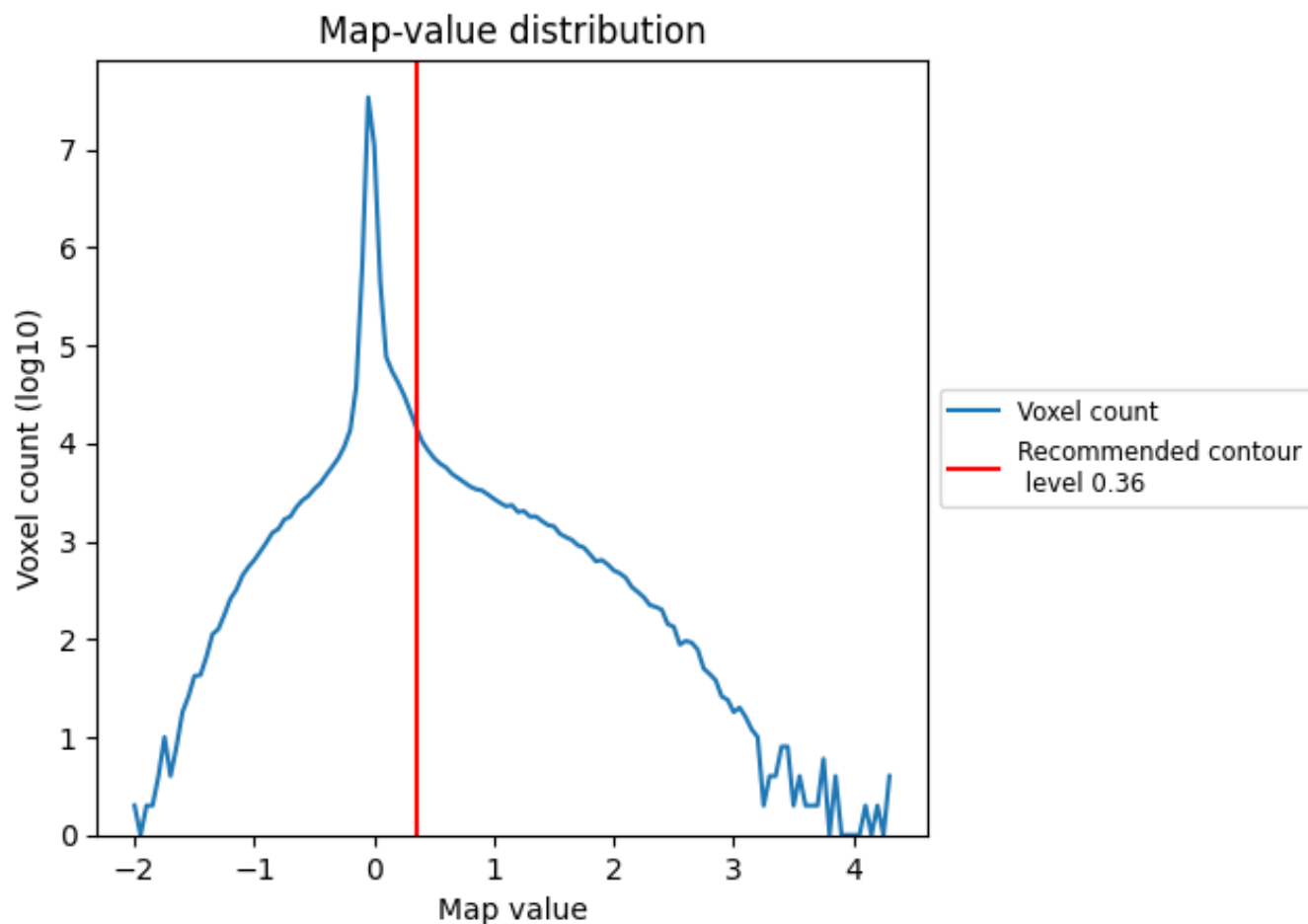
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

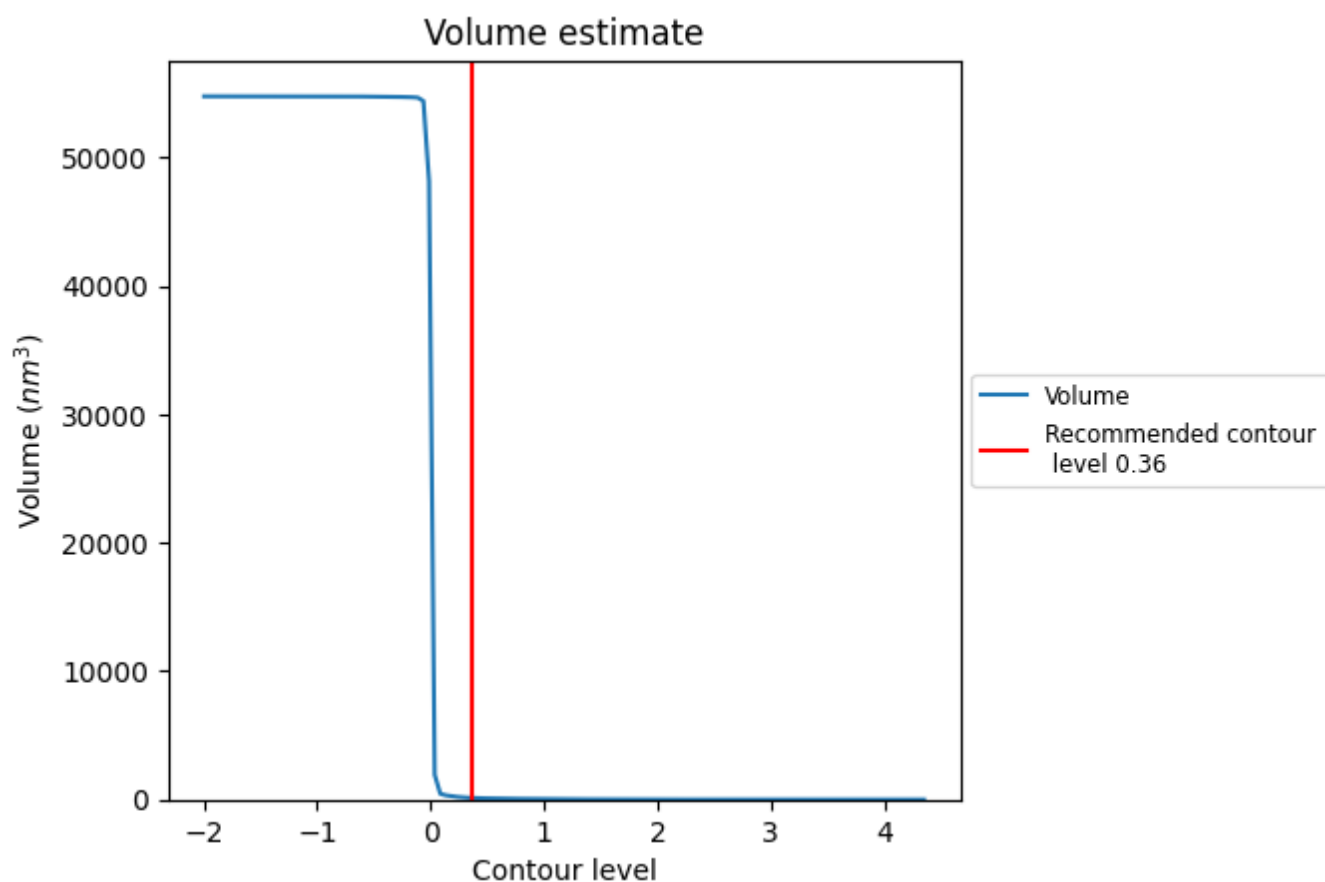
This section contains the results of statistical analysis of the map.

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.

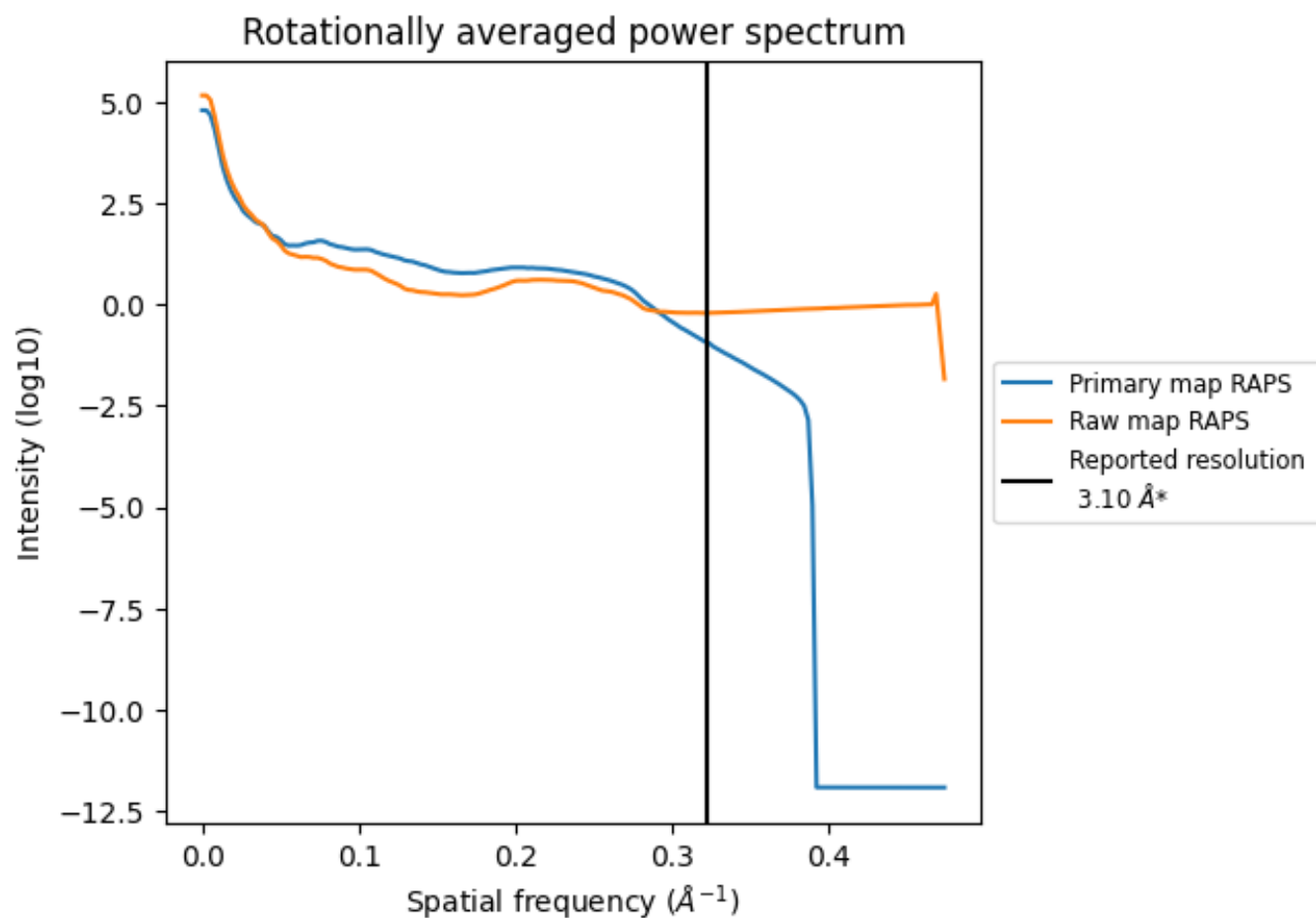
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 130 nm^3 ; this corresponds to an approximate mass of 117 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 ⓘ

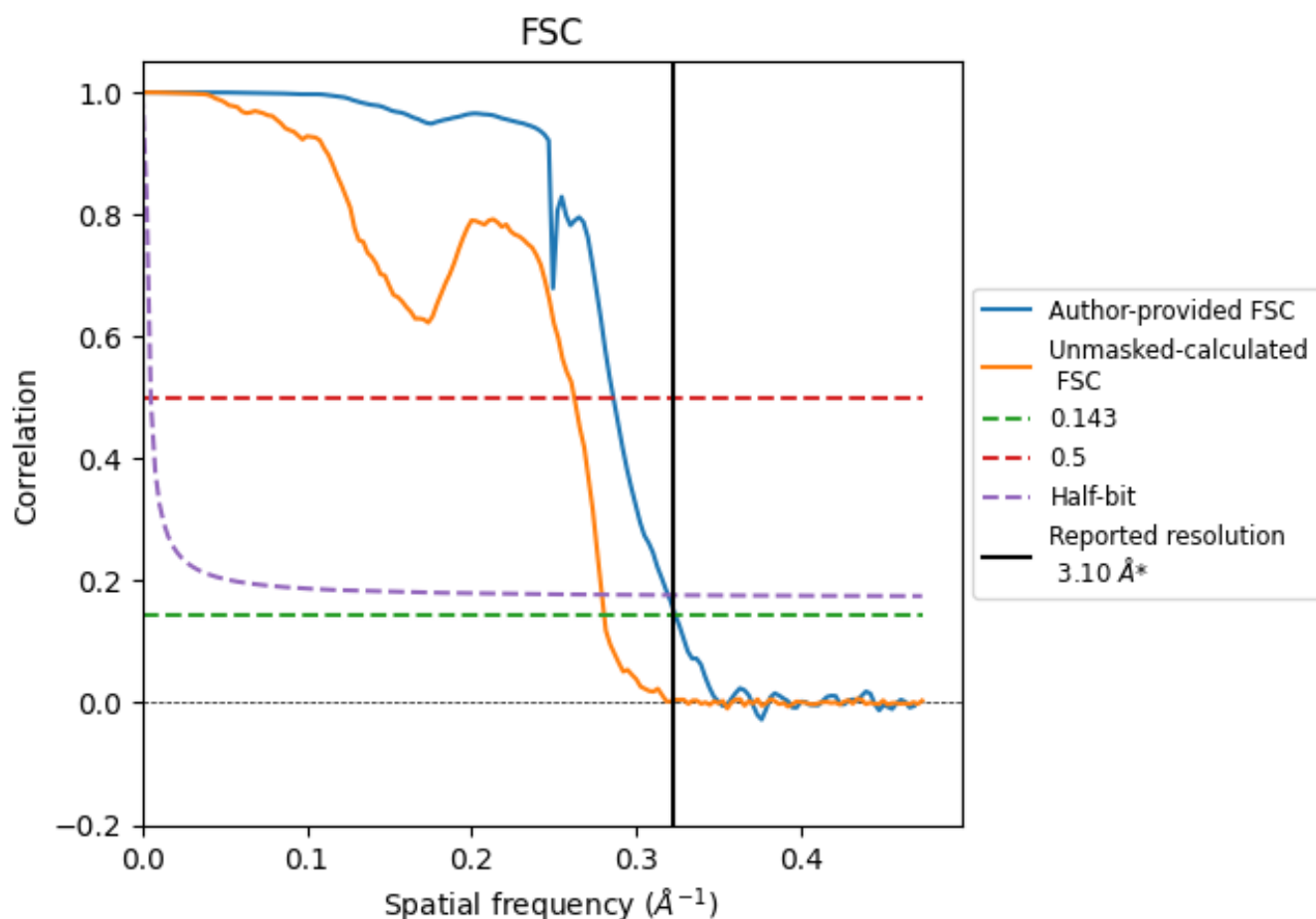


*Reported resolution corresponds to spatial frequency of 0.323 $\text{\AA}^{-1}$

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 0.323 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

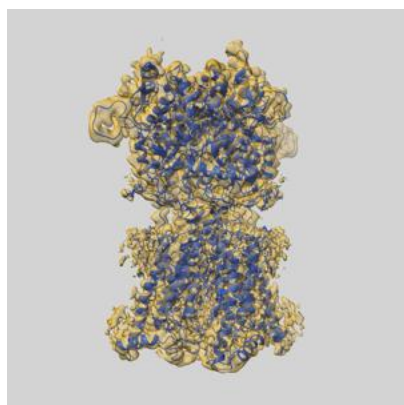
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.09	3.49	3.13
Unmasked-calculated*	3.56	3.81	3.58

*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 3.56 differs from the reported value 3.1 by more than 10 %

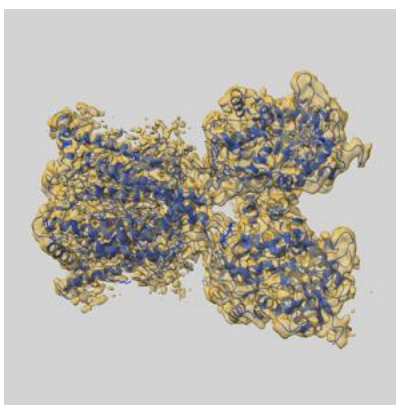
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-47296 and PDB model 9DXR. Per-residue inclusion information can be found in [section 3](#) on [page 8](#).

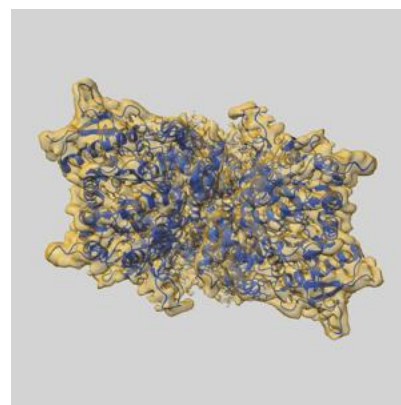
9.1 Map-model overlay [i](#)



X



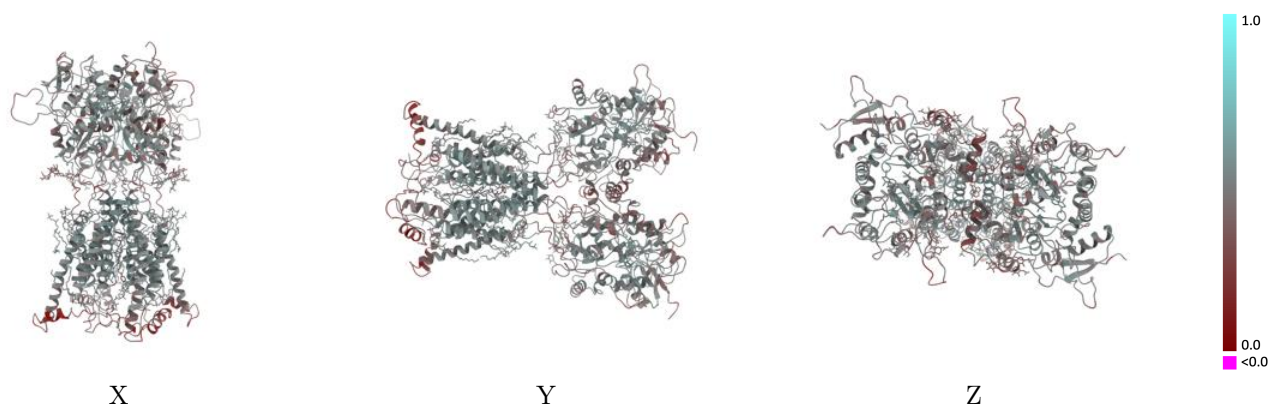
Y



Z

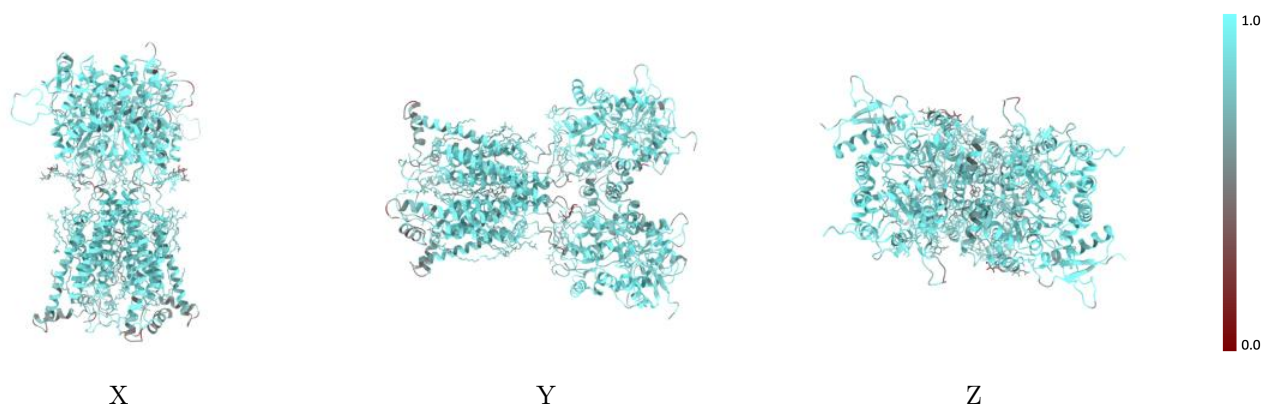
The images above show the 3D surface view of the map at the recommended contour level 0.36 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



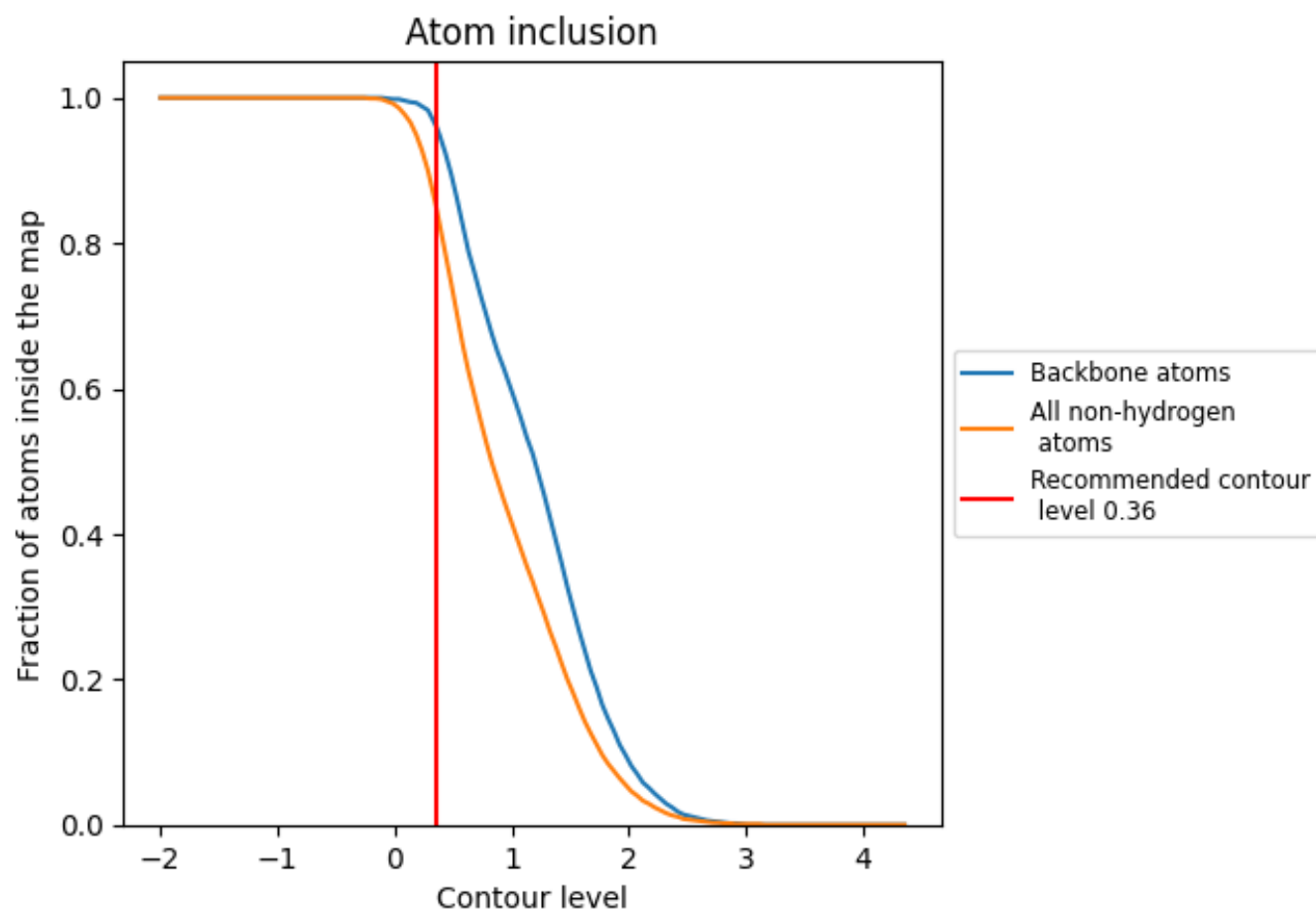
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.36).

9.4 Atom inclusion ⓘ



At the recommended contour level, 96% of all backbone atoms, 85% 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 (0.36) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8460	0.4620
A	0.8430	0.4650
B	0.8620	0.4690
C	0.8330	0.4570
D	0.8560	0.4610
E	0.4640	0.3630
F	0.6790	0.3710
G	0.8800	0.4990
H	0.7500	0.4090
I	0.4640	0.3480
J	0.6790	0.3880
K	0.9000	0.4830
L	0.7860	0.4090

