



Full wwPDB EM Validation Report ⓘ

Mar 10, 2026 – 12:08 AM UTC

PDB ID : 9N4P / pdb_00009n4p
EMDB ID : EMD-48901
Title : Composite map for GluK2-1xNeto2 in the apo state
Authors : Gangwar, S.P.; Yelshanskaya, M.V.; Yen, L.Y.; Newton, T.P.; Sobolevsky, A.I.
Deposited on : 2025-02-03
Resolution : 3.58 Å(reported)

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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:

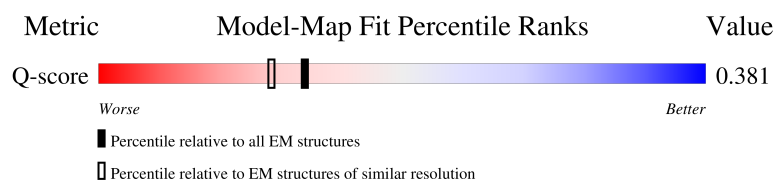
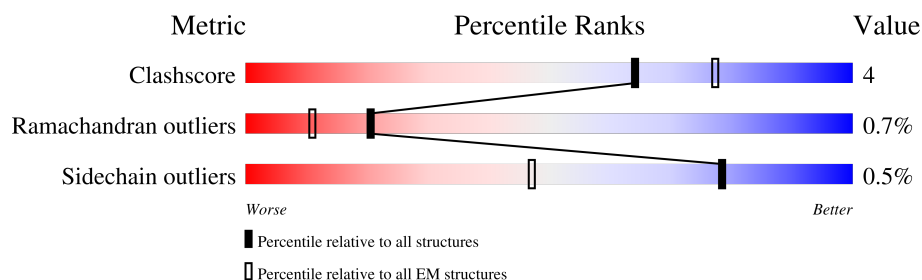
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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 3.58 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	12629 (3.08 - 4.08)

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	14% 83% 9% 7%
1	B	908	11% 83% 9% 7%
1	C	908	11% 83% 9% 7%
1	D	908	6% 82% 8% 10%

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Mol	Chain	Length	Quality of chain
2	E	525	
3	F	5	
3	H	5	
3	L	5	
3	Q	5	
3	T	5	
4	G	2	
4	I	2	
4	J	2	
4	K	2	
4	M	2	
4	O	2	
4	P	2	
4	R	2	
4	S	2	
4	U	2	
4	V	2	
5	N	4	

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 30797 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	840	Total	C	N	O	S	0	0
			6655	4266	1109	1240	40		
1	B	840	Total	C	N	O	S	0	0
			6655	4266	1109	1240	40		
1	C	841	Total	C	N	O	S	0	0
			6666	4272	1113	1241	40		
1	D	818	Total	C	N	O	S	0	0
			6477	4157	1077	1207	36		

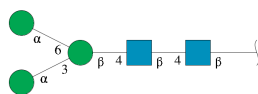
There are 8 discrepancies between the modelled and reference sequences:

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

- Molecule 2 is a protein called Neuropilin and tolloid-like protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	E	341	Total	C	N	O	S	0	0
			2705	1725	459	498	23		

- Molecule 3 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]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	F	5	Total	C	N	O	0	0
			61	34	2	25		
3	H	5	Total	C	N	O	0	0
			61	34	2	25		
3	L	5	Total	C	N	O	0	0
			61	34	2	25		
3	Q	5	Total	C	N	O	0	0
			61	34	2	25		
3	T	5	Total	C	N	O	0	0
			61	34	2	25		

- 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	G	2	Total	C	N	O	0	0
			28	16	2	10		
4	I	2	Total	C	N	O	0	0
			28	16	2	10		
4	J	2	Total	C	N	O	0	0
			28	16	2	10		
4	K	2	Total	C	N	O	0	0
			28	16	2	10		
4	M	2	Total	C	N	O	0	0
			28	16	2	10		
4	O	2	Total	C	N	O	0	0
			28	16	2	10		
4	P	2	Total	C	N	O	0	0
			28	16	2	10		
4	R	2	Total	C	N	O	0	0
			28	16	2	10		
4	S	2	Total	C	N	O	0	0
			28	16	2	10		
4	U	2	Total	C	N	O	0	0
			28	16	2	10		

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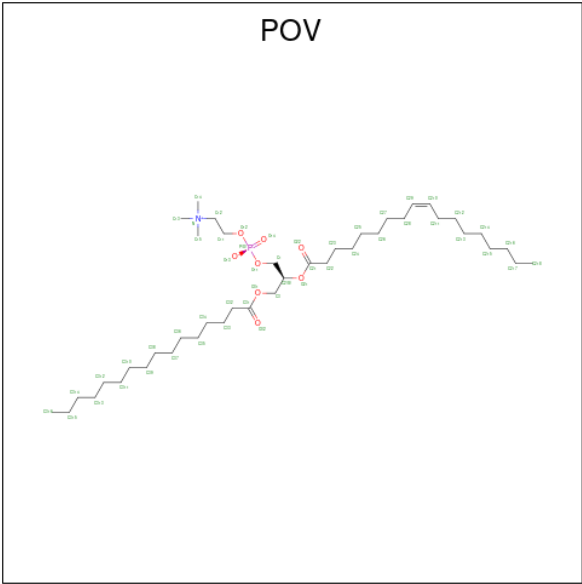
Mol	Chain	Residues	Atoms				AltConf	Trace
4	V	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 5 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
5	N	4	Total	C	N	O	0	0
			50	28	2	20		

- Molecule 6 is (2S)-3-(hexadecanoyloxy)-2-[(9Z)-octadec-9-enoyloxy]propyl 2-(trimethylamm onio)ethyl phosphate (CCD ID: POV) (formula: C₄₂H₈₂NO₈P).



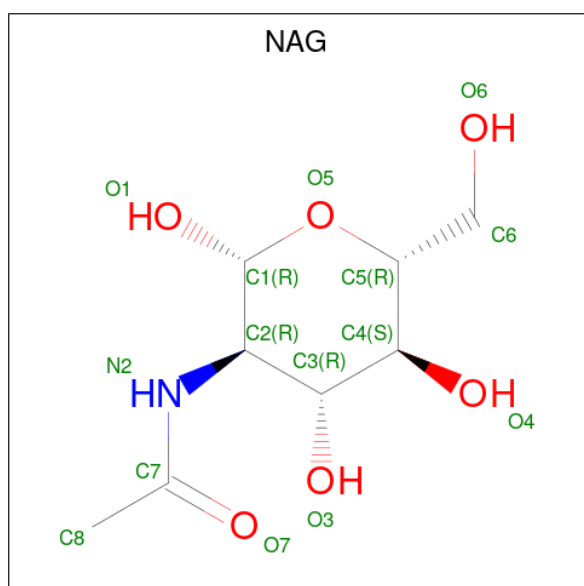
Mol	Chain	Residues	Atoms					AltConf
6	A	1	Total	C	N	O	P	0
			52	42	1	8	1	
6	A	1	Total	C	N	O	P	0
			52	42	1	8	1	
6	A	1	Total	C	N	O	P	0
			52	42	1	8	1	

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

- Molecule 7 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).

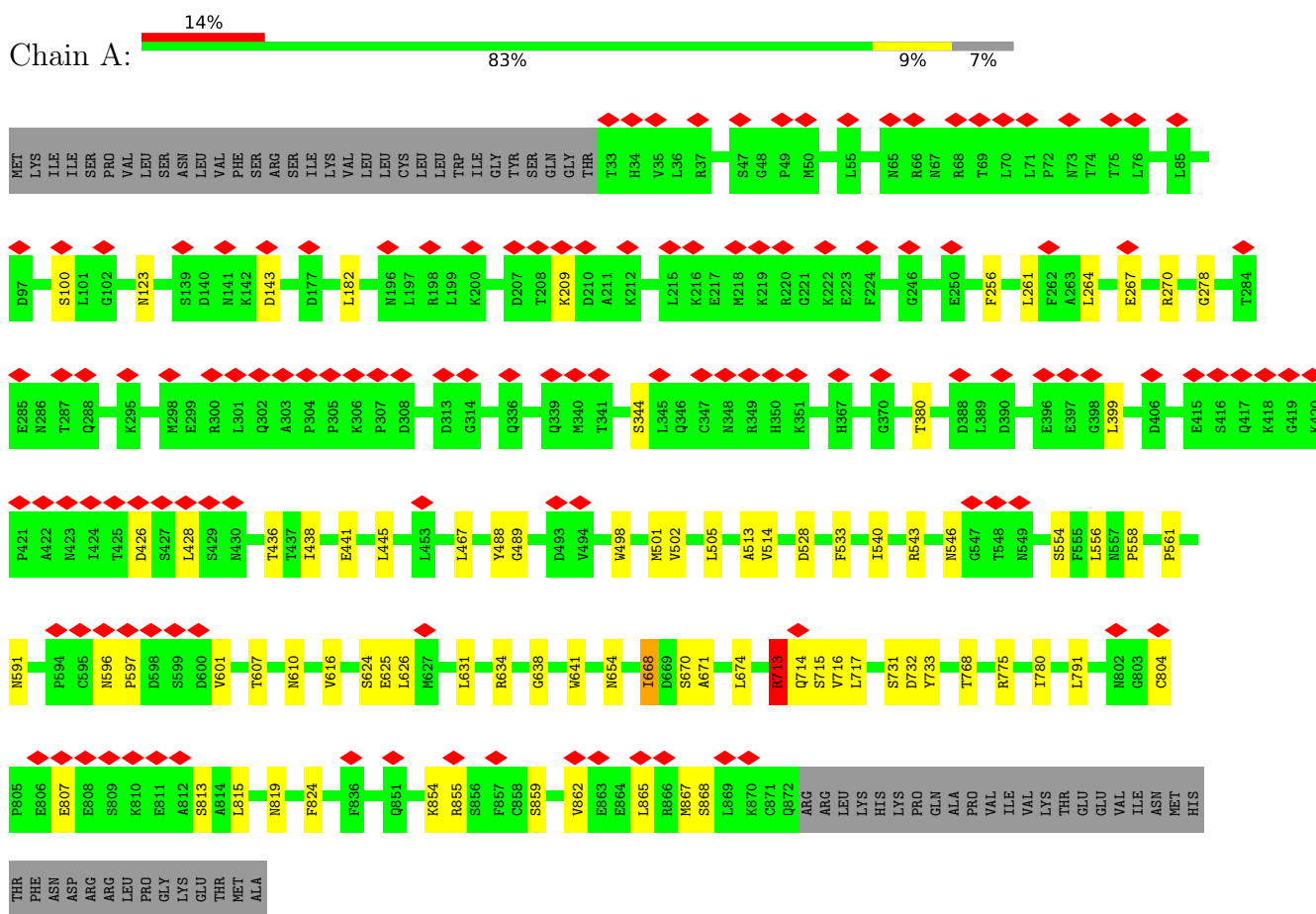


Mol	Chain	Residues	Atoms				AltConf
7	A	1	Total	C	N	O	0
			14	8	1	5	
7	A	1	Total	C	N	O	0
			14	8	1	5	
7	A	1	Total	C	N	O	0
			14	8	1	5	
7	A	1	Total	C	N	O	0
			14	8	1	5	
7	B	1	Total	C	N	O	0
			14	8	1	5	
7	B	1	Total	C	N	O	0
			14	8	1	5	
7	C	1	Total	C	N	O	0
			14	8	1	5	
7	C	1	Total	C	N	O	0
			14	8	1	5	
7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

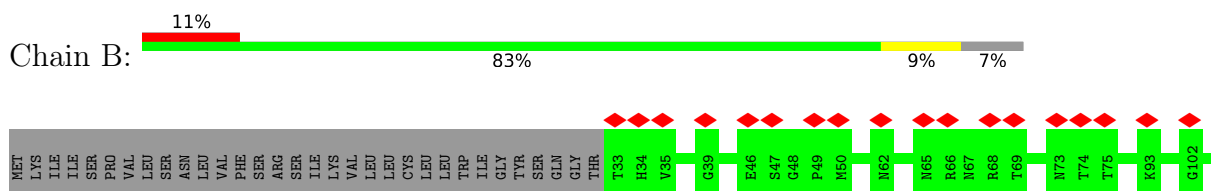
3 Residue-property plots

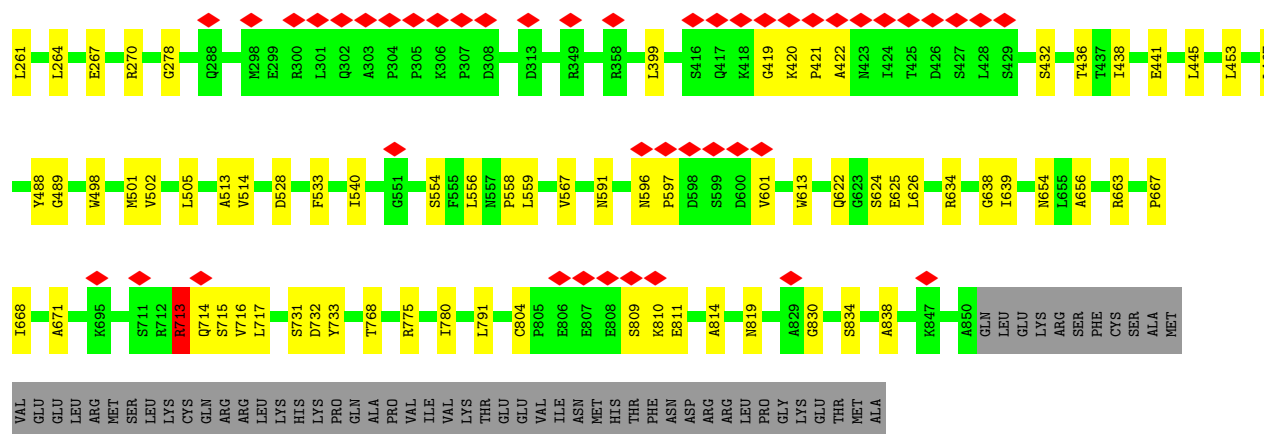
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Glutamate receptor ionotropic, kainate 2

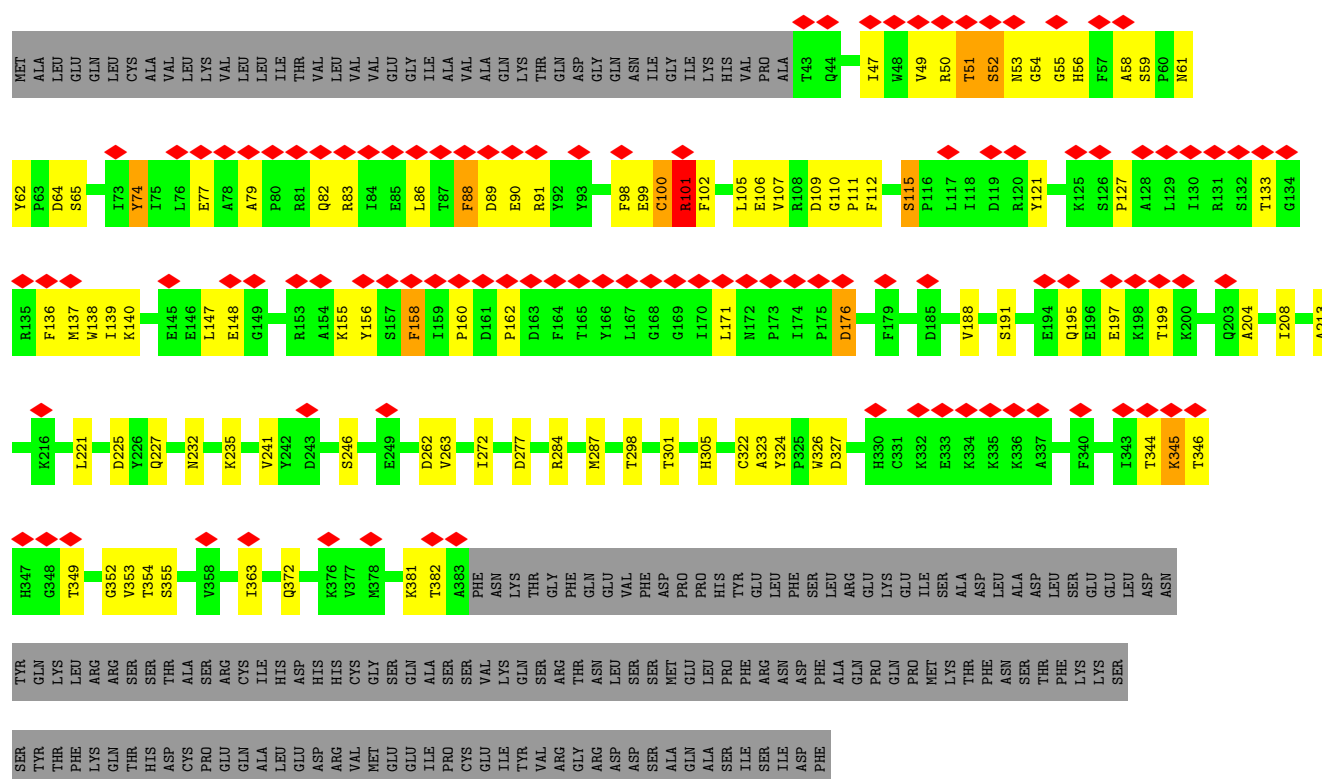


- Molecule 1: Glutamate receptor ionotropic, kainate 2

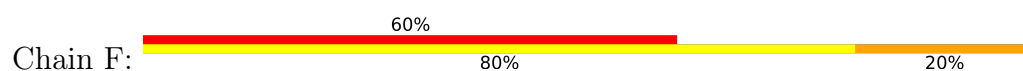




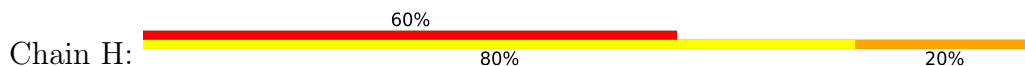
• Molecule 2: Neuropilin and tolloid-like protein 2



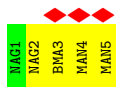
• Molecule 3: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



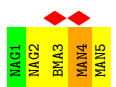
- Molecule 3: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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





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



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



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



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



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



- Molecule 5: 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



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	62000	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 ($e^-/\text{\AA}^2$)	58.8	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	46.602	Depositor
Minimum map value	-34.299	Depositor
Average map value	-0.032	Depositor
Map value standard deviation	1.068	Depositor
Recommended contour level	5.5	Depositor
Map size ($\text{\AA}$)	332.0, 332.0, 332.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	0.83, 0.83, 0.83	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.35	0/6805	0.72	3/9212 (0.0%)
1	B	0.35	0/6805	0.71	1/9212 (0.0%)
1	C	0.35	0/6816	0.73	5/9226 (0.1%)
1	D	0.35	0/6626	0.74	3/8976 (0.0%)
2	E	0.38	0/2771	1.03	9/3745 (0.2%)
All	All	0.35	0/29823	0.76	21/40371 (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	A	0	6
1	B	0	4
1	C	0	6
1	D	0	2
2	E	0	8
All	All	0	26

There are no bond length outliers.

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	419	GLY	CA-C-N	12.67	138.88	120.51
1	D	419	GLY	C-N-CA	12.67	138.88	120.51
1	C	807	GLU	N-CA-C	-7.04	104.84	113.50
2	E	52	SER	CA-C-N	6.48	133.92	121.54
2	E	52	SER	C-N-CA	6.48	133.92	121.54
1	C	420	LYS	N-CA-C	-6.46	102.41	108.22

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	551	GLY	CA-C-N	5.62	132.09	121.97
1	C	551	GLY	C-N-CA	5.62	132.09	121.97
2	E	235	LYS	N-CA-C	-5.59	107.11	114.04
2	E	99	GLU	CA-C-N	5.52	132.09	121.54
2	E	99	GLU	C-N-CA	5.52	132.09	121.54
2	E	74	TYR	N-CA-C	5.44	118.37	110.42
1	D	209	LYS	N-CA-C	-5.27	106.53	113.17
1	A	209	LYS	N-CA-C	-5.26	106.54	113.17
1	C	209	LYS	N-CA-C	-5.26	106.54	113.17
1	B	209	LYS	N-CA-C	-5.26	106.54	113.17
1	A	807	GLU	CA-C-N	5.09	131.27	121.54
1	A	807	GLU	C-N-CA	5.09	131.27	121.54
2	E	101	ARG	N-CA-C	5.04	121.53	110.80
2	E	51	THR	CA-C-N	5.01	131.10	121.54
2	E	51	THR	C-N-CA	5.01	131.10	121.54

There are no chirality outliers.

All (26) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	426	ASP	Peptide
1	A	668	ILE	Peptide
1	A	713	ARG	Peptide
1	A	804	CYS	Mainchain,Peptide
1	A	854	LYS	Peptide
1	B	713	ARG	Peptide
1	B	804	CYS	Mainchain,Peptide
1	B	806	GLU	Peptide
1	C	429	SER	Peptide
1	C	713	ARG	Peptide
1	C	804	CYS	Mainchain,Peptide
1	C	805	PRO	Peptide
1	C	871	CYS	Peptide
1	D	713	ARG	Peptide
1	D	814	ALA	Peptide
2	E	100	CYS	Peptide
2	E	115	SER	Peptide
2	E	158	PHE	Peptide
2	E	176	ASP	Peptide
2	E	213	ALA	Peptide
2	E	322	CYS	Peptide
2	E	345	LYS	Peptide

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Mol	Chain	Res	Type	Group
2	E	88	PHE	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	6655	0	6625	46	0
1	B	6655	0	6626	51	0
1	C	6666	0	6640	57	0
1	D	6477	0	6442	42	0
2	E	2705	0	2652	52	0
3	F	61	0	52	1	0
3	H	61	0	52	1	0
3	L	61	0	52	0	0
3	Q	61	0	52	1	0
3	T	61	0	52	0	0
4	G	28	0	25	0	0
4	I	28	0	25	1	0
4	J	28	0	25	0	0
4	K	28	0	25	0	0
4	M	28	0	25	0	0
4	O	28	0	25	0	0
4	P	28	0	25	1	0
4	R	28	0	25	1	0
4	S	28	0	25	0	0
4	U	28	0	25	0	0
4	V	28	0	25	0	0
5	N	50	0	43	0	0
6	A	260	0	410	19	0
6	B	208	0	328	4	0
6	C	104	0	164	7	0
6	D	208	0	328	10	0
7	A	56	0	52	0	0
7	B	28	0	26	0	0
7	C	56	0	52	0	0
7	D	42	0	39	0	0
7	E	14	0	13	0	0
All	All	30797	0	30975	254	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 4.

All (254) 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:B:621:GLN:HG2	1:C:622:GLN:HE22	1.50	0.76
1:A:713:ARG:HG3	1:A:717:LEU:HD12	1.74	0.70
1:C:713:ARG:HG3	1:C:717:LEU:HD12	1.74	0.69
1:D:713:ARG:HG3	1:D:717:LEU:HD12	1.74	0.69
1:B:713:ARG:HG3	1:B:717:LEU:HD12	1.74	0.68
1:D:453:LEU:O	2:E:232:ASN:ND2	2.28	0.67
2:E:74:TYR:HB2	2:E:139:ILE:HB	1.76	0.66
6:A:1001:POV:H31D	6:A:1002:POV:H31E	1.78	0.65
2:E:49:VAL:O	2:E:53:ASN:ND2	2.30	0.64
2:E:65:SER:HB2	2:E:148:GLU:HB2	1.80	0.63
1:B:583:ARG:NH1	1:C:872:GLN:O	2.32	0.62
1:C:768:THR:HG21	1:C:775:ARG:HB2	1.82	0.61
1:A:768:THR:HG21	1:A:775:ARG:HB2	1.82	0.60
1:C:543:ARG:NH2	4:R:1:NAG:O3	2.31	0.60
1:D:768:THR:HG21	1:D:775:ARG:HB2	1.82	0.60
1:A:591:ASN:HD21	1:A:601:VAL:HG23	1.67	0.60
1:B:768:THR:HG21	1:B:775:ARG:HB2	1.82	0.60
2:E:105:LEU:HB3	2:E:121:TYR:HB2	1.84	0.60
1:B:591:ASN:HD21	1:B:601:VAL:HG23	1.67	0.60
1:C:591:ASN:HD21	1:C:601:VAL:HG23	1.67	0.59
6:A:1009:POV:H37	1:B:608:LEU:HD23	1.84	0.59
1:D:591:ASN:HD21	1:D:601:VAL:HG23	1.67	0.59
2:E:98:PHE:O	2:E:101:ARG:NH1	2.33	0.59
2:E:61:ASN:HB3	2:E:64:ASP:HB2	1.86	0.58
1:D:810:LYS:NZ	1:D:811:GLU:OE2	2.36	0.58
1:C:663:ARG:NH1	1:C:813:SER:OG	2.37	0.57
6:C:1002:POV:H27A	6:C:1002:POV:H31B	1.86	0.57
1:D:441:GLU:HG3	1:D:445:LEU:HD11	1.87	0.57
1:C:441:GLU:HG3	1:C:445:LEU:HD11	1.87	0.57
1:C:664:MET:HE1	1:D:809:SER:HB2	1.86	0.56
1:A:546:ASN:HB3	3:H:1:NAG:HN2	1.71	0.56
6:A:1009:POV:H22A	6:A:1009:POV:H29	1.88	0.56
1:B:441:GLU:HG3	1:B:445:LEU:HD11	1.87	0.56
1:A:441:GLU:HG3	1:A:445:LEU:HD11	1.87	0.55
1:B:584:PHE:HA	1:C:867:MET:HG3	1.89	0.55
1:B:123:ASN:ND2	1:B:143:ASP:OD1	2.39	0.55
2:E:83:ARG:HD2	2:E:133:THR:HA	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1009:POV:H24A	1:B:841:GLU:HG3	1.90	0.54
1:C:438:ILE:HG21	1:C:488:TYR:HE1	1.73	0.54
1:B:431:ARG:NH1	1:B:511:ASP:OD2	2.41	0.54
1:B:438:ILE:HG21	1:B:488:TYR:HE1	1.73	0.54
2:E:227:GLN:OE1	2:E:284:ARG:NH2	2.41	0.54
1:A:123:ASN:ND2	1:A:143:ASP:OD1	2.39	0.53
2:E:53:ASN:O	2:E:55:GLY:N	2.40	0.53
2:E:188:VAL:HB	2:E:287:MET:HB2	1.91	0.53
1:D:123:ASN:ND2	1:D:143:ASP:OD1	2.39	0.53
1:D:436:THR:HG22	1:D:501:MET:HE3	1.91	0.53
1:D:438:ILE:HG21	1:D:488:TYR:HE1	1.73	0.53
1:B:505:LEU:HD21	1:B:513:ALA:HB2	1.91	0.53
1:C:123:ASN:ND2	1:C:143:ASP:OD1	2.39	0.53
1:B:436:THR:HG22	1:B:501:MET:HE3	1.91	0.52
1:C:540:ILE:HD11	1:C:671:ALA:HB2	1.91	0.52
1:D:505:LEU:HD21	1:D:513:ALA:HB2	1.91	0.52
2:E:79:ALA:HB3	2:E:82:GLN:HE22	1.75	0.52
1:B:540:ILE:HD11	1:B:671:ALA:HB2	1.91	0.52
1:A:438:ILE:HG21	1:A:488:TYR:HE1	1.73	0.52
1:B:564:TRP:HZ3	6:B:1001:POV:H21D	1.74	0.52
1:A:540:ILE:HD11	1:A:671:ALA:HB2	1.91	0.52
6:A:1002:POV:H39	1:D:639:ILE:HD11	1.89	0.52
1:B:261:LEU:HD13	1:B:278:GLY:HA3	1.92	0.52
1:C:505:LEU:HD21	1:C:513:ALA:HB2	1.91	0.52
1:D:261:LEU:HD13	1:D:278:GLY:HA3	1.92	0.52
2:E:225:ASP:OD2	2:E:284:ARG:NH1	2.43	0.52
1:C:565:MET:HE2	6:C:1001:POV:H23A	1.92	0.52
1:A:261:LEU:HD13	1:A:278:GLY:HA3	1.92	0.51
1:C:436:THR:HG22	1:C:501:MET:HE3	1.91	0.51
1:C:261:LEU:HD13	1:C:278:GLY:HA3	1.92	0.51
1:A:505:LEU:HD21	1:A:513:ALA:HB2	1.91	0.51
2:E:77:GLU:HG2	2:E:136:PHE:HA	1.91	0.51
1:D:540:ILE:HD11	1:D:671:ALA:HB2	1.91	0.51
1:A:436:THR:HG22	1:A:501:MET:HE3	1.91	0.51
1:A:634:ARG:O	1:A:638:GLY:N	2.44	0.51
1:B:586:PRO:HB2	1:C:845:LYS:HG2	1.92	0.51
1:C:69:THR:HB	4:P:1:NAG:H61	1.92	0.51
6:C:1001:POV:H310	6:C:1002:POV:H210	1.93	0.51
2:E:47:ILE:HB	2:E:56:HIS:HD2	1.76	0.50
2:E:59:SER:HB2	2:E:62:TYR:HB2	1.92	0.50
1:C:634:ARG:O	1:C:638:GLY:N	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:241:VAL:HG22	2:E:272:ILE:HG22	1.94	0.50
1:B:634:ARG:O	1:B:638:GLY:N	2.44	0.50
1:D:634:ARG:O	1:D:638:GLY:N	2.44	0.50
1:B:787:GLU:OE2	1:C:520:THR:OG1	2.25	0.50
6:A:1002:POV:H23	6:A:1002:POV:H32	1.93	0.49
2:E:106:GLU:OE1	2:E:140:LYS:NZ	2.43	0.49
2:E:221:LEU:HB2	2:E:263:VAL:HG22	1.94	0.49
1:C:426:ASP:O	1:C:429:SER:N	2.46	0.49
1:C:634:ARG:HD3	1:D:613:TRP:CG	2.47	0.49
1:A:867:MET:HE3	1:A:868:SER:HB2	1.95	0.49
1:B:554:SER:OG	1:B:819:ASN:O	2.30	0.49
1:C:261:LEU:HA	1:C:264:LEU:HD23	1.95	0.49
1:B:546:ASN:OD1	1:B:547:GLY:N	2.46	0.49
1:A:467:LEU:HD13	1:A:514:VAL:HG21	1.95	0.48
1:C:726:GLN:HG3	2:E:305:HIS:CE1	2.48	0.48
1:B:261:LEU:HA	1:B:264:LEU:HD23	1.95	0.48
1:B:467:LEU:HD13	1:B:514:VAL:HG21	1.95	0.48
1:C:850:ALA:HB1	1:C:854:LYS:HB2	1.95	0.48
6:D:1003:POV:H32	6:D:1003:POV:H35A	1.65	0.48
1:A:554:SER:OG	1:A:819:ASN:O	2.30	0.48
1:A:855:ARG:HB2	1:A:859:SER:HB3	1.95	0.48
1:D:261:LEU:HA	1:D:264:LEU:HD23	1.95	0.48
1:D:567:VAL:HG11	6:D:1001:POV:H215	1.95	0.48
6:D:1001:POV:H35A	6:D:1001:POV:H26A	1.95	0.48
6:D:1002:POV:H31E	6:D:1002:POV:H31B	1.65	0.48
1:C:467:LEU:HD13	1:C:514:VAL:HG21	1.95	0.47
1:D:256:PHE:HB2	1:D:261:LEU:HD12	1.97	0.47
2:E:197:GLU:HG2	2:E:199:THR:H	1.78	0.47
1:A:261:LEU:HA	1:A:264:LEU:HD23	1.95	0.47
6:D:1003:POV:H29	2:E:354:THR:HB	1.96	0.47
1:C:256:PHE:HB2	1:C:261:LEU:HD12	1.97	0.47
1:A:813:SER:OG	1:D:663:ARG:NH2	2.47	0.47
6:B:1001:POV:H29	6:B:1001:POV:H26A	1.65	0.47
1:C:554:SER:OG	1:C:819:ASN:O	2.30	0.47
2:E:82:GLN:HA	2:E:160:PRO:HD2	1.96	0.47
1:A:641:TRP:CD1	1:B:622:GLN:HG3	2.49	0.47
1:B:731:SER:OG	1:B:732:ASP:N	2.48	0.47
1:D:467:LEU:HD13	1:D:514:VAL:HG21	1.95	0.47
2:E:52:SER:O	2:E:156:TYR:OH	2.19	0.47
1:C:641:TRP:CD1	1:D:622:GLN:HG3	2.49	0.47
1:D:420:LYS:HD3	1:D:421:PRO:HD2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:109:ASP:O	2:E:115:SER:OG	2.28	0.47
1:A:616:VAL:HG21	6:A:1002:POV:H31H	1.97	0.46
1:C:551:GLY:O	1:C:553:PHE:N	2.48	0.46
1:A:731:SER:OG	1:A:732:ASP:N	2.48	0.46
6:A:1003:POV:H28	6:A:1003:POV:H21A	1.69	0.46
2:E:327:ASP:OD1	2:E:327:ASP:N	2.38	0.46
1:B:256:PHE:HB2	1:B:261:LEU:HD12	1.97	0.46
1:B:574:VAL:HG21	1:C:827:LEU:HD11	1.97	0.46
1:B:713:ARG:O	1:B:715:SER:N	2.40	0.46
1:D:731:SER:OG	1:D:732:ASP:N	2.48	0.46
1:A:256:PHE:HB2	1:A:261:LEU:HD12	1.97	0.46
6:A:1001:POV:H29	6:A:1001:POV:H34A	1.98	0.46
1:C:158:ARG:HD2	3:Q:4:MAN:H2	1.97	0.46
1:C:653:ALA:HA	1:D:656:ALA:HB2	1.97	0.46
6:D:1001:POV:H38	6:D:1001:POV:H31B	1.73	0.45
1:A:624:SER:OG	1:A:625:GLU:N	2.49	0.45
2:E:204:ALA:HA	2:E:277:ASP:HA	1.99	0.45
2:E:372:GLN:HE21	2:E:381:LYS:HG2	1.81	0.45
6:C:1001:POV:H21A	6:C:1001:POV:H28A	1.71	0.45
2:E:158:PHE:HB3	2:E:160:PRO:HD3	1.97	0.45
1:B:558:PRO:O	1:B:654:ASN:ND2	2.49	0.45
6:A:1004:POV:H32A	6:A:1004:POV:H35A	1.80	0.45
1:D:528:ASP:HB3	1:D:775:ARG:HD3	1.99	0.45
2:E:298:THR:O	2:E:301:THR:OG1	2.33	0.45
1:B:624:SER:OG	1:B:625:GLU:N	2.49	0.45
1:D:558:PRO:O	1:D:654:ASN:ND2	2.49	0.45
1:A:528:ASP:HB3	1:A:775:ARG:HD3	1.99	0.44
1:A:498:TRP:HB3	1:A:502:VAL:HG13	2.00	0.44
1:A:626:LEU:HA	1:A:626:LEU:HD13	1.83	0.44
1:C:624:SER:OG	1:C:625:GLU:N	2.49	0.44
2:E:90:GLU:OE1	2:E:91:ARG:NE	2.48	0.44
1:D:554:SER:OG	1:D:819:ASN:O	2.30	0.44
6:C:1001:POV:H26A	6:C:1002:POV:H21A	2.00	0.44
2:E:107:VAL:HB	2:E:137:MET:HE1	1.98	0.44
1:A:862:VAL:HA	1:A:865:LEU:HB2	2.00	0.44
1:B:267:GLU:HA	1:B:270:ARG:HE	1.83	0.44
6:B:1003:POV:H21G	6:B:1003:POV:H21D	1.67	0.44
1:C:723:GLU:HG3	2:E:305:HIS:HB3	1.99	0.44
1:D:713:ARG:O	1:D:715:SER:N	2.40	0.44
1:B:626:LEU:HD13	1:B:626:LEU:HA	1.84	0.44
6:A:1009:POV:H214	6:A:1009:POV:H211	1.59	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:C:1001:POV:H211	6:C:1001:POV:H21D	1.79	0.44
2:E:100:CYS:O	2:E:102:PHE:N	2.35	0.44
1:A:267:GLU:HA	1:A:270:ARG:HE	1.83	0.43
1:B:716:VAL:O	1:B:733:TYR:OH	2.34	0.43
1:C:261:LEU:HD23	1:C:399:LEU:HD21	2.00	0.43
1:C:267:GLU:HA	1:C:270:ARG:HE	1.83	0.43
1:D:267:GLU:HA	1:D:270:ARG:HE	1.83	0.43
2:E:89:ASP:OD1	2:E:155:LYS:NZ	2.51	0.43
2:E:110:GLY:HA2	2:E:136:PHE:HB2	2.00	0.43
1:B:528:ASP:HB3	1:B:775:ARG:HD3	1.99	0.43
1:B:535:THR:HG21	1:C:535:THR:HG21	2.00	0.43
2:E:352:GLY:HA2	2:E:355:SER:HB2	1.99	0.43
1:C:528:ASP:HB3	1:C:775:ARG:HD3	1.99	0.43
2:E:111:PRO:HA	2:E:138:TRP:HB2	2.00	0.43
2:E:162:PRO:HD2	2:E:171:LEU:HD22	2.00	0.43
1:A:561:PRO:HB3	6:A:1001:POV:H23A	1.99	0.43
1:A:641:TRP:CG	1:B:622:GLN:HG3	2.53	0.43
6:B:1001:POV:H36	6:B:1001:POV:H39A	1.78	0.43
1:C:731:SER:OG	1:C:732:ASP:N	2.48	0.43
1:D:498:TRP:HB3	1:D:502:VAL:HG13	2.00	0.43
6:A:1009:POV:H27	6:A:1009:POV:H24	1.78	0.43
1:B:846:SER:OG	1:B:863:GLU:OE1	2.33	0.43
1:C:713:ARG:O	1:C:715:SER:N	2.40	0.43
1:D:261:LEU:HD23	1:D:399:LEU:HD21	2.00	0.43
1:B:498:TRP:HB3	1:B:502:VAL:HG13	1.99	0.43
1:A:668:ILE:HD11	1:A:674:LEU:HG	1.99	0.43
1:D:626:LEU:HD13	1:D:626:LEU:HA	1.83	0.43
1:D:716:VAL:O	1:D:733:TYR:OH	2.34	0.43
6:D:1002:POV:H31G	6:D:1002:POV:H216	2.00	0.43
1:B:489:GLY:HA3	1:B:502:VAL:HG12	2.01	0.43
1:B:261:LEU:HD23	1:B:399:LEU:HD21	2.00	0.43
1:A:543:ARG:NH2	4:I:1:NAG:O7	2.50	0.42
1:A:824:PHE:HB3	6:A:1003:POV:H23A	2.01	0.42
2:E:50:ARG:HA	2:E:53:ASN:HA	2.00	0.42
2:E:381:LYS:HG3	2:E:382:THR:H	1.84	0.42
1:A:261:LEU:HD23	1:A:399:LEU:HD21	2.00	0.42
1:C:533:PHE:HB2	1:C:791:LEU:HD21	2.02	0.42
1:A:380:THR:HB	3:F:1:NAG:HN2	1.83	0.42
1:C:512:LEU:HD12	1:C:512:LEU:HA	1.84	0.42
1:B:521:TYR:CE1	1:C:780:ILE:HG23	2.54	0.42
1:C:498:TRP:HB3	1:C:502:VAL:HG13	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:324:TYR:HB3	2:E:326:TRP:CD1	2.54	0.42
2:E:349:THR:O	2:E:353:VAL:N	2.48	0.42
1:A:716:VAL:O	1:A:733:TYR:OH	2.34	0.42
1:B:596:ASN:HA	1:B:597:PRO:HD3	1.91	0.42
1:A:533:PHE:HB2	1:A:791:LEU:HD21	2.02	0.42
1:D:533:PHE:HB2	1:D:791:LEU:HD21	2.02	0.42
1:D:624:SER:OG	1:D:625:GLU:N	2.49	0.42
1:B:533:PHE:HB2	1:B:791:LEU:HD21	2.02	0.42
1:B:583:ARG:HH12	1:C:873:ARG:HB3	1.84	0.42
1:C:639:ILE:HG13	1:D:830:GLY:HA3	2.01	0.42
2:E:191:SER:O	2:E:195:GLN:N	2.50	0.42
6:A:1001:POV:H32	6:A:1001:POV:H35A	1.77	0.42
6:A:1009:POV:H211	6:A:1009:POV:H28	1.86	0.42
1:D:489:GLY:HA3	1:D:502:VAL:HG12	2.01	0.41
1:A:859:SER:HA	1:A:862:VAL:HG12	2.02	0.41
2:E:51:THR:C	2:E:53:ASN:H	2.28	0.41
1:A:631:LEU:HD13	1:B:609:LEU:HD11	2.02	0.41
1:A:713:ARG:O	1:A:715:SER:N	2.40	0.41
6:A:1003:POV:H11	6:A:1003:POV:H15A	1.85	0.41
6:D:1001:POV:H28	6:D:1001:POV:H37A	2.02	0.41
1:A:100:SER:O	1:A:344:SER:OG	2.31	0.41
6:D:1001:POV:H21A	6:D:1001:POV:H21D	1.91	0.41
2:E:344:THR:OG1	2:E:345:LYS:N	2.51	0.41
1:A:596:ASN:HA	1:A:597:PRO:HD3	1.91	0.41
1:A:815:LEU:HB2	1:D:559:LEU:HD23	2.01	0.41
1:B:428:LEU:HG	1:B:430:ASN:HB3	2.03	0.41
1:B:784:GLN:HB2	1:C:521:TYR:CE1	2.56	0.41
6:C:1002:POV:H11A	6:C:1002:POV:H13B	1.90	0.41
2:E:58:ALA:O	2:E:74:TYR:OH	2.39	0.41
1:C:245:MET:HE3	1:C:245:MET:HB3	1.88	0.41
2:E:176:ASP:OD1	2:E:176:ASP:N	2.54	0.41
1:A:489:GLY:HA3	1:A:502:VAL:HG12	2.01	0.41
6:A:1009:POV:H11	6:A:1009:POV:H15B	1.82	0.41
1:B:512:LEU:HD12	1:B:512:LEU:HA	1.84	0.41
1:C:489:GLY:HA3	1:C:502:VAL:HG12	2.01	0.41
1:C:607:THR:H	1:C:610:ASN:HB2	1.86	0.41
2:E:86:LEU:HD21	2:E:137:MET:HE2	2.02	0.41
2:E:262:ASP:N	2:E:262:ASP:OD1	2.54	0.41
1:A:558:PRO:O	1:A:654:ASN:ND2	2.49	0.41
1:C:429:SER:O	1:C:429:SER:OG	2.33	0.41
1:C:854:LYS:O	1:C:855:ARG:NE	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:607:THR:H	1:A:610:ASN:HB2	1.86	0.40
1:B:245:MET:HE3	1:B:245:MET:HB3	1.88	0.40
1:C:626:LEU:HD13	1:C:626:LEU:HA	1.83	0.40
1:D:420:LYS:HG3	1:D:422:ALA:H	1.86	0.40
6:D:1004:POV:H15A	6:D:1004:POV:H11	1.84	0.40
6:A:1001:POV:H27A	6:A:1001:POV:H24	1.99	0.40
1:D:596:ASN:HA	1:D:597:PRO:HD3	1.91	0.40
2:E:88:PHE:HB2	2:E:127:PRO:HG3	2.03	0.40
2:E:112:PHE:CE1	2:E:208:ILE:HG21	2.57	0.40
1:B:586:PRO:HG3	1:C:842:PHE:HA	2.04	0.40
1:C:692:THR:HA	1:C:695:LYS:HE2	2.04	0.40
1:D:834:SER:O	1:D:838:ALA:N	2.53	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	838/908 (92%)	740 (88%)	95 (11%)	3 (0%)	30	60
1	B	838/908 (92%)	752 (90%)	81 (10%)	5 (1%)	21	54
1	C	839/908 (92%)	746 (89%)	87 (10%)	6 (1%)	18	51
1	D	816/908 (90%)	728 (89%)	82 (10%)	6 (1%)	18	51
2	E	338/525 (64%)	232 (69%)	101 (30%)	5 (2%)	8	37
All	All	3669/4157 (88%)	3198 (87%)	446 (12%)	25 (1%)	20	51

All (25) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	714	GLN
1	B	714	GLN

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Mol	Chain	Res	Type
1	C	714	GLN
1	D	714	GLN
2	E	101	ARG
1	A	713	ARG
1	B	713	ARG
1	C	427	SER
1	C	713	ARG
2	E	246	SER
1	B	804	CYS
1	C	430	ASN
1	C	804	CYS
1	D	713	ARG
2	E	323	ALA
1	B	855	ARG
1	D	432	SER
1	D	667	PRO
2	E	346	THR
1	A	670	SER
1	B	807	GLU
1	D	668	ILE
1	D	804	CYS
1	C	552	VAL
2	E	54	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	731/794 (92%)	727 (100%)	4 (0%)	81	80
1	B	731/794 (92%)	728 (100%)	3 (0%)	84	81
1	C	732/794 (92%)	727 (99%)	5 (1%)	76	78
1	D	710/794 (89%)	707 (100%)	3 (0%)	84	81
2	E	300/465 (64%)	298 (99%)	2 (1%)	76	78
All	All	3204/3641 (88%)	3187 (100%)	17 (0%)	78	80

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	182	LEU
1	A	428	LEU
1	A	556	LEU
1	A	780	ILE
1	B	182	LEU
1	B	556	LEU
1	B	780	ILE
1	C	182	LEU
1	C	556	LEU
1	C	780	ILE
1	C	805	PRO
1	C	807	GLU
1	D	182	LEU
1	D	556	LEU
1	D	780	ILE
2	E	147	LEU
2	E	363	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (83) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	81	GLN
1	A	129	HIS
1	A	137	GLN
1	A	141	ASN
1	A	196	ASN
1	A	350	HIS
1	A	367	HIS
1	A	456	ASN
1	A	491	GLN
1	A	495	ASN
1	A	591	ASN
1	A	596	ASN
1	A	604	ASN
1	A	610	ASN
1	A	677	GLN
1	A	714	GLN
1	A	721	ASN
1	A	849	ASN
1	B	81	GLN
1	B	98	GLN

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Mol	Chain	Res	Type
1	B	129	HIS
1	B	137	GLN
1	B	141	ASN
1	B	196	ASN
1	B	350	HIS
1	B	367	HIS
1	B	423	ASN
1	B	456	ASN
1	B	491	GLN
1	B	495	ASN
1	B	591	ASN
1	B	596	ASN
1	B	605	ASN
1	B	677	GLN
1	B	714	GLN
1	B	721	ASN
1	B	749	ASN
1	B	849	ASN
1	B	851	GLN
1	C	81	GLN
1	C	129	HIS
1	C	137	GLN
1	C	141	ASN
1	C	196	ASN
1	C	350	HIS
1	C	456	ASN
1	C	491	GLN
1	C	495	ASN
1	C	591	ASN
1	C	596	ASN
1	C	605	ASN
1	C	610	ASN
1	C	622	GLN
1	C	677	GLN
1	C	714	GLN
1	C	721	ASN
1	C	849	ASN
1	C	851	GLN
1	D	81	GLN
1	D	129	HIS
1	D	137	GLN
1	D	141	ASN

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Mol	Chain	Res	Type
1	D	196	ASN
1	D	350	HIS
1	D	367	HIS
1	D	456	ASN
1	D	491	GLN
1	D	495	ASN
1	D	591	ASN
1	D	596	ASN
1	D	604	ASN
1	D	677	GLN
1	D	714	GLN
1	D	721	ASN
1	D	849	ASN
2	E	53	ASN
2	E	56	HIS
2	E	69	ASN
2	E	192	GLN
2	E	305	HIS
2	E	321	ASN
2	E	330	HIS
2	E	369	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

51 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
3	NAG	F	1	1,3	14,14,15	0.72	1 (7%)	17,19,21	1.14	1 (5%)
3	NAG	F	2	3	14,14,15	1.32	1 (7%)	17,19,21	1.57	1 (5%)
3	BMA	F	3	3	11,11,12	1.13	1 (9%)	15,15,17	1.13	3 (20%)
3	MAN	F	4	3	11,11,12	1.12	1 (9%)	15,15,17	1.40	1 (6%)
3	MAN	F	5	3	11,11,12	1.58	2 (18%)	15,15,17	1.80	5 (33%)
4	NAG	G	1	1,4	14,14,15	0.66	0	17,19,21	1.89	4 (23%)
4	NAG	G	2	4	14,14,15	0.48	0	17,19,21	0.44	0
3	NAG	H	1	1,3	14,14,15	0.61	0	17,19,21	0.96	1 (5%)
3	NAG	H	2	3	14,14,15	1.17	2 (14%)	17,19,21	1.66	1 (5%)
3	BMA	H	3	3	11,11,12	1.97	4 (36%)	15,15,17	1.46	3 (20%)
3	MAN	H	4	3	11,11,12	1.01	0	15,15,17	1.27	2 (13%)
3	MAN	H	5	3	11,11,12	0.99	0	15,15,17	1.39	3 (20%)
4	NAG	I	1	1,4	14,14,15	0.71	1 (7%)	17,19,21	0.66	0
4	NAG	I	2	4	14,14,15	0.52	0	17,19,21	0.70	0
4	NAG	J	1	1,4	14,14,15	0.50	0	17,19,21	0.55	0
4	NAG	J	2	4	14,14,15	0.66	0	17,19,21	0.62	0
4	NAG	K	1	1,4	14,14,15	1.99	2 (14%)	17,19,21	2.65	3 (17%)
4	NAG	K	2	4	14,14,15	0.82	1 (7%)	17,19,21	0.51	0
3	NAG	L	1	1,3	14,14,15	0.59	0	17,19,21	0.68	0
3	NAG	L	2	3	14,14,15	0.77	1 (7%)	17,19,21	2.36	3 (17%)
3	BMA	L	3	3	11,11,12	1.15	2 (18%)	15,15,17	1.65	2 (13%)
3	MAN	L	4	3	11,11,12	0.92	0	15,15,17	1.10	1 (6%)
3	MAN	L	5	3	11,11,12	0.99	0	15,15,17	0.98	2 (13%)
4	NAG	M	1	1,4	14,14,15	0.38	0	17,19,21	0.69	0
4	NAG	M	2	4	14,14,15	0.92	1 (7%)	17,19,21	0.60	0
5	NAG	N	1	1,5	14,14,15	0.70	1 (7%)	17,19,21	0.84	0
5	NAG	N	2	5	14,14,15	0.26	0	17,19,21	0.76	0
5	BMA	N	3	5	11,11,12	1.69	2 (18%)	15,15,17	1.46	3 (20%)
5	BMA	N	4	5	11,11,12	0.66	0	15,15,17	0.89	0
4	NAG	O	1	1,4	14,14,15	0.25	0	17,19,21	0.72	0
4	NAG	O	2	4	14,14,15	0.76	1 (7%)	17,19,21	0.65	0
4	NAG	P	1	1,4	14,14,15	1.83	2 (14%)	17,19,21	2.26	3 (17%)
4	NAG	P	2	4	14,14,15	0.49	0	17,19,21	0.75	1 (5%)
3	NAG	Q	1	1,3	14,14,15	0.40	0	17,19,21	0.89	0
3	NAG	Q	2	3	14,14,15	1.00	1 (7%)	17,19,21	1.56	1 (5%)
3	BMA	Q	3	3	11,11,12	1.17	1 (9%)	15,15,17	1.36	2 (13%)
3	MAN	Q	4	3	11,11,12	1.38	2 (18%)	15,15,17	1.73	5 (33%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	MAN	Q	5	3	11,11,12	0.94	1 (9%)	15,15,17	1.62	2 (13%)
4	NAG	R	1	1,4	14,14,15	0.55	0	17,19,21	0.81	1 (5%)
4	NAG	R	2	4	14,14,15	0.72	0	17,19,21	0.94	1 (5%)
4	NAG	S	1	1,4	14,14,15	1.59	1 (7%)	17,19,21	1.43	2 (11%)
4	NAG	S	2	4	14,14,15	0.41	0	17,19,21	0.49	0
3	NAG	T	1	1,3	14,14,15	1.60	1 (7%)	17,19,21	2.42	3 (17%)
3	NAG	T	2	3	14,14,15	1.43	1 (7%)	17,19,21	1.62	1 (5%)
3	BMA	T	3	3	11,11,12	0.75	0	15,15,17	1.11	1 (6%)
3	MAN	T	4	3	11,11,12	0.86	0	15,15,17	1.71	4 (26%)
3	MAN	T	5	3	11,11,12	0.72	0	15,15,17	1.05	2 (13%)
4	NAG	U	1	1,4	14,14,15	0.57	0	17,19,21	1.44	2 (11%)
4	NAG	U	2	4	14,14,15	1.02	1 (7%)	17,19,21	1.38	4 (23%)
4	NAG	V	1	1,4	14,14,15	0.25	0	17,19,21	0.61	0
4	NAG	V	2	4	14,14,15	0.36	0	17,19,21	0.56	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
3	NAG	F	1	1,3	-	4/6/23/26	0/1/1/1
3	NAG	F	2	3	-	2/6/23/26	0/1/1/1
3	BMA	F	3	3	-	2/2/19/22	0/1/1/1
3	MAN	F	4	3	-	2/2/19/22	1/1/1/1
3	MAN	F	5	3	-	2/2/19/22	0/1/1/1
4	NAG	G	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	G	2	4	-	0/6/23/26	0/1/1/1
3	NAG	H	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	H	2	3	-	4/6/23/26	0/1/1/1
3	BMA	H	3	3	-	1/2/19/22	1/1/1/1
3	MAN	H	4	3	-	1/2/19/22	1/1/1/1
3	MAN	H	5	3	-	0/2/19/22	0/1/1/1
4	NAG	I	1	1,4	-	4/6/23/26	0/1/1/1
4	NAG	I	2	4	-	4/6/23/26	0/1/1/1
4	NAG	J	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	J	2	4	-	4/6/23/26	0/1/1/1
4	NAG	K	1	1,4	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	K	2	4	-	2/6/23/26	0/1/1/1
3	NAG	L	1	1,3	-	4/6/23/26	0/1/1/1
3	NAG	L	2	3	-	6/6/23/26	0/1/1/1
3	BMA	L	3	3	-	2/2/19/22	0/1/1/1
3	MAN	L	4	3	-	2/2/19/22	0/1/1/1
3	MAN	L	5	3	-	2/2/19/22	0/1/1/1
4	NAG	M	1	1,4	-	4/6/23/26	0/1/1/1
4	NAG	M	2	4	-	2/6/23/26	0/1/1/1
5	NAG	N	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	N	2	5	-	2/6/23/26	0/1/1/1
5	BMA	N	3	5	-	0/2/19/22	0/1/1/1
5	BMA	N	4	5	-	2/2/19/22	0/1/1/1
4	NAG	O	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	O	2	4	-	2/6/23/26	0/1/1/1
4	NAG	P	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	P	2	4	-	1/6/23/26	0/1/1/1
3	NAG	Q	1	1,3	-	4/6/23/26	0/1/1/1
3	NAG	Q	2	3	-	4/6/23/26	0/1/1/1
3	BMA	Q	3	3	-	0/2/19/22	0/1/1/1
3	MAN	Q	4	3	-	0/2/19/22	0/1/1/1
3	MAN	Q	5	3	-	1/2/19/22	1/1/1/1
4	NAG	R	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	R	2	4	-	4/6/23/26	0/1/1/1
4	NAG	S	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	S	2	4	-	2/6/23/26	0/1/1/1
3	NAG	T	1	1,3	-	4/6/23/26	0/1/1/1
3	NAG	T	2	3	-	2/6/23/26	0/1/1/1
3	BMA	T	3	3	-	0/2/19/22	0/1/1/1
3	MAN	T	4	3	-	2/2/19/22	0/1/1/1
3	MAN	T	5	3	-	0/2/19/22	0/1/1/1
4	NAG	U	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	U	2	4	-	4/6/23/26	0/1/1/1
4	NAG	V	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	V	2	4	-	0/6/23/26	0/1/1/1

All (35) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	P	1	NAG	O5-C1	6.46	1.54	1.43
3	T	1	NAG	O5-C1	5.87	1.53	1.43
4	K	1	NAG	O5-C1	5.54	1.53	1.43
4	S	1	NAG	O5-C1	-5.53	1.34	1.43
3	T	2	NAG	O5-C1	4.94	1.52	1.43
4	K	1	NAG	C1-C2	4.76	1.58	1.52
3	F	2	NAG	O5-C1	4.72	1.51	1.43
3	H	3	BMA	C2-C3	3.87	1.58	1.52
5	N	3	BMA	C4-C3	3.71	1.62	1.52
3	F	5	MAN	C2-C3	3.69	1.58	1.52
3	Q	2	NAG	O5-C1	3.45	1.49	1.43
3	F	5	MAN	C1-C2	3.25	1.60	1.52
4	M	2	NAG	C1-C2	3.14	1.56	1.52
3	H	2	NAG	O5-C1	3.09	1.48	1.43
3	H	3	BMA	O5-C5	3.02	1.49	1.43
3	Q	4	MAN	C2-C3	2.93	1.57	1.52
4	U	2	NAG	C1-C2	2.89	1.56	1.52
3	H	2	NAG	C1-C2	2.88	1.56	1.52
5	N	3	BMA	C2-C3	2.80	1.56	1.52
3	Q	3	BMA	C4-C3	2.79	1.59	1.52
3	F	3	BMA	C4-C5	2.73	1.58	1.53
3	H	3	BMA	C4-C3	2.64	1.59	1.52
3	Q	4	MAN	C4-C3	2.62	1.59	1.52
3	Q	5	MAN	O5-C5	2.53	1.48	1.43
3	L	3	BMA	C4-C3	2.47	1.58	1.52
5	N	1	NAG	O5-C1	-2.44	1.39	1.43
4	K	2	NAG	C1-C2	2.42	1.55	1.52
4	I	1	NAG	O5-C1	-2.42	1.39	1.43
3	F	1	NAG	O5-C1	-2.35	1.39	1.43
3	L	3	BMA	C1-C2	2.32	1.57	1.52
3	F	4	MAN	O5-C5	2.30	1.47	1.43
3	L	2	NAG	C1-C2	2.21	1.55	1.52
4	O	2	NAG	O5-C1	2.14	1.47	1.43
3	H	3	BMA	O5-C1	2.10	1.47	1.43
4	P	1	NAG	C1-C2	2.04	1.55	1.52

All (74) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	K	1	NAG	C1-O5-C5	10.37	126.09	112.19
3	T	1	NAG	C1-O5-C5	8.66	123.79	112.19
3	L	2	NAG	C2-N2-C7	8.29	134.00	122.90
4	P	1	NAG	C1-O5-C5	7.99	122.89	112.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	T	2	NAG	C1-O5-C5	6.35	120.69	112.19
3	F	2	NAG	C1-O5-C5	6.25	120.56	112.19
3	H	2	NAG	C1-O5-C5	5.85	120.03	112.19
3	Q	2	NAG	C1-O5-C5	5.78	119.93	112.19
3	Q	5	MAN	C1-O5-C5	5.36	119.37	112.19
4	G	1	NAG	C1-O5-C5	5.28	119.27	112.19
3	L	3	BMA	C1-O5-C5	4.61	118.36	112.19
3	F	4	MAN	C1-O5-C5	4.40	118.08	112.19
4	U	1	NAG	C1-O5-C5	4.24	117.87	112.19
4	G	1	NAG	C3-C4-C5	4.13	117.73	110.23
3	F	5	MAN	C1-O5-C5	3.92	117.44	112.19
3	H	4	MAN	C1-O5-C5	3.85	117.35	112.19
3	L	2	NAG	C1-C2-N2	3.79	116.41	110.43
3	Q	4	MAN	C2-C3-C4	3.75	117.47	110.86
3	T	4	MAN	C1-O5-C5	3.63	117.05	112.19
3	H	3	BMA	C1-O5-C5	3.52	116.91	112.19
3	H	5	MAN	C1-O5-C5	3.43	116.78	112.19
4	U	1	NAG	O4-C4-C5	3.41	117.72	109.32
5	N	3	BMA	C2-C3-C4	3.37	116.78	110.86
4	S	1	NAG	C1-O5-C5	-3.37	107.68	112.19
3	T	1	NAG	C2-N2-C7	3.33	127.36	122.90
3	H	1	NAG	C1-O5-C5	3.33	116.64	112.19
4	U	2	NAG	C2-N2-C7	3.29	127.31	122.90
3	Q	4	MAN	C1-C2-C3	3.26	114.39	109.64
3	F	1	NAG	C2-N2-C7	3.14	127.11	122.90
4	U	2	NAG	C4-C3-C2	3.10	115.56	111.02
4	P	1	NAG	O4-C4-C5	3.00	116.71	109.32
3	T	4	MAN	C2-C3-C4	2.99	116.12	110.86
4	G	1	NAG	C4-C3-C2	2.98	115.38	111.02
3	F	5	MAN	C1-C2-C3	2.97	113.97	109.64
4	S	1	NAG	C4-C3-C2	2.92	115.29	111.02
4	R	2	NAG	C1-O5-C5	2.80	115.94	112.19
3	T	5	MAN	C1-O5-C5	2.77	115.90	112.19
3	F	5	MAN	C2-C3-C4	2.76	115.71	110.86
3	T	4	MAN	C1-C2-C3	2.75	113.64	109.64
4	P	1	NAG	C4-C3-C2	-2.60	107.20	111.02
3	T	4	MAN	O2-C2-C3	-2.60	104.76	110.15
3	Q	3	BMA	C1-C2-C3	2.56	113.38	109.64
3	Q	4	MAN	C1-O5-C5	2.50	115.54	112.19
3	T	3	BMA	O2-C2-C3	-2.48	105.02	110.15
3	Q	4	MAN	C3-C4-C5	2.45	114.67	110.23
4	P	2	NAG	C1-O5-C5	2.44	115.45	112.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	R	1	NAG	C1-O5-C5	2.35	115.34	112.19
3	F	3	BMA	C1-O5-C5	2.35	115.33	112.19
3	Q	3	BMA	O3-C3-C2	-2.35	105.27	110.05
3	T	1	NAG	C1-C2-N2	2.33	114.11	110.43
5	N	3	BMA	O3-C3-C4	2.33	115.86	110.38
3	L	3	BMA	C2-C3-C4	2.33	114.95	110.86
3	H	5	MAN	O2-C2-C3	-2.29	105.40	110.15
3	Q	5	MAN	O2-C2-C3	-2.28	105.42	110.15
3	T	5	MAN	O2-C2-C3	-2.26	105.47	110.15
3	F	3	BMA	C3-C4-C5	2.25	114.32	110.23
3	H	3	BMA	O2-C2-C1	2.25	114.38	109.22
3	H	3	BMA	O5-C5-C6	2.25	112.03	107.66
3	H	4	MAN	O2-C2-C3	-2.23	105.52	110.15
4	U	2	NAG	C1-C2-N2	2.23	113.95	110.43
5	N	3	BMA	C1-C2-C3	2.22	112.88	109.64
3	L	2	NAG	C8-C7-N2	2.20	119.76	116.12
3	F	5	MAN	O5-C5-C4	-2.17	105.55	110.83
3	F	5	MAN	O2-C2-C3	-2.15	105.70	110.15
3	L	5	MAN	O2-C2-C3	-2.15	105.70	110.15
3	L	5	MAN	C1-O5-C5	2.13	115.04	112.19
4	U	2	NAG	C3-C4-C5	2.12	114.08	110.23
4	K	1	NAG	C3-C4-C5	-2.12	106.40	110.23
3	H	5	MAN	C2-C3-C4	2.10	114.56	110.86
4	G	1	NAG	O5-C5-C4	2.07	115.86	110.83
3	F	3	BMA	O2-C2-C3	-2.05	105.91	110.15
3	L	4	MAN	O2-C2-C3	-2.02	105.97	110.15
3	Q	4	MAN	O2-C2-C3	-2.02	105.97	110.15
4	K	1	NAG	C4-C3-C2	2.01	113.97	111.02

There are no chirality outliers.

All (104) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	I	1	NAG	O5-C5-C6-O6
4	U	1	NAG	C4-C5-C6-O6
4	U	2	NAG	C4-C5-C6-O6
3	T	2	NAG	O5-C5-C6-O6
3	F	4	MAN	O5-C5-C6-O6
3	Q	2	NAG	C4-C5-C6-O6
4	K	1	NAG	C4-C5-C6-O6
3	F	1	NAG	O5-C5-C6-O6
3	F	2	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
3	F	3	BMA	O5-C5-C6-O6
3	T	1	NAG	O5-C5-C6-O6
4	R	2	NAG	O5-C5-C6-O6
4	M	2	NAG	C4-C5-C6-O6
3	L	1	NAG	O5-C5-C6-O6
4	R	1	NAG	O5-C5-C6-O6
4	U	2	NAG	O5-C5-C6-O6
5	N	1	NAG	O5-C5-C6-O6
3	L	1	NAG	C4-C5-C6-O6
5	N	1	NAG	C4-C5-C6-O6
4	I	1	NAG	C4-C5-C6-O6
4	U	1	NAG	O5-C5-C6-O6
3	F	4	MAN	C4-C5-C6-O6
4	J	2	NAG	O5-C5-C6-O6
4	K	2	NAG	O5-C5-C6-O6
3	Q	1	NAG	C4-C5-C6-O6
3	L	3	BMA	O5-C5-C6-O6
3	Q	2	NAG	O5-C5-C6-O6
4	P	1	NAG	O5-C5-C6-O6
3	T	2	NAG	C4-C5-C6-O6
4	M	2	NAG	O5-C5-C6-O6
4	S	1	NAG	O5-C5-C6-O6
3	L	4	MAN	O5-C5-C6-O6
5	N	4	BMA	C4-C5-C6-O6
4	G	1	NAG	O5-C5-C6-O6
3	F	3	BMA	C4-C5-C6-O6
3	L	3	BMA	C4-C5-C6-O6
3	L	4	MAN	C4-C5-C6-O6
3	T	1	NAG	C4-C5-C6-O6
4	S	1	NAG	C4-C5-C6-O6
4	P	1	NAG	C4-C5-C6-O6
4	R	2	NAG	C4-C5-C6-O6
3	F	1	NAG	C4-C5-C6-O6
4	K	2	NAG	C4-C5-C6-O6
4	K	1	NAG	O5-C5-C6-O6
4	M	1	NAG	O5-C5-C6-O6
3	H	2	NAG	C8-C7-N2-C2
3	H	2	NAG	O7-C7-N2-C2
3	L	1	NAG	C8-C7-N2-C2
3	L	1	NAG	O7-C7-N2-C2
3	L	2	NAG	C8-C7-N2-C2
3	L	2	NAG	O7-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
3	Q	1	NAG	C8-C7-N2-C2
3	Q	1	NAG	O7-C7-N2-C2
3	Q	2	NAG	C8-C7-N2-C2
3	Q	2	NAG	O7-C7-N2-C2
4	I	1	NAG	C8-C7-N2-C2
4	I	1	NAG	O7-C7-N2-C2
4	I	2	NAG	C8-C7-N2-C2
4	I	2	NAG	O7-C7-N2-C2
4	J	2	NAG	C8-C7-N2-C2
4	J	2	NAG	O7-C7-N2-C2
4	M	1	NAG	C8-C7-N2-C2
4	M	1	NAG	O7-C7-N2-C2
4	O	1	NAG	C8-C7-N2-C2
4	O	1	NAG	O7-C7-N2-C2
4	O	2	NAG	C8-C7-N2-C2
4	O	2	NAG	O7-C7-N2-C2
4	R	2	NAG	C8-C7-N2-C2
4	R	2	NAG	O7-C7-N2-C2
5	N	2	NAG	C8-C7-N2-C2
5	N	2	NAG	O7-C7-N2-C2
3	L	5	MAN	O5-C5-C6-O6
4	J	2	NAG	C4-C5-C6-O6
3	L	2	NAG	O5-C5-C6-O6
3	L	5	MAN	C4-C5-C6-O6
4	R	1	NAG	C4-C5-C6-O6
4	G	1	NAG	C4-C5-C6-O6
4	S	2	NAG	O5-C5-C6-O6
3	F	2	NAG	C4-C5-C6-O6
3	H	2	NAG	C4-C5-C6-O6
3	Q	1	NAG	O5-C5-C6-O6
5	N	4	BMA	O5-C5-C6-O6
3	H	2	NAG	O5-C5-C6-O6
4	M	1	NAG	C4-C5-C6-O6
4	P	2	NAG	O5-C5-C6-O6
3	F	5	MAN	O5-C5-C6-O6
3	T	4	MAN	C4-C5-C6-O6
4	I	2	NAG	O5-C5-C6-O6
3	F	5	MAN	C4-C5-C6-O6
3	H	3	BMA	O5-C5-C6-O6
3	Q	5	MAN	O5-C5-C6-O6
4	S	2	NAG	C4-C5-C6-O6
3	F	1	NAG	C3-C2-N2-C7

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Mol	Chain	Res	Type	Atoms
3	L	2	NAG	C3-C2-N2-C7
3	T	1	NAG	C3-C2-N2-C7
3	L	2	NAG	C4-C5-C6-O6
3	H	4	MAN	O5-C5-C6-O6
3	F	1	NAG	C1-C2-N2-C7
3	L	2	NAG	C1-C2-N2-C7
3	T	1	NAG	C1-C2-N2-C7
4	U	2	NAG	C1-C2-N2-C7
4	U	2	NAG	C3-C2-N2-C7
4	I	2	NAG	C4-C5-C6-O6
3	T	4	MAN	O5-C5-C6-O6

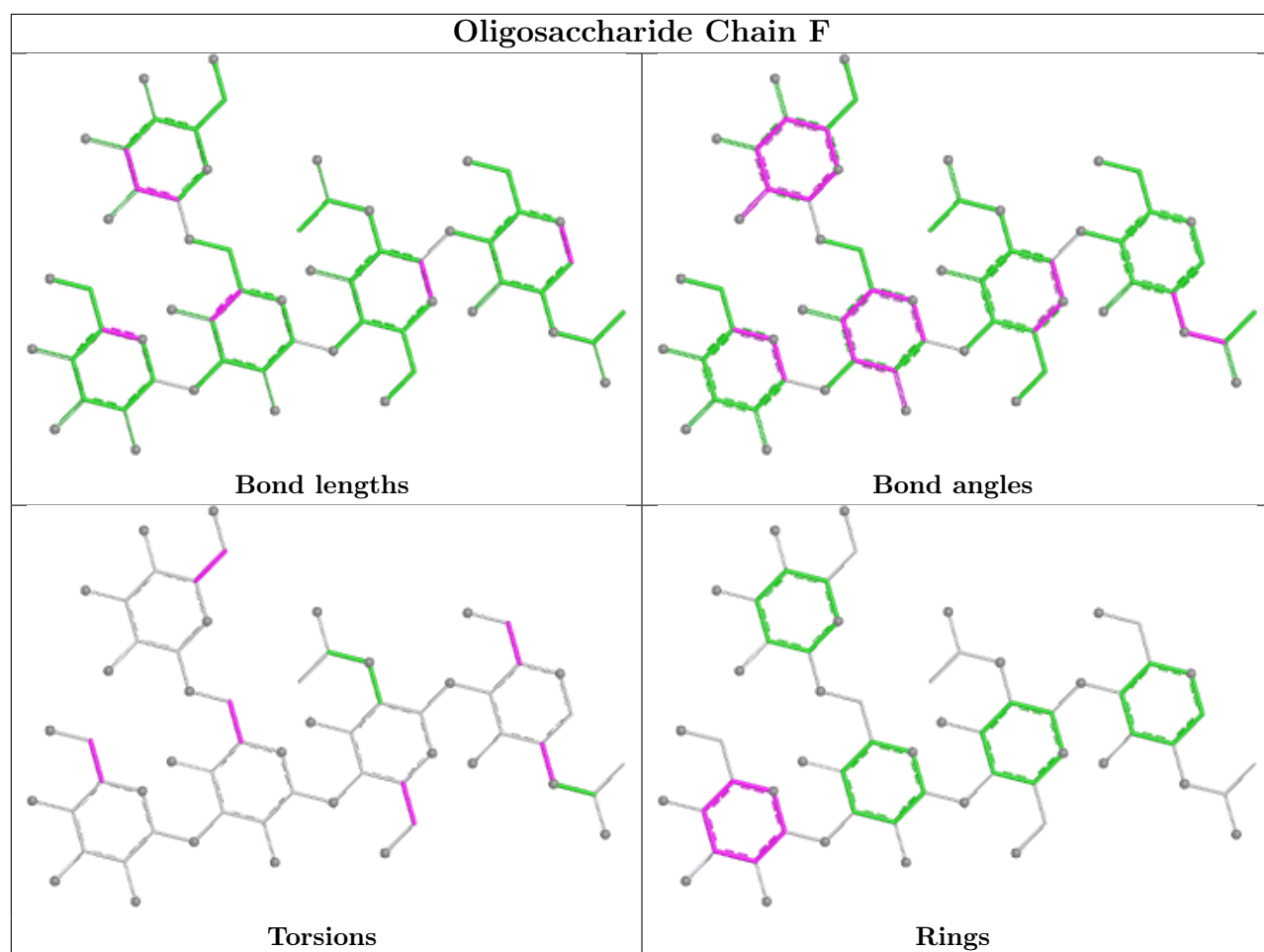
All (4) ring outliers are listed below:

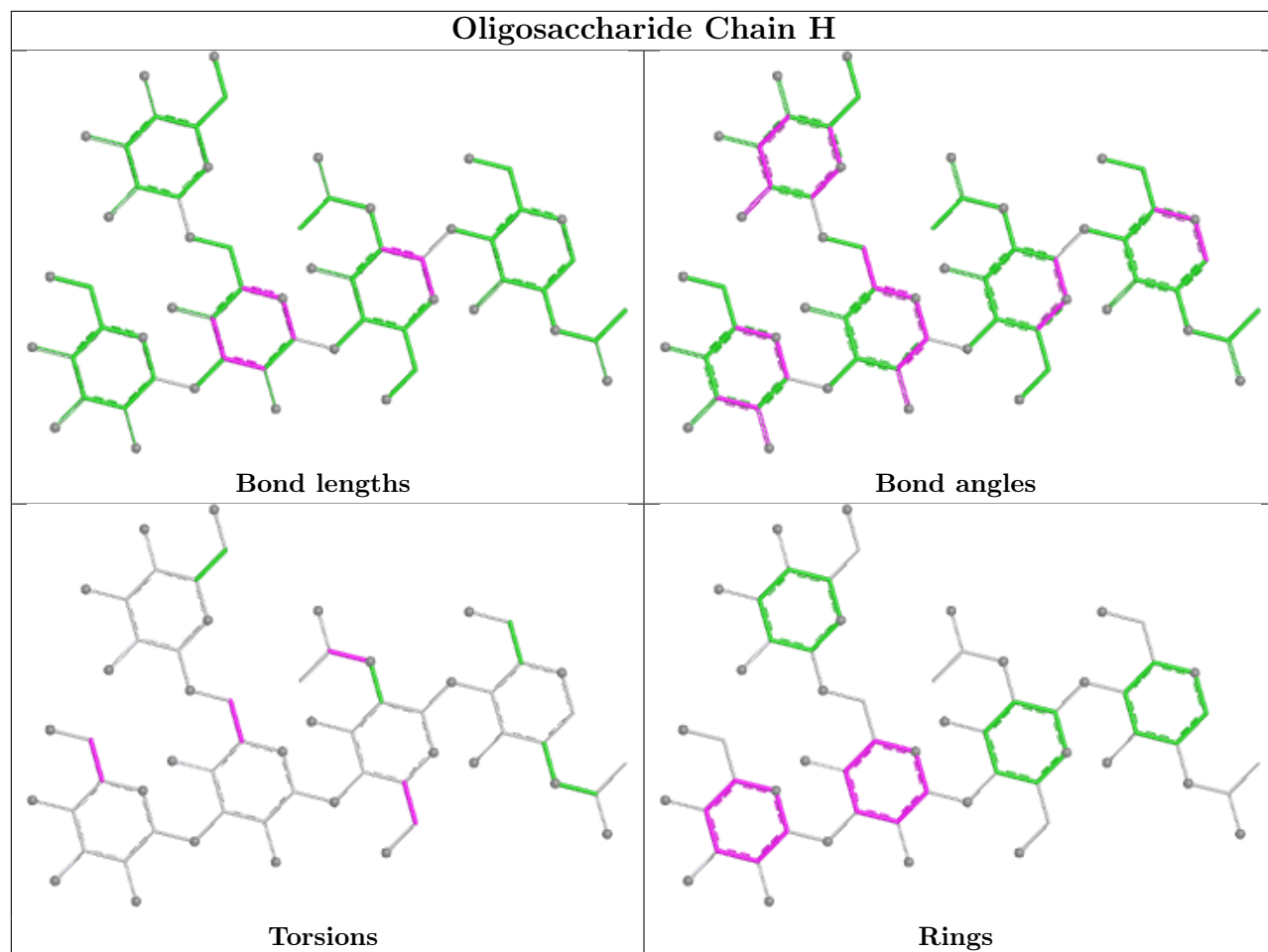
Mol	Chain	Res	Type	Atoms
3	Q	5	MAN	C1-C2-C3-C4-C5-O5
3	H	4	MAN	C1-C2-C3-C4-C5-O5
3	H	3	BMA	C1-C2-C3-C4-C5-O5
3	F	4	MAN	C1-C2-C3-C4-C5-O5

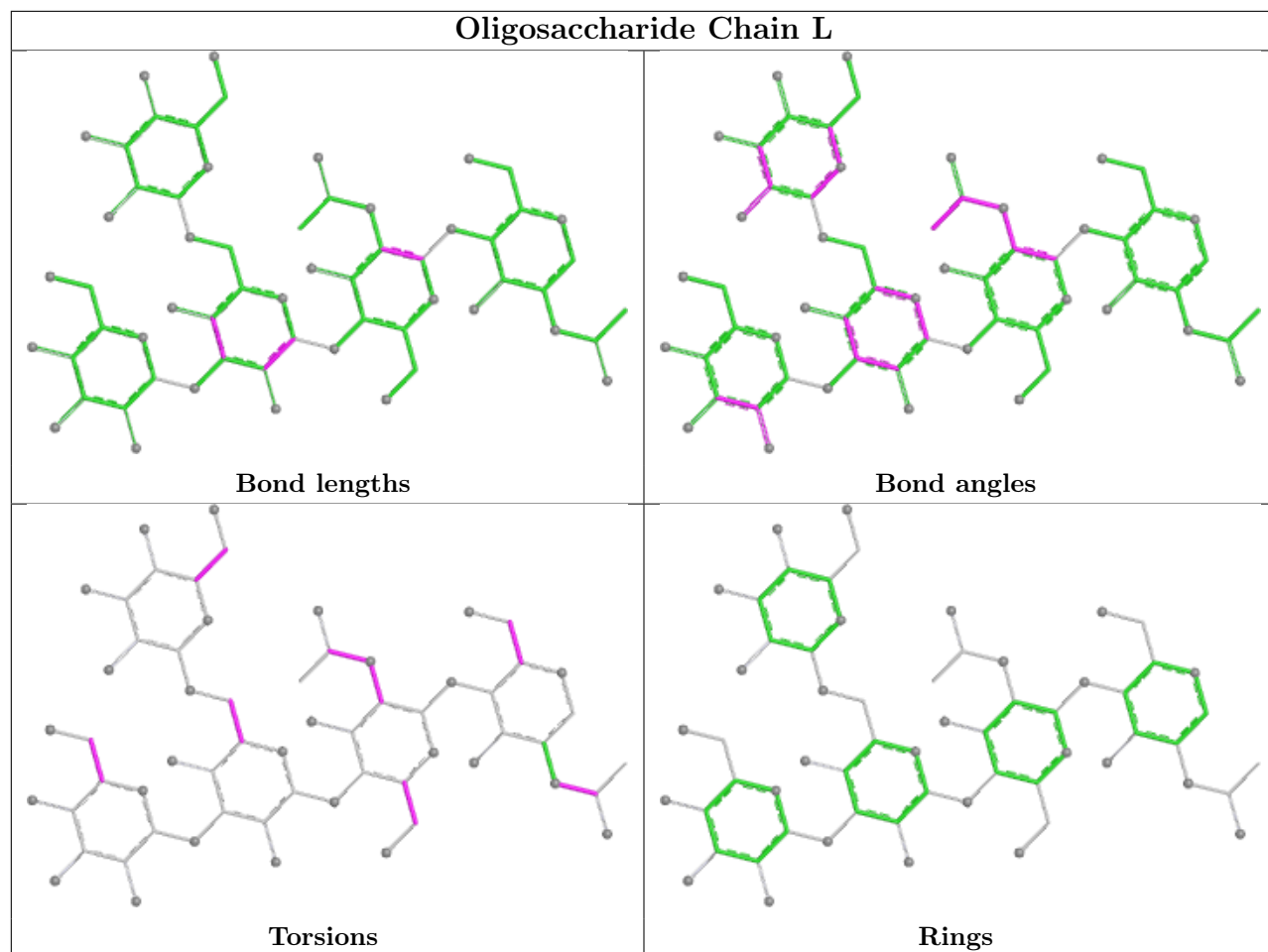
6 monomers are involved in 6 short contacts:

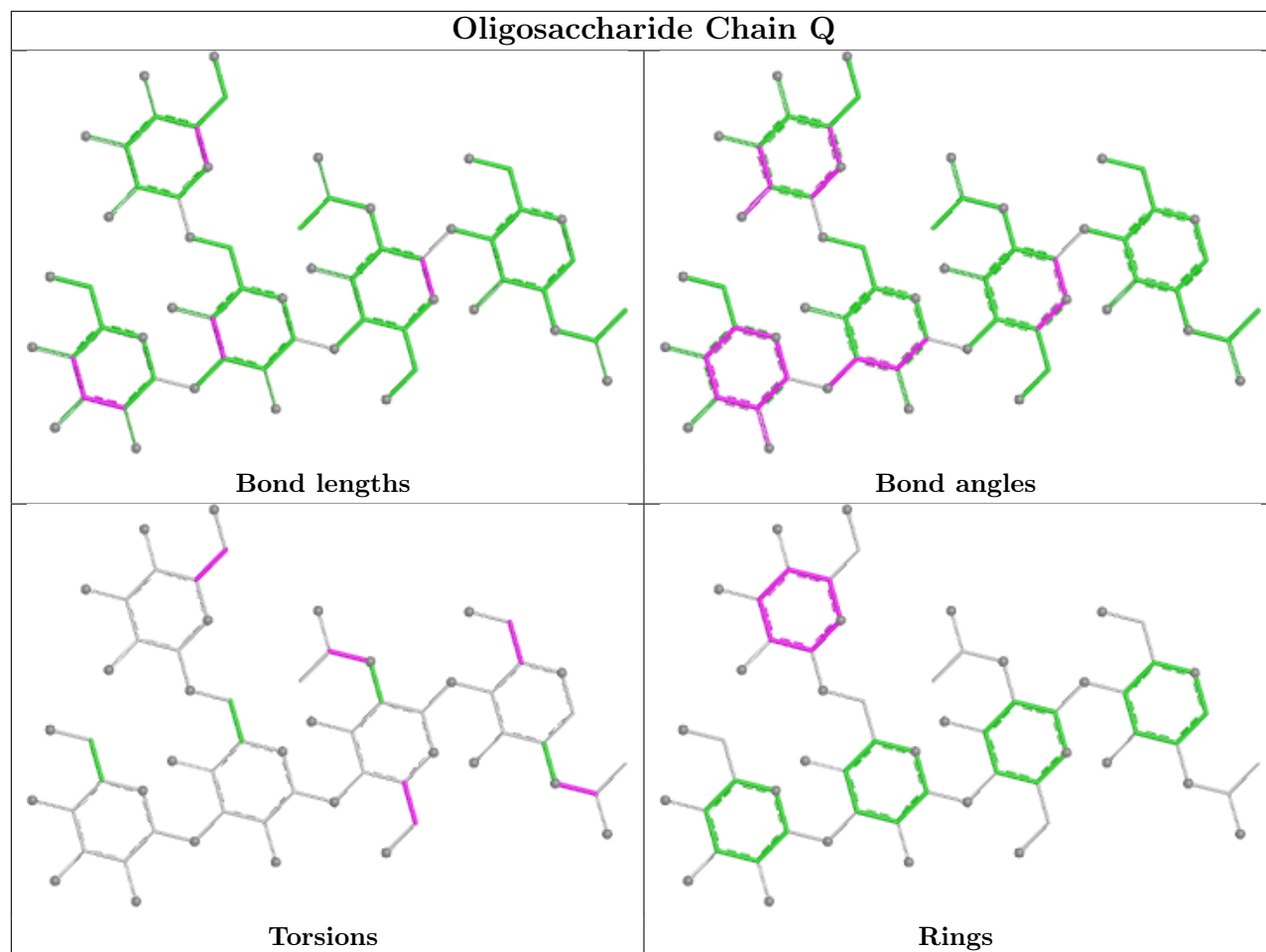
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	H	1	NAG	1	0
4	P	1	NAG	1	0
4	I	1	NAG	1	0
4	R	1	NAG	1	0
3	F	1	NAG	1	0
3	Q	4	MAN	1	0

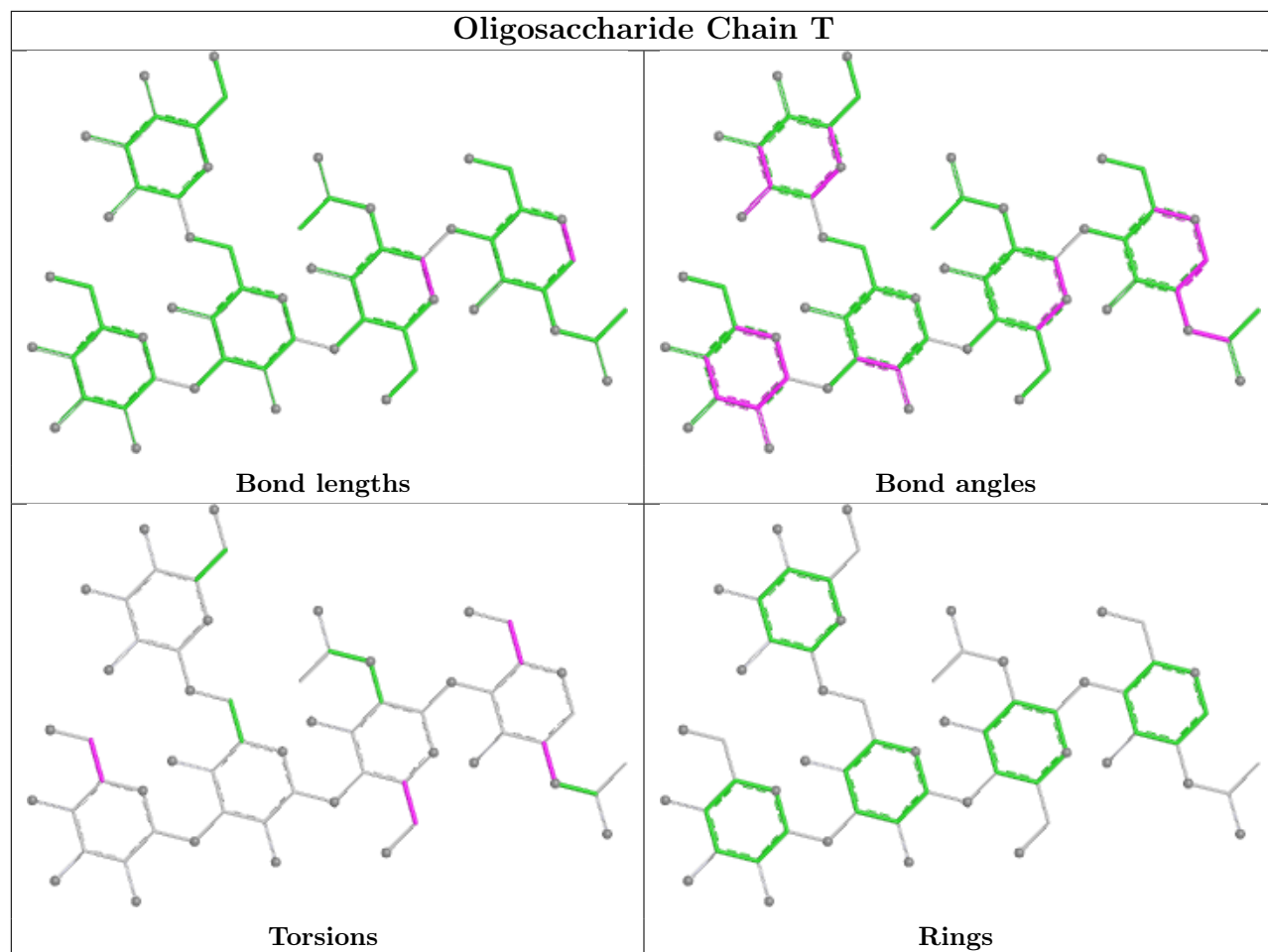
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

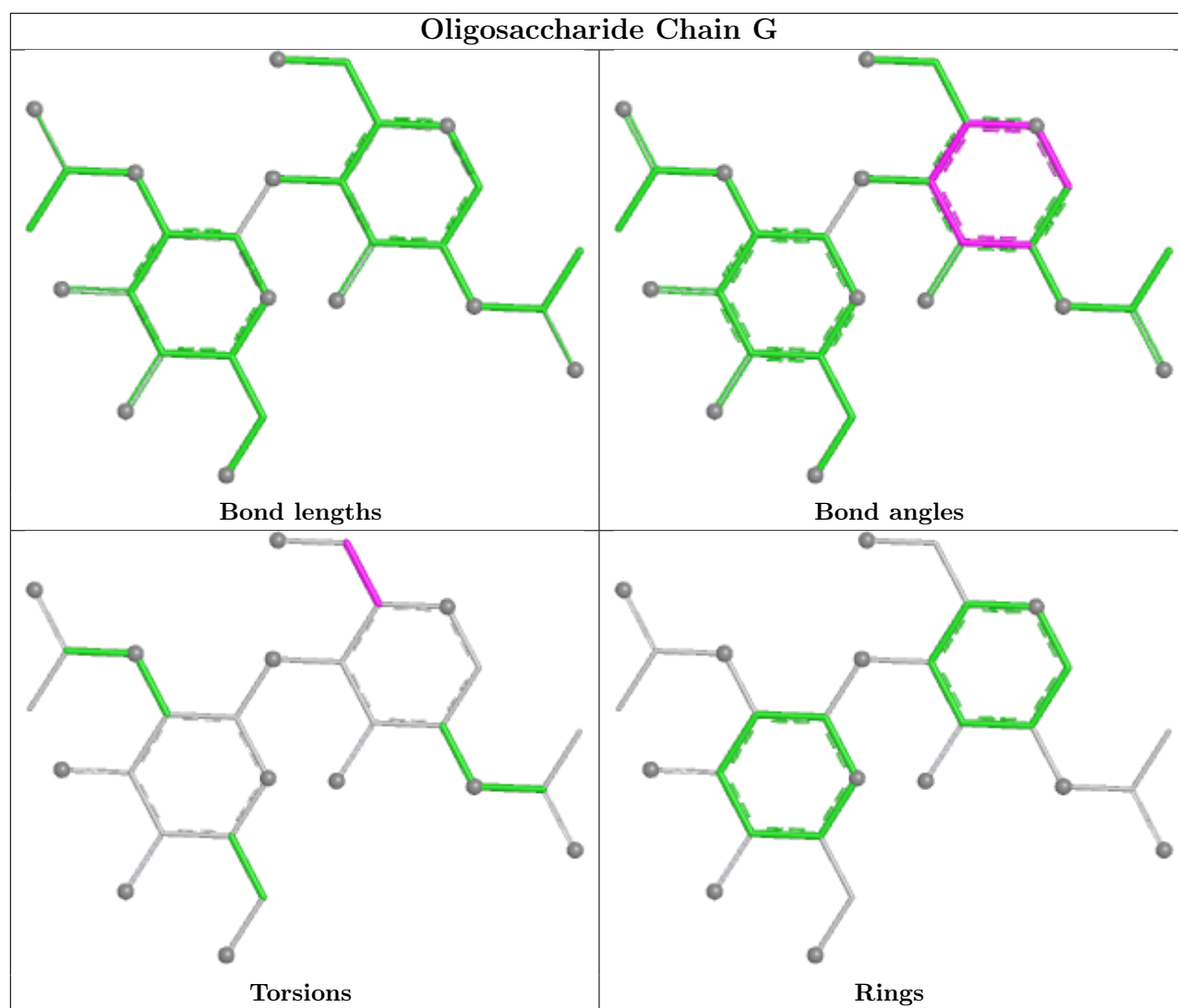


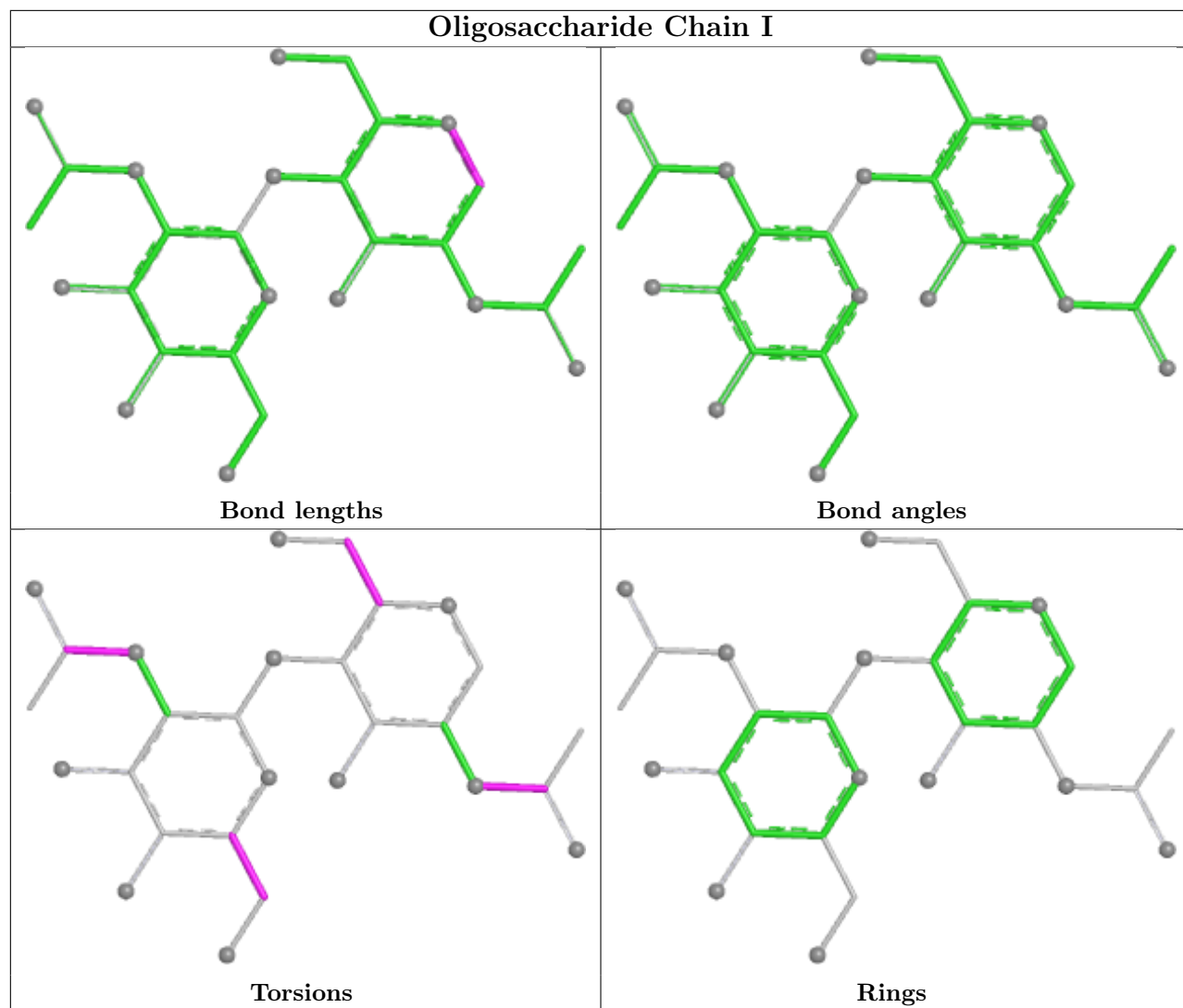


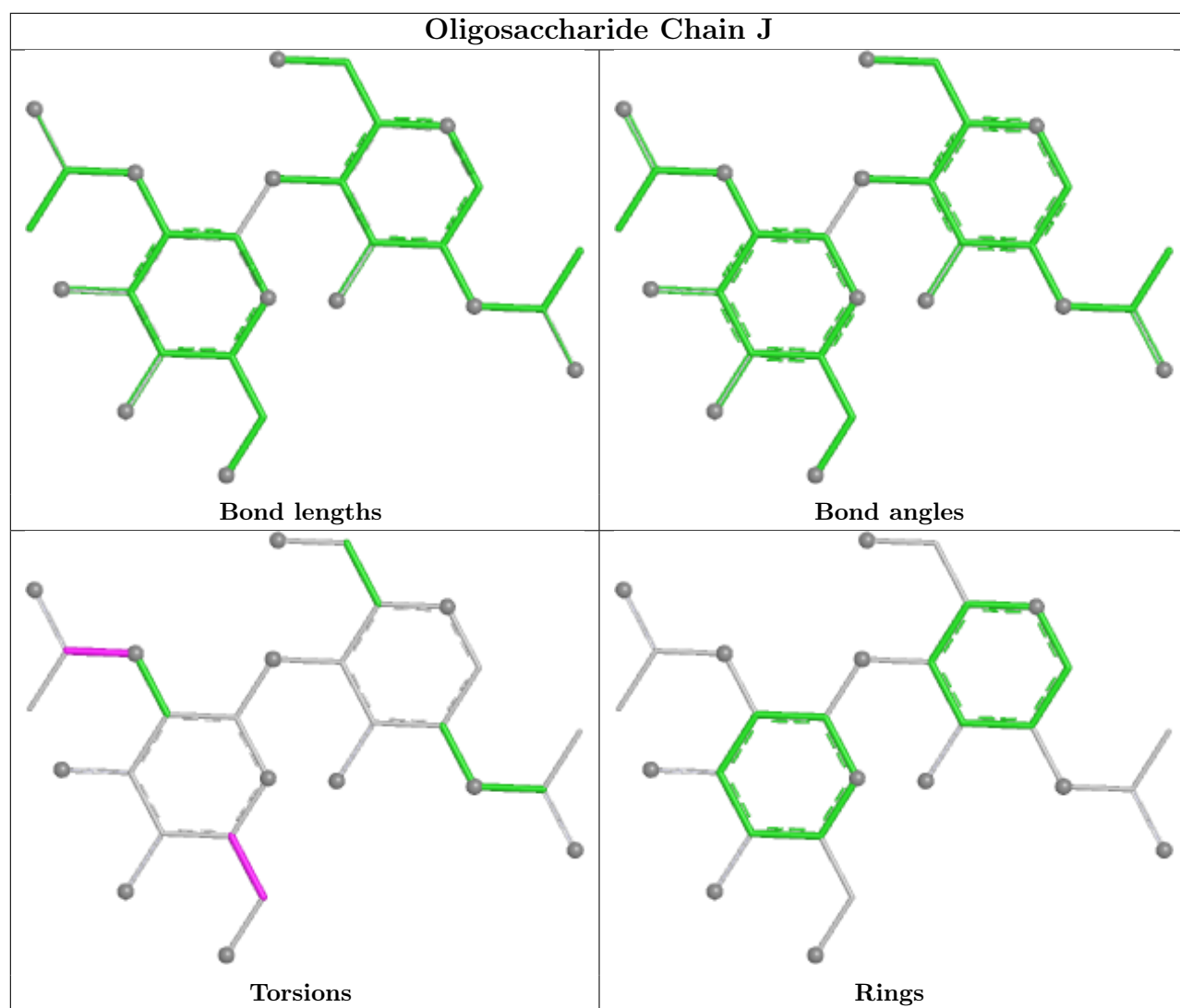


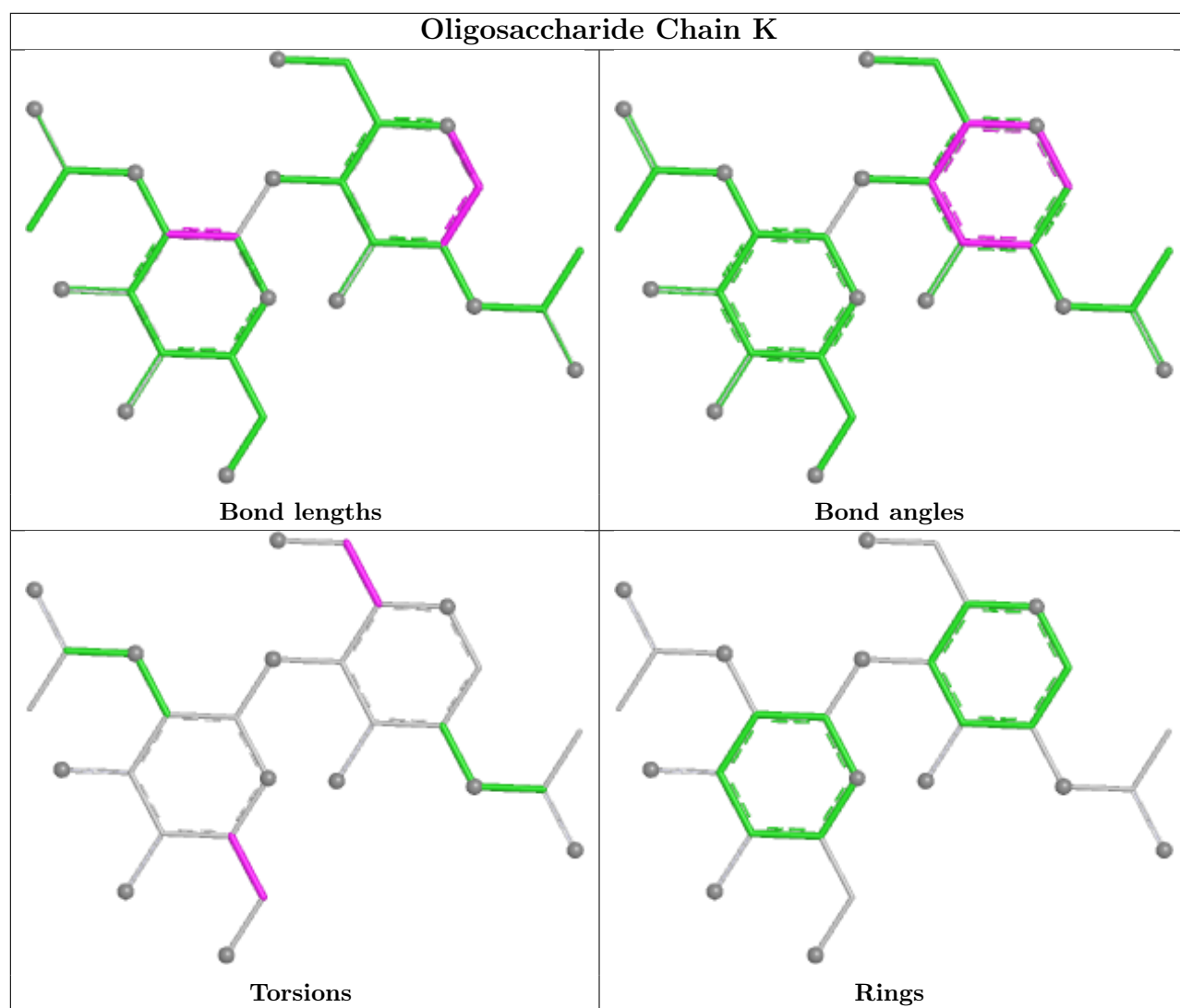


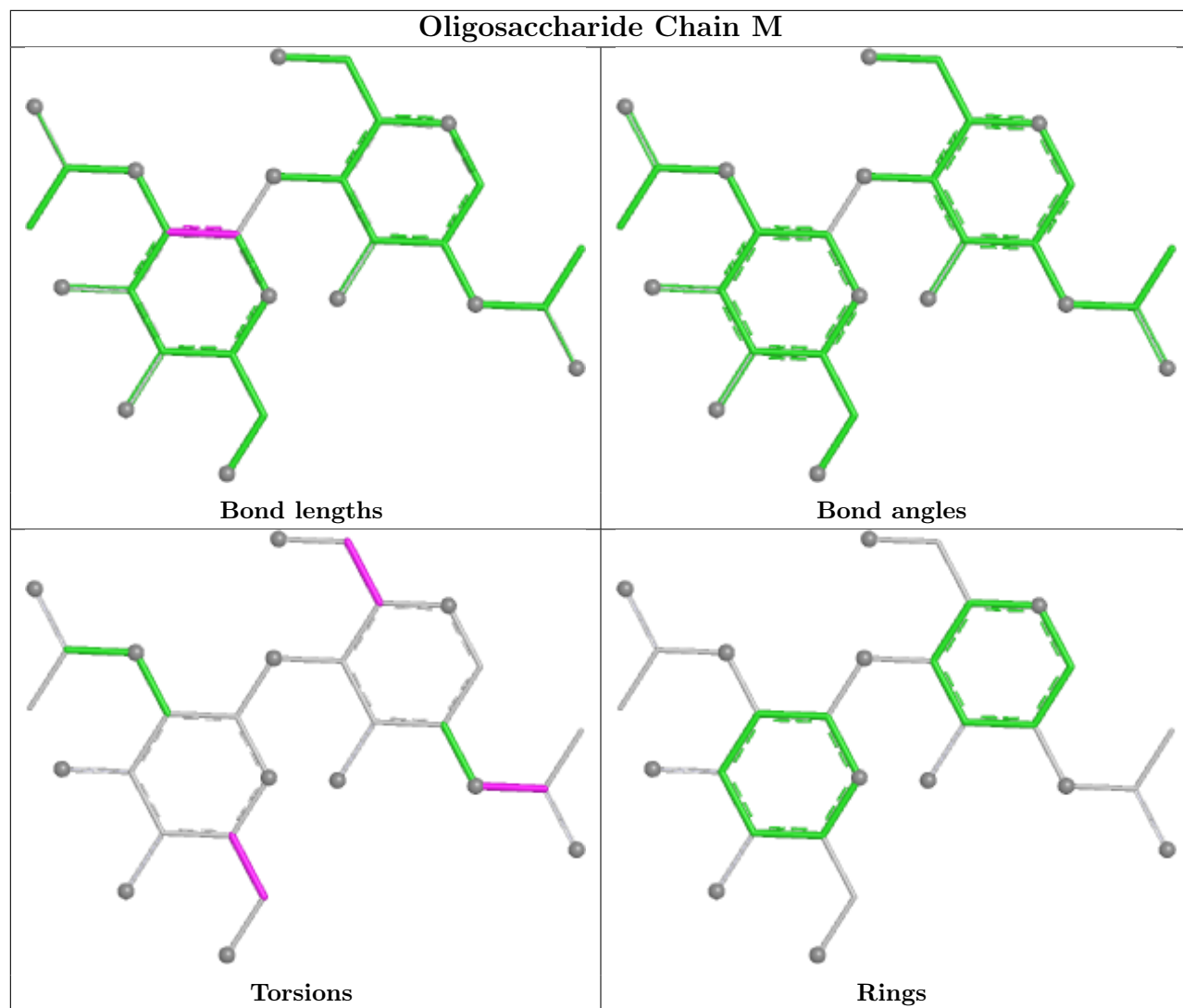


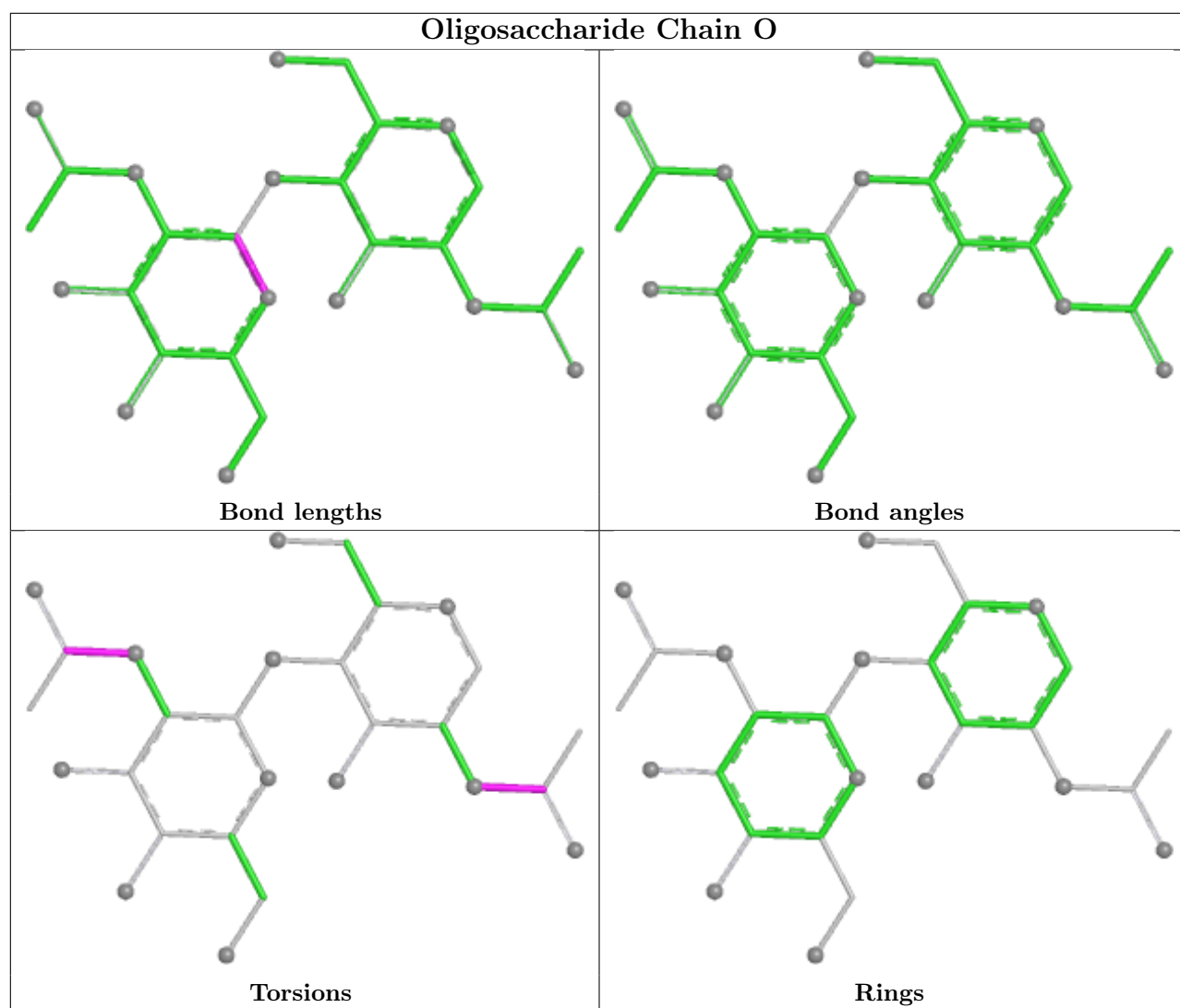


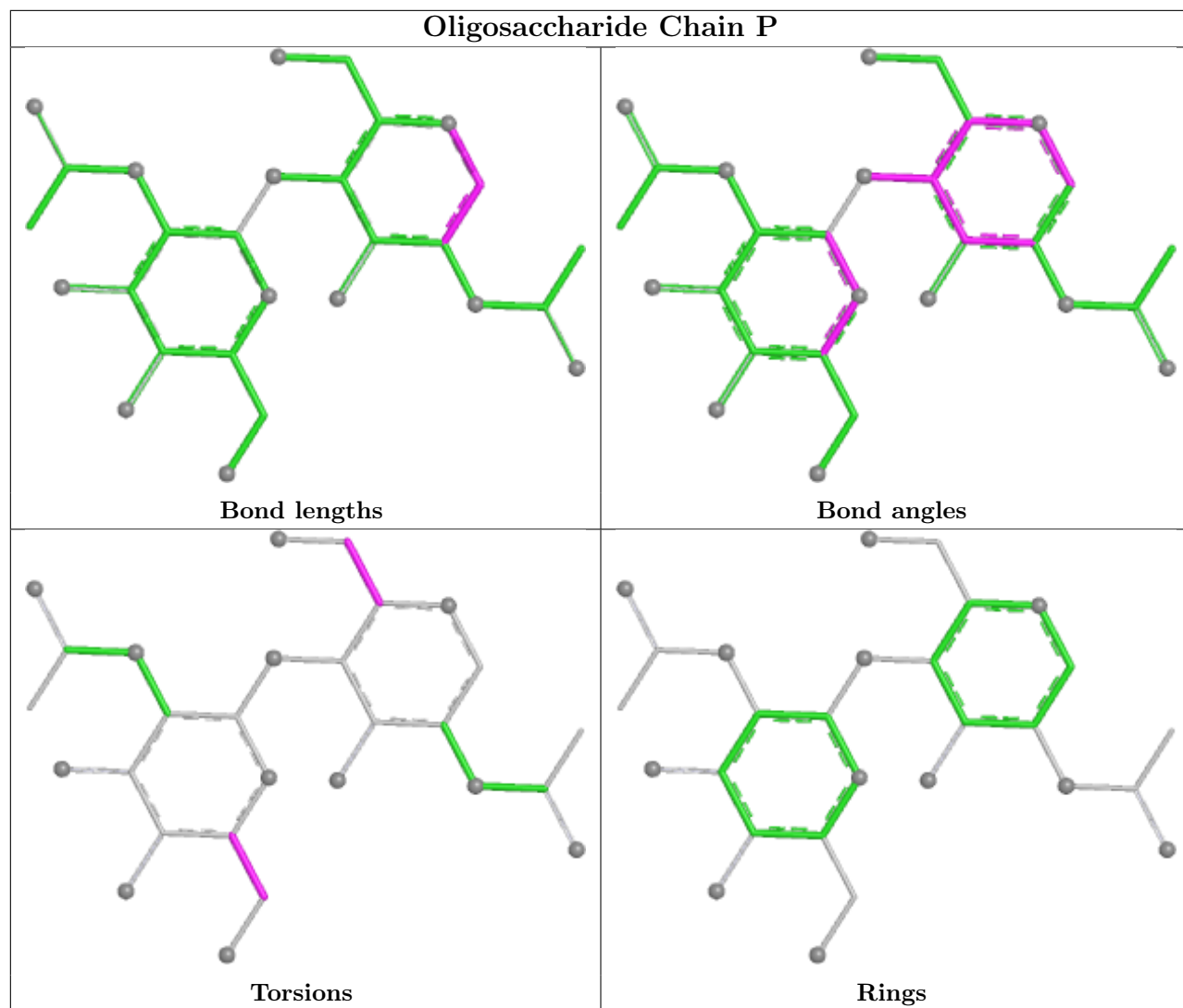


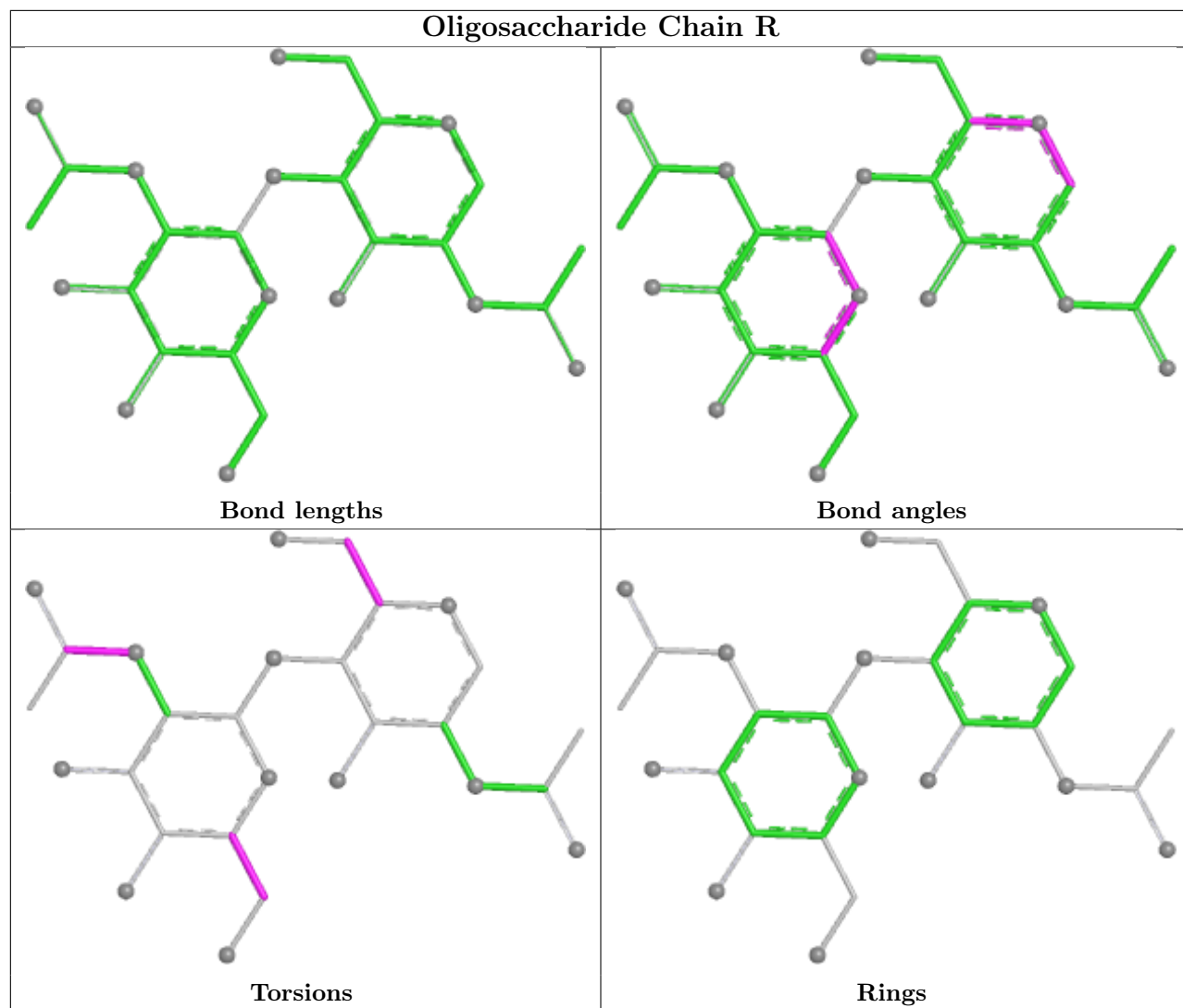


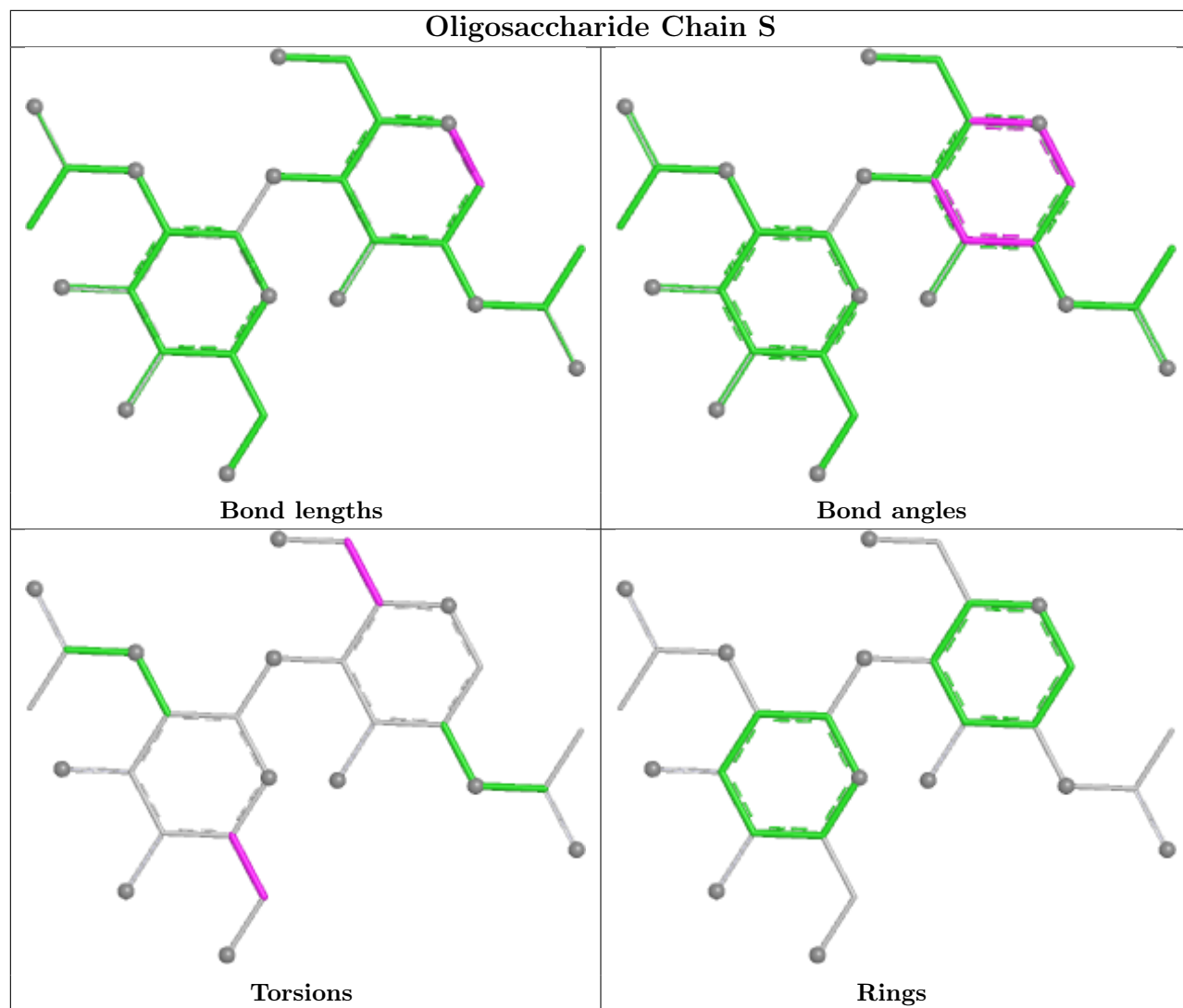


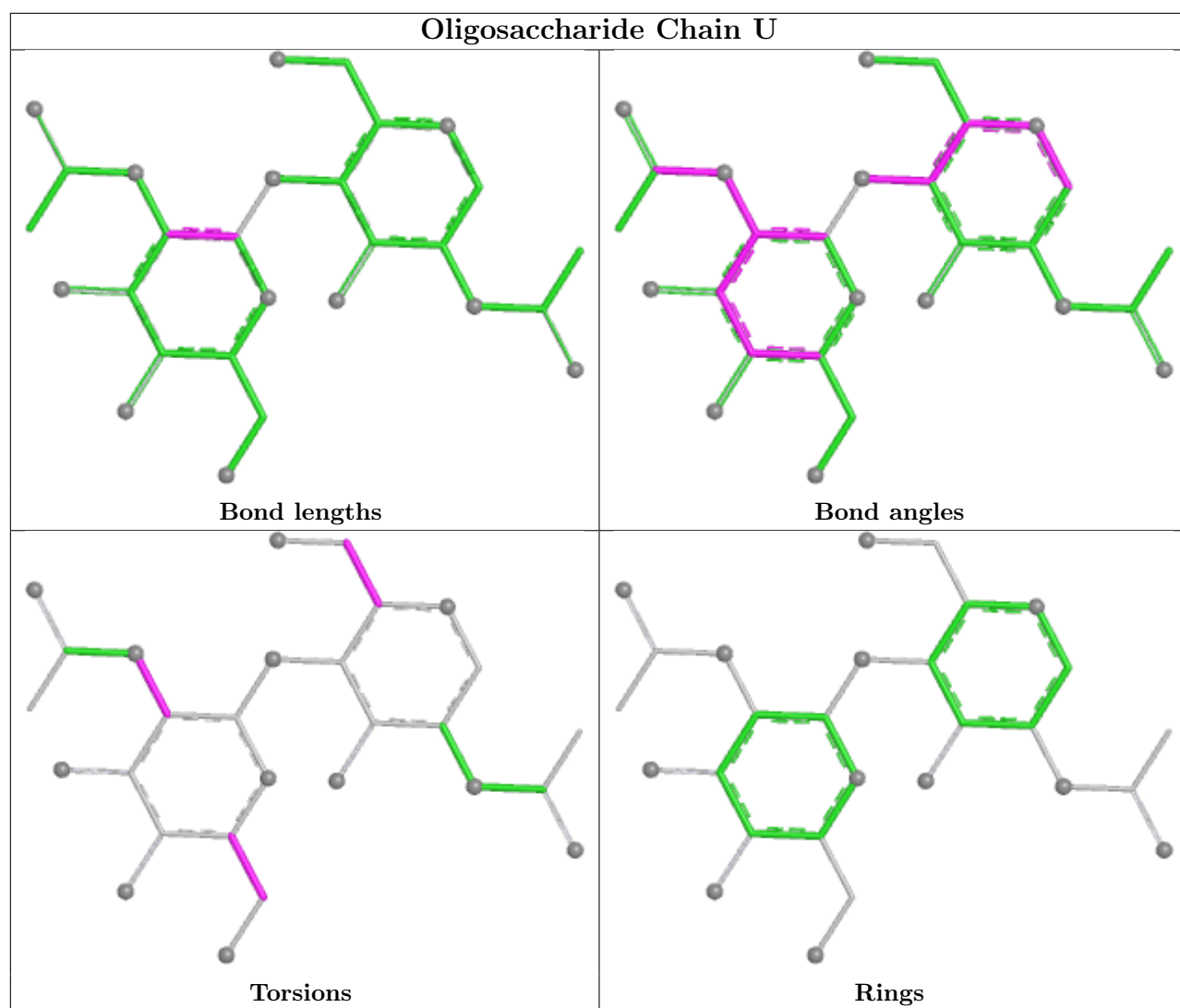


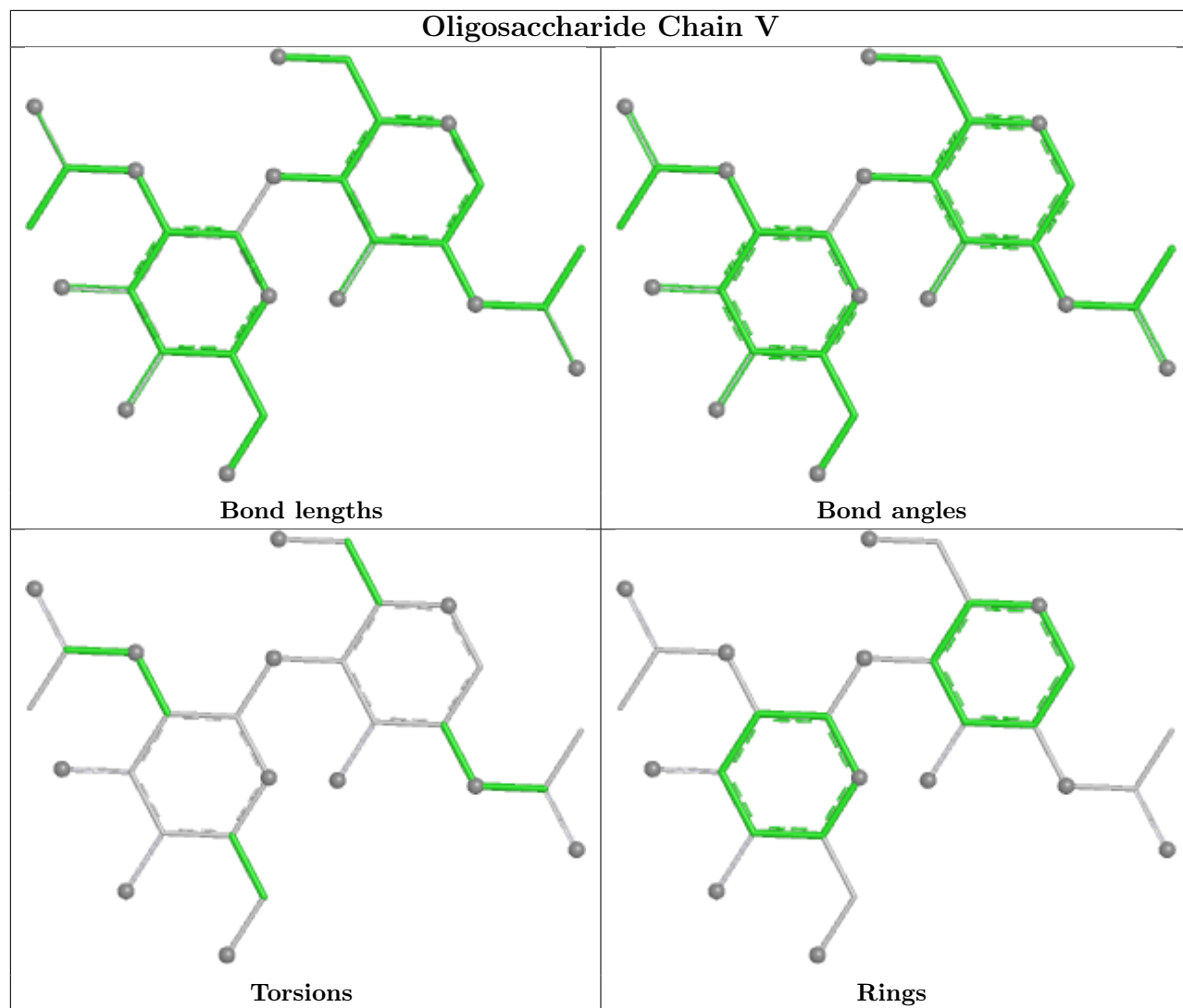


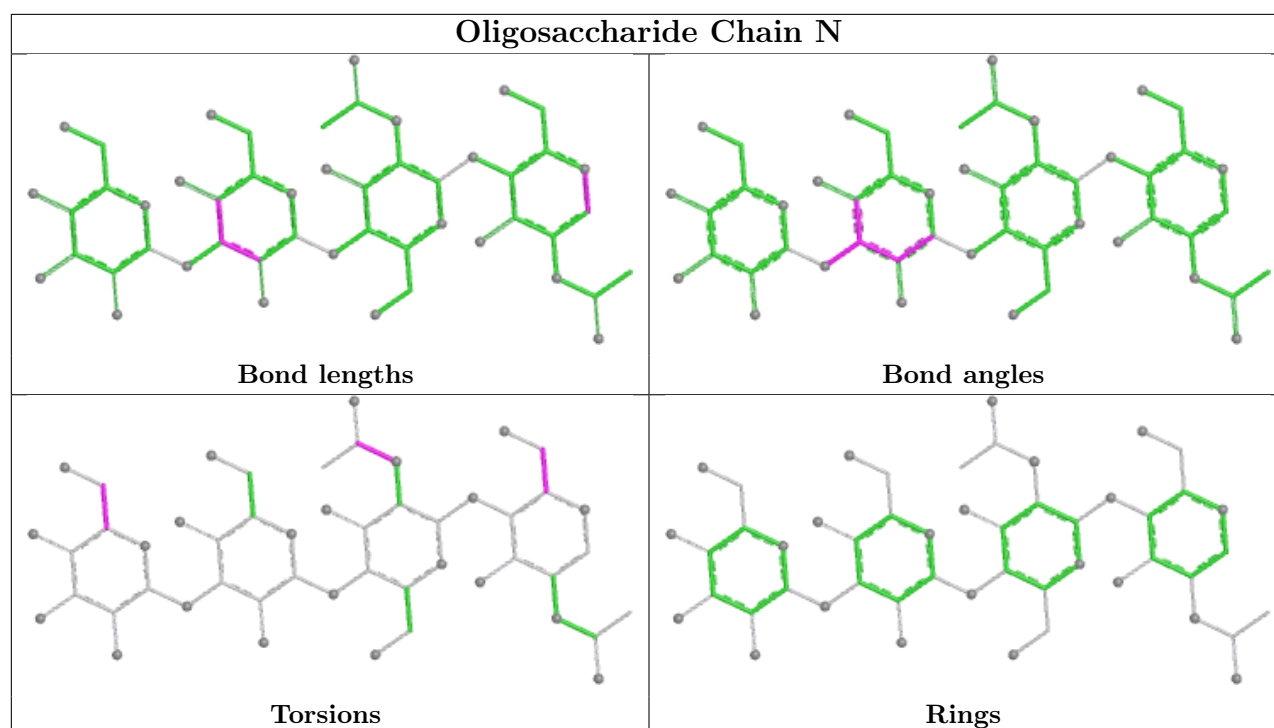












5.6 Ligand geometry [i](#)

29 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	$\# Z > 2$
7	NAG	A	1006	1	14,14,15	0.48	0	17,19,21	0.45	0
7	NAG	A	1007	1	14,14,15	1.09	1 (7%)	17,19,21	1.90	3 (17%)
7	NAG	C	1004	1	14,14,15	1.23	1 (7%)	17,19,21	1.68	1 (5%)
6	POV	B	1002	-	51,51,51	1.07	3 (5%)	57,59,59	0.94	3 (5%)
6	POV	B	1006	-	51,51,51	1.09	3 (5%)	57,59,59	0.95	3 (5%)
7	NAG	A	1008	1	14,14,15	0.75	0	17,19,21	1.29	3 (17%)
6	POV	D	1001	-	51,51,51	1.06	2 (3%)	57,59,59	0.98	3 (5%)
6	POV	A	1009	-	51,51,51	1.08	3 (5%)	57,59,59	0.92	2 (3%)
6	POV	A	1002	-	51,51,51	1.08	3 (5%)	57,59,59	0.95	3 (5%)
6	POV	C	1001	-	51,51,51	1.10	4 (7%)	57,59,59	1.01	3 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
7	NAG	B	1005	1	14,14,15	0.43	0	17,19,21	0.51	0
6	POV	A	1004	-	51,51,51	1.09	3 (5%)	57,59,59	0.90	3 (5%)
6	POV	D	1002	-	51,51,51	1.10	3 (5%)	57,59,59	0.91	3 (5%)
7	NAG	C	1005	1	14,14,15	0.33	0	17,19,21	0.36	0
7	NAG	E	701	2	14,14,15	1.17	2 (14%)	17,19,21	1.49	2 (11%)
7	NAG	B	1004	1	14,14,15	0.38	0	17,19,21	0.61	0
7	NAG	D	1006	1	14,14,15	0.41	0	17,19,21	0.57	0
7	NAG	D	1005	1	14,14,15	0.39	0	17,19,21	0.61	0
6	POV	A	1003	-	51,51,51	1.08	3 (5%)	57,59,59	0.90	3 (5%)
6	POV	C	1002	-	51,51,51	1.10	3 (5%)	57,59,59	0.88	3 (5%)
6	POV	D	1004	-	51,51,51	1.09	4 (7%)	57,59,59	0.93	3 (5%)
6	POV	A	1001	-	51,51,51	1.06	3 (5%)	57,59,59	0.96	3 (5%)
7	NAG	A	1005	1	14,14,15	0.47	0	17,19,21	0.68	1 (5%)
7	NAG	D	1007	1	14,14,15	0.27	0	17,19,21	0.88	1 (5%)
7	NAG	C	1003	1	14,14,15	0.33	0	17,19,21	0.62	0
6	POV	B	1003	-	51,51,51	1.08	3 (5%)	57,59,59	0.93	3 (5%)
7	NAG	C	1006	1	14,14,15	1.49	2 (14%)	17,19,21	1.74	1 (5%)
6	POV	D	1003	-	51,51,51	1.08	3 (5%)	57,59,59	0.88	3 (5%)
6	POV	B	1001	-	51,51,51	1.08	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
7	NAG	A	1006	1	-	0/6/23/26	0/1/1/1
7	NAG	A	1007	1	-	4/6/23/26	0/1/1/1
7	NAG	C	1004	1	-	2/6/23/26	0/1/1/1
6	POV	B	1002	-	-	22/55/55/55	-
6	POV	B	1006	-	-	24/55/55/55	-
7	NAG	A	1008	1	-	4/6/23/26	0/1/1/1
6	POV	D	1001	-	-	23/55/55/55	-
6	POV	A	1009	-	-	30/55/55/55	-
6	POV	A	1002	-	-	26/55/55/55	-
6	POV	C	1001	-	-	24/55/55/55	-
7	NAG	B	1005	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	POV	A	1004	-	-	26/55/55/55	-
6	POV	D	1002	-	-	32/55/55/55	-
7	NAG	C	1005	1	-	3/6/23/26	0/1/1/1
7	NAG	E	701	2	-	2/6/23/26	0/1/1/1
7	NAG	B	1004	1	-	4/6/23/26	0/1/1/1
7	NAG	D	1006	1	-	4/6/23/26	0/1/1/1
7	NAG	D	1005	1	-	1/6/23/26	0/1/1/1
6	POV	A	1003	-	-	29/55/55/55	-
6	POV	C	1002	-	-	32/55/55/55	-
6	POV	D	1004	-	-	25/55/55/55	-
6	POV	A	1001	-	-	25/55/55/55	-
7	NAG	A	1005	1	-	2/6/23/26	0/1/1/1
7	NAG	D	1007	1	-	2/6/23/26	0/1/1/1
7	NAG	C	1003	1	-	4/6/23/26	0/1/1/1
6	POV	B	1003	-	-	34/55/55/55	-
7	NAG	C	1006	1	-	2/6/23/26	0/1/1/1
6	POV	D	1003	-	-	32/55/55/55	-
6	POV	B	1001	-	-	33/55/55/55	-

All (52) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	C	1006	NAG	O5-C1	4.98	1.52	1.43
7	C	1004	NAG	O5-C1	4.43	1.51	1.43
7	A	1007	NAG	O5-C1	3.45	1.49	1.43
7	E	701	NAG	C1-C2	3.24	1.56	1.52
6	D	1001	POV	O21-C21	3.06	1.42	1.34
6	B	1006	POV	O21-C21	3.02	1.42	1.34
6	D	1003	POV	O21-C21	2.98	1.42	1.34
6	B	1003	POV	O21-C21	2.98	1.42	1.34
6	B	1002	POV	O21-C21	2.96	1.42	1.34
6	A	1001	POV	O21-C21	2.95	1.42	1.34
6	C	1001	POV	O21-C21	2.94	1.42	1.34
6	B	1001	POV	O21-C21	2.91	1.42	1.34
6	B	1006	POV	O31-C31	2.88	1.41	1.33
6	D	1003	POV	O31-C31	2.86	1.41	1.33
6	D	1002	POV	O21-C21	2.85	1.42	1.34
6	A	1003	POV	O21-C21	2.85	1.42	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	1003	POV	O31-C31	2.80	1.41	1.33
6	A	1004	POV	O21-C21	2.78	1.42	1.34
6	B	1002	POV	O31-C31	2.78	1.41	1.33
6	C	1002	POV	O21-C21	2.77	1.42	1.34
6	A	1009	POV	O31-C31	2.76	1.41	1.33
7	E	701	NAG	O5-C1	2.76	1.48	1.43
6	A	1004	POV	O31-C31	2.76	1.41	1.33
6	A	1009	POV	O21-C21	2.76	1.42	1.34
6	D	1004	POV	O31-C31	2.75	1.41	1.33
6	C	1002	POV	O31-C31	2.73	1.41	1.33
6	B	1003	POV	O31-C31	2.71	1.41	1.33
6	C	1001	POV	O21-C2	-2.70	1.40	1.46
6	A	1002	POV	O31-C31	2.69	1.41	1.33
6	A	1002	POV	O21-C21	2.67	1.41	1.34
6	D	1004	POV	O21-C21	2.67	1.41	1.34
6	D	1004	POV	O21-C2	-2.63	1.40	1.46
6	B	1001	POV	O31-C31	2.62	1.41	1.33
6	A	1002	POV	O21-C2	-2.62	1.40	1.46
6	D	1001	POV	O31-C31	2.61	1.40	1.33
6	D	1002	POV	O21-C2	-2.56	1.40	1.46
6	C	1002	POV	O21-C2	-2.54	1.40	1.46
6	D	1002	POV	O31-C31	2.53	1.40	1.33
6	A	1009	POV	O21-C2	-2.51	1.40	1.46
6	A	1001	POV	O31-C31	2.51	1.40	1.33
6	A	1004	POV	O21-C2	-2.48	1.40	1.46
6	A	1001	POV	O21-C2	-2.43	1.40	1.46
7	C	1006	NAG	C1-C2	2.41	1.55	1.52
6	C	1001	POV	O31-C31	2.38	1.40	1.33
6	B	1001	POV	O21-C2	-2.38	1.41	1.46
6	B	1002	POV	O21-C2	-2.33	1.41	1.46
6	D	1003	POV	O21-C2	-2.18	1.41	1.46
6	A	1003	POV	O21-C2	-2.14	1.41	1.46
6	B	1003	POV	O21-C2	-2.09	1.41	1.46
6	C	1001	POV	P-O11	2.08	1.67	1.59
6	B	1006	POV	O21-C2	-2.06	1.41	1.46
6	D	1004	POV	P-O12	2.02	1.67	1.59

All (56) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	C	1006	NAG	C1-O5-C5	6.93	121.47	112.19
7	A	1007	NAG	C1-O5-C5	6.77	121.26	112.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	C	1004	NAG	C1-O5-C5	6.56	120.97	112.19
6	C	1001	POV	O21-C21-C22	5.10	122.52	111.48
7	E	701	NAG	C1-O5-C5	4.91	118.77	112.19
6	B	1001	POV	O21-C21-C22	4.27	120.73	111.48
6	A	1009	POV	O21-C21-C22	4.18	120.53	111.48
6	B	1006	POV	O21-C21-C22	4.18	120.52	111.48
6	A	1002	POV	O21-C21-C22	4.14	120.43	111.48
6	B	1002	POV	O21-C21-C22	4.14	120.43	111.48
6	D	1001	POV	O21-C21-C22	4.06	120.27	111.48
6	A	1001	POV	O21-C21-C22	4.02	120.17	111.48
6	B	1003	POV	O21-C21-C22	3.90	119.92	111.48
6	D	1002	POV	O21-C21-C22	3.89	119.89	111.48
6	D	1004	POV	O21-C21-C22	3.86	119.83	111.48
6	C	1002	POV	O21-C21-C22	3.83	119.76	111.48
6	A	1003	POV	O21-C21-C22	3.63	119.33	111.48
7	A	1008	NAG	C2-N2-C7	3.52	127.62	122.90
6	A	1004	POV	O21-C21-C22	3.46	118.96	111.48
6	D	1003	POV	O21-C21-C22	3.11	118.20	111.48
7	D	1007	NAG	C1-O5-C5	3.09	116.32	112.19
6	A	1004	POV	O31-C31-C32	2.70	120.06	111.83
6	D	1004	POV	C14-N-C12	2.64	120.42	109.91
6	A	1003	POV	O31-C31-C32	2.62	119.83	111.83
6	D	1003	POV	C14-N-C12	2.61	120.28	109.91
6	B	1003	POV	O31-C31-C32	2.60	119.76	111.83
6	D	1003	POV	O31-C31-C32	2.57	119.67	111.83
6	B	1001	POV	O31-C31-C32	2.56	119.65	111.83
6	B	1006	POV	O31-C31-C32	2.53	119.56	111.83
6	A	1001	POV	C14-N-C12	2.52	119.92	109.91
6	C	1002	POV	O31-C31-C32	2.51	119.49	111.83
6	A	1009	POV	O31-C31-C32	2.48	119.41	111.83
6	D	1002	POV	O31-C31-C32	2.48	119.41	111.83
6	D	1004	POV	O31-C31-C32	2.46	119.34	111.83
6	D	1001	POV	O31-C31-C32	2.44	119.27	111.83
6	B	1001	POV	C14-N-C12	2.42	119.51	109.91
6	A	1002	POV	O31-C31-C32	2.41	119.17	111.83
6	D	1002	POV	C14-N-C12	2.39	119.40	109.91
7	A	1005	NAG	C1-O5-C5	2.37	115.36	112.19
6	D	1001	POV	C14-N-C12	2.36	119.29	109.91
7	E	701	NAG	C4-C3-C2	2.32	114.42	111.02
6	A	1001	POV	O31-C31-C32	2.31	118.89	111.83
7	A	1007	NAG	C2-N2-C7	2.29	125.97	122.90
6	B	1006	POV	C14-N-C12	2.27	118.93	109.91

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	A	1003	POV	C14-N-C12	2.25	118.84	109.91
7	A	1008	NAG	C4-C3-C2	2.21	114.26	111.02
7	A	1008	NAG	C1-C2-N2	2.19	113.88	110.43
6	C	1002	POV	C14-N-C12	2.19	118.61	109.91
6	B	1002	POV	O31-C31-C32	2.18	118.47	111.83
7	A	1007	NAG	C3-C4-C5	2.14	114.12	110.23
6	B	1002	POV	C14-N-C12	2.11	118.31	109.91
6	B	1003	POV	C14-N-C12	2.11	118.28	109.91
6	C	1001	POV	O31-C31-C32	2.10	118.23	111.83
6	A	1004	POV	C14-N-C12	2.10	118.25	109.91
6	A	1002	POV	C14-N-C12	2.07	118.14	109.91
6	C	1001	POV	C14-N-C12	2.06	118.11	109.91

There are no chirality outliers.

All (453) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	1001	POV	C1-O11-P-O12
6	A	1001	POV	C1-O11-P-O14
6	A	1001	POV	C11-O12-P-O11
6	A	1001	POV	C11-O12-P-O13
6	A	1001	POV	O12-C11-C12-N
6	A	1001	POV	C22-C21-O21-C2
6	A	1001	POV	O22-C21-O21-C2
6	A	1002	POV	O12-C11-C12-N
6	A	1002	POV	O22-C21-O21-C2
6	A	1003	POV	C1-O11-P-O14
6	A	1003	POV	C11-O12-P-O11
6	A	1003	POV	C11-O12-P-O13
6	A	1003	POV	C11-O12-P-O14
6	A	1003	POV	O22-C21-O21-C2
6	A	1004	POV	C11-O12-P-O11
6	A	1004	POV	C11-O12-P-O13
6	A	1004	POV	C11-O12-P-O14
6	A	1004	POV	O12-C11-C12-N
6	A	1004	POV	O22-C21-O21-C2
6	A	1009	POV	C1-O11-P-O14
6	A	1009	POV	C11-O12-P-O11
6	A	1009	POV	C11-O12-P-O13
6	A	1009	POV	C11-O12-P-O14
6	A	1009	POV	O22-C21-O21-C2
6	B	1001	POV	C1-O11-P-O13

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Mol	Chain	Res	Type	Atoms
6	B	1001	POV	C11-O12-P-O11
6	B	1001	POV	C11-O12-P-O13
6	B	1001	POV	O12-C11-C12-N
6	B	1001	POV	C22-C21-O21-C2
6	B	1001	POV	O22-C21-O21-C2
6	B	1002	POV	C11-O12-P-O11
6	B	1002	POV	C11-O12-P-O14
6	B	1003	POV	C11-O12-P-O11
6	B	1003	POV	C11-O12-P-O14
6	B	1003	POV	C22-C21-O21-C2
6	B	1006	POV	C11-O12-P-O11
6	B	1006	POV	C11-O12-P-O13
6	B	1006	POV	C11-O12-P-O14
6	B	1006	POV	O12-C11-C12-N
6	B	1006	POV	C22-C21-O21-C2
6	C	1001	POV	C1-O11-P-O12
6	C	1001	POV	C1-O11-P-O13
6	C	1001	POV	O21-C2-C3-O31
6	C	1001	POV	C22-C21-O21-C2
6	C	1002	POV	C1-O11-P-O12
6	C	1002	POV	C1-O11-P-O13
6	C	1002	POV	C11-O12-P-O11
6	C	1002	POV	C11-O12-P-O13
6	C	1002	POV	C11-O12-P-O14
6	C	1002	POV	O12-C11-C12-N
6	D	1001	POV	C11-O12-P-O11
6	D	1001	POV	O21-C2-C3-O31
6	D	1001	POV	C22-C21-O21-C2
6	D	1002	POV	C1-O11-P-O12
6	D	1002	POV	C11-O12-P-O11
6	D	1002	POV	O12-C11-C12-N
6	D	1003	POV	C1-O11-P-O12
6	D	1003	POV	C1-O11-P-O13
6	D	1004	POV	C1-O11-P-O12
6	D	1004	POV	C1-O11-P-O13
6	D	1004	POV	O12-C11-C12-N
6	D	1004	POV	O22-C21-O21-C2
7	C	1004	NAG	C4-C5-C6-O6
6	A	1009	POV	O32-C31-O31-C3
7	A	1007	NAG	C4-C5-C6-O6
6	B	1001	POV	O32-C31-O31-C3
6	B	1003	POV	O22-C21-O21-C2

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Mol	Chain	Res	Type	Atoms
6	B	1006	POV	O22-C21-O21-C2
6	D	1001	POV	O22-C21-O21-C2
6	D	1003	POV	O22-C21-O21-C2
7	C	1003	NAG	O5-C5-C6-O6
6	A	1009	POV	C32-C31-O31-C3
6	A	1002	POV	C22-C21-O21-C2
6	A	1003	POV	C22-C21-O21-C2
6	A	1004	POV	C22-C21-O21-C2
6	A	1009	POV	C22-C21-O21-C2
6	D	1004	POV	C22-C21-O21-C2
6	A	1004	POV	C32-C31-O31-C3
6	C	1001	POV	O22-C21-O21-C2
6	B	1001	POV	C32-C31-O31-C3
7	A	1005	NAG	O5-C5-C6-O6
7	A	1007	NAG	O5-C5-C6-O6
7	D	1007	NAG	O5-C5-C6-O6
6	B	1002	POV	C22-C21-O21-C2
6	D	1003	POV	C22-C21-O21-C2
7	D	1006	NAG	C4-C5-C6-O6
6	A	1004	POV	O32-C31-O31-C3
6	B	1002	POV	O22-C21-O21-C2
7	C	1004	NAG	O5-C5-C6-O6
7	D	1007	NAG	C4-C5-C6-O6
7	C	1003	NAG	C4-C5-C6-O6
7	D	1006	NAG	O5-C5-C6-O6
7	A	1005	NAG	C4-C5-C6-O6
6	B	1001	POV	C22-C23-C24-C25
6	A	1001	POV	C310-C311-C312-C313
6	C	1001	POV	C22-C23-C24-C25
6	B	1001	POV	C24-C25-C26-C27
6	B	1001	POV	C21-C22-C23-C24
6	B	1001	POV	C31-C32-C33-C34
6	C	1001	POV	C21-C22-C23-C24
6	A	1009	POV	C211-C212-C213-C214
7	B	1005	NAG	O5-C5-C6-O6
7	A	1007	NAG	C8-C7-N2-C2
7	A	1007	NAG	O7-C7-N2-C2
7	B	1004	NAG	C8-C7-N2-C2
7	B	1004	NAG	O7-C7-N2-C2
7	C	1003	NAG	C8-C7-N2-C2
7	C	1003	NAG	O7-C7-N2-C2
7	C	1006	NAG	C8-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
7	C	1006	NAG	O7-C7-N2-C2
7	D	1006	NAG	C8-C7-N2-C2
7	D	1006	NAG	O7-C7-N2-C2
6	A	1001	POV	C32-C31-O31-C3
6	D	1004	POV	C39-C310-C311-C312
6	D	1004	POV	C21-C22-C23-C24
6	C	1001	POV	C311-C310-C39-C38
7	B	1004	NAG	O5-C5-C6-O6
7	B	1005	NAG	C4-C5-C6-O6
6	A	1002	POV	C21-C22-C23-C24
6	A	1009	POV	C31-C32-C33-C34
6	C	1002	POV	C22-C21-O21-C2
6	A	1001	POV	C21-C22-C23-C24
6	A	1003	POV	C31-C32-C33-C34
6	D	1002	POV	C21-C22-C23-C24
6	B	1003	POV	C34-C35-C36-C37
6	D	1001	POV	C32-C31-O31-C3
6	A	1001	POV	C32-C33-C34-C35
6	D	1003	POV	C311-C310-C39-C38
6	C	1002	POV	O22-C21-O21-C2
6	A	1002	POV	C32-C31-O31-C3
6	C	1001	POV	C32-C31-O31-C3
6	D	1004	POV	C32-C31-O31-C3
6	A	1009	POV	C24-C25-C26-C27
6	A	1009	POV	C36-C37-C38-C39
6	A	1001	POV	O32-C31-O31-C3
6	B	1001	POV	C311-C312-C313-C314
6	A	1002	POV	O32-C31-O31-C3
6	B	1003	POV	C36-C37-C38-C39
6	D	1002	POV	C311-C312-C313-C314
6	A	1001	POV	C24-C25-C26-C27
6	D	1003	POV	C36-C37-C38-C39
6	C	1001	POV	O32-C31-O31-C3
7	E	701	NAG	O5-C5-C6-O6
6	B	1006	POV	C34-C35-C36-C37
7	A	1008	NAG	O5-C5-C6-O6
6	A	1002	POV	C24-C25-C26-C27
6	C	1002	POV	C35-C36-C37-C38
6	D	1004	POV	C213-C214-C215-C216
6	D	1002	POV	C25-C26-C27-C28
6	A	1009	POV	C39-C310-C311-C312
6	A	1009	POV	C312-C313-C314-C315

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Mol	Chain	Res	Type	Atoms
6	B	1003	POV	C23-C24-C25-C26
6	D	1003	POV	C311-C312-C313-C314
6	B	1003	POV	C21-C22-C23-C24
6	B	1006	POV	C310-C311-C312-C313
6	A	1002	POV	C312-C313-C314-C315
6	D	1002	POV	C23-C24-C25-C26
6	A	1002	POV	C36-C37-C38-C39
6	B	1003	POV	C311-C312-C313-C314
6	C	1001	POV	C33-C34-C35-C36
6	D	1003	POV	C211-C212-C213-C214
6	A	1004	POV	C21-C22-C23-C24
6	D	1001	POV	O32-C31-O31-C3
6	D	1004	POV	O32-C31-O31-C3
6	A	1002	POV	C2-C3-O31-C31
6	D	1003	POV	C32-C33-C34-C35
6	A	1001	POV	C211-C212-C213-C214
6	A	1003	POV	C32-C31-O31-C3
6	A	1004	POV	C1-C2-C3-O31
6	A	1004	POV	C25-C26-C27-C28
6	A	1009	POV	C32-C33-C34-C35
6	C	1001	POV	C37-C38-C39-C310
6	C	1002	POV	C25-C26-C27-C28
6	A	1002	POV	C23-C24-C25-C26
6	B	1003	POV	C211-C212-C213-C214
6	D	1001	POV	C36-C37-C38-C39
6	D	1002	POV	C214-C215-C216-C217
6	D	1001	POV	C22-C23-C24-C25
6	D	1003	POV	C21-C22-C23-C24
6	D	1003	POV	C213-C214-C215-C216
6	A	1004	POV	C26-C27-C28-C29
6	B	1001	POV	C2-C1-O11-P
6	A	1002	POV	C22-C23-C24-C25
6	D	1004	POV	C25-C26-C27-C28
6	A	1002	POV	C39-C310-C311-C312
6	D	1003	POV	C24-C25-C26-C27
6	D	1004	POV	C23-C24-C25-C26
6	B	1006	POV	C37-C38-C39-C310
6	C	1001	POV	C36-C37-C38-C39
6	A	1001	POV	C33-C34-C35-C36
6	C	1001	POV	C213-C214-C215-C216
6	C	1002	POV	C24-C25-C26-C27
6	A	1009	POV	C212-C213-C214-C215

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Mol	Chain	Res	Type	Atoms
6	D	1001	POV	C310-C311-C312-C313
6	A	1003	POV	O32-C31-O31-C3
6	A	1003	POV	C212-C213-C214-C215
6	A	1009	POV	C311-C310-C39-C38
6	A	1009	POV	C26-C27-C28-C29
6	A	1004	POV	C22-C23-C24-C25
6	D	1002	POV	C35-C36-C37-C38
6	D	1003	POV	C22-C23-C24-C25
7	E	701	NAG	C4-C5-C6-O6
6	B	1003	POV	C214-C215-C216-C217
6	A	1001	POV	C22-C23-C24-C25
6	A	1004	POV	C31-C32-C33-C34
6	A	1003	POV	C25-C26-C27-C28
6	C	1001	POV	C32-C33-C34-C35
6	B	1002	POV	C211-C212-C213-C214
6	B	1002	POV	C27-C28-C29-C210
6	B	1001	POV	C32-C33-C34-C35
6	C	1002	POV	C212-C213-C214-C215
6	D	1002	POV	C34-C35-C36-C37
6	B	1002	POV	C34-C35-C36-C37
6	B	1002	POV	C23-C24-C25-C26
6	A	1003	POV	C310-C311-C312-C313
6	C	1002	POV	C23-C24-C25-C26
6	B	1003	POV	C312-C313-C314-C315
6	D	1003	POV	C23-C24-C25-C26
6	B	1006	POV	C36-C37-C38-C39
6	D	1004	POV	C33-C34-C35-C36
6	B	1001	POV	C37-C38-C39-C310
6	B	1002	POV	C310-C311-C312-C313
6	A	1002	POV	C26-C27-C28-C29
6	B	1001	POV	C26-C27-C28-C29
6	B	1002	POV	C210-C211-C212-C213
6	B	1003	POV	C213-C214-C215-C216
6	B	1001	POV	C25-C26-C27-C28
6	C	1001	POV	C25-C26-C27-C28
6	A	1003	POV	C311-C310-C39-C38
6	A	1009	POV	C1-C2-C3-O31
6	C	1001	POV	C1-C2-C3-O31
6	C	1002	POV	C1-C2-C3-O31
6	D	1001	POV	C1-C2-C3-O31
6	A	1003	POV	C26-C27-C28-C29
6	B	1006	POV	C311-C310-C39-C38

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Mol	Chain	Res	Type	Atoms
6	A	1001	POV	C23-C24-C25-C26
6	B	1002	POV	C32-C33-C34-C35
6	C	1002	POV	C34-C35-C36-C37
6	B	1001	POV	C23-C24-C25-C26
6	C	1002	POV	C311-C310-C39-C38
6	A	1003	POV	C311-C312-C313-C314
6	C	1002	POV	C31-C32-C33-C34
6	C	1002	POV	C213-C214-C215-C216
6	A	1003	POV	C3-C2-O21-C21
6	B	1006	POV	C3-C2-O21-C21
6	D	1001	POV	C1-C2-O21-C21
6	D	1003	POV	C3-C2-O21-C21
6	A	1004	POV	C210-C211-C212-C213
6	B	1006	POV	C26-C27-C28-C29
6	D	1002	POV	C210-C211-C212-C213
6	D	1003	POV	C31-C32-C33-C34
6	B	1006	POV	C23-C24-C25-C26
6	D	1004	POV	C22-C23-C24-C25
6	B	1006	POV	C312-C313-C314-C315
6	A	1002	POV	O21-C2-C3-O31
6	D	1002	POV	C212-C213-C214-C215
6	C	1001	POV	C24-C25-C26-C27
6	D	1002	POV	C312-C313-C314-C315
6	C	1002	POV	C32-C31-O31-C3
6	D	1002	POV	C32-C31-O31-C3
6	A	1001	POV	C36-C37-C38-C39
6	D	1003	POV	C313-C314-C315-C316
6	B	1001	POV	C215-C216-C217-C218
6	D	1003	POV	C215-C216-C217-C218
6	A	1009	POV	C22-C23-C24-C25
6	B	1002	POV	C25-C26-C27-C28
6	B	1003	POV	C32-C33-C34-C35
6	B	1002	POV	C36-C37-C38-C39
6	D	1003	POV	C39-C310-C311-C312
6	D	1003	POV	C37-C38-C39-C310
6	A	1003	POV	C215-C216-C217-C218
6	B	1002	POV	C22-C23-C24-C25
6	C	1002	POV	C33-C34-C35-C36
6	A	1002	POV	C1-C2-C3-O31
6	B	1003	POV	C1-C2-C3-O31
6	D	1003	POV	C1-C2-C3-O31
6	D	1004	POV	C1-C2-C3-O31

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Mol	Chain	Res	Type	Atoms
6	A	1002	POV	C37-C38-C39-C310
6	A	1002	POV	C310-C311-C312-C313
6	B	1001	POV	C211-C212-C213-C214
6	C	1001	POV	C211-C212-C213-C214
6	C	1002	POV	O11-C1-C2-O21
6	B	1006	POV	C25-C26-C27-C28
6	A	1004	POV	C310-C311-C312-C313
6	C	1002	POV	C39-C310-C311-C312
6	B	1003	POV	O21-C2-C3-O31
6	D	1003	POV	O21-C2-C3-O31
6	A	1003	POV	C33-C34-C35-C36
6	A	1004	POV	C212-C213-C214-C215
6	D	1004	POV	C36-C37-C38-C39
6	A	1003	POV	C213-C214-C215-C216
7	A	1008	NAG	C1-C2-N2-C7
6	B	1003	POV	C39-C310-C311-C312
6	D	1002	POV	C313-C314-C315-C316
6	D	1001	POV	C311-C312-C313-C314
6	A	1009	POV	O11-C1-C2-C3
6	C	1002	POV	O11-C1-C2-C3
6	D	1002	POV	C310-C311-C312-C313
6	A	1009	POV	C21-C22-C23-C24
6	C	1002	POV	O32-C31-O31-C3
6	A	1009	POV	C3-C2-O21-C21
6	B	1003	POV	C3-C2-O21-C21
6	D	1002	POV	O32-C31-O31-C3
6	A	1009	POV	O11-C1-C2-O21
6	B	1003	POV	O11-C1-C2-O21
6	D	1001	POV	O11-C1-C2-O21
6	D	1002	POV	O11-C1-C2-O21
7	C	1005	NAG	C4-C5-C6-O6
6	B	1003	POV	C26-C27-C28-C29
6	D	1004	POV	O21-C2-C3-O31
6	A	1003	POV	C23-C24-C25-C26
6	A	1003	POV	O12-C11-C12-N
6	A	1009	POV	O12-C11-C12-N
6	B	1003	POV	O12-C11-C12-N
6	A	1001	POV	C311-C312-C313-C314
7	B	1004	NAG	C4-C5-C6-O6
6	A	1004	POV	C37-C38-C39-C310
6	B	1001	POV	C313-C314-C315-C316
6	D	1002	POV	C22-C21-O21-C2

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Mol	Chain	Res	Type	Atoms
6	D	1004	POV	C311-C312-C313-C314
6	B	1006	POV	C313-C314-C315-C316
6	D	1004	POV	C37-C38-C39-C310
6	B	1001	POV	C34-C35-C36-C37
6	A	1001	POV	C2-C1-O11-P
6	A	1004	POV	C2-C1-O11-P
6	A	1009	POV	C311-C312-C313-C314
6	D	1001	POV	C37-C38-C39-C310
6	B	1006	POV	O11-C1-C2-O21
6	A	1002	POV	C34-C35-C36-C37
6	B	1003	POV	O21-C21-C22-C23
6	B	1006	POV	C212-C213-C214-C215
6	C	1002	POV	C29-C210-C211-C212
6	B	1006	POV	C213-C214-C215-C216
6	B	1002	POV	C31-C32-C33-C34
6	A	1004	POV	O21-C2-C3-O31
6	A	1009	POV	O21-C2-C3-O31
6	C	1002	POV	O21-C2-C3-O31
6	B	1001	POV	C36-C37-C38-C39
6	D	1003	POV	C33-C34-C35-C36
6	B	1003	POV	C313-C314-C315-C316
6	C	1002	POV	C312-C313-C314-C315
6	D	1002	POV	O22-C21-O21-C2
6	A	1001	POV	C1-O11-P-O13
6	A	1002	POV	C1-O11-P-O14
6	A	1002	POV	C11-O12-P-O14
6	A	1003	POV	C1-O11-P-O12
6	A	1003	POV	C1-O11-P-O13
6	A	1004	POV	C1-O11-P-O12
6	A	1009	POV	C1-O11-P-O12
6	B	1001	POV	C1-O11-P-O12
6	B	1001	POV	C11-O12-P-O14
6	C	1001	POV	C11-C12-N-C15
6	D	1001	POV	C11-O12-P-O13
6	D	1001	POV	C11-O12-P-O14
6	D	1002	POV	C1-O11-P-O14
6	D	1002	POV	C11-O12-P-O14
6	D	1004	POV	C11-O12-P-O14
6	B	1001	POV	C311-C310-C39-C38
6	B	1003	POV	O11-C1-C2-C3
6	A	1002	POV	C313-C314-C315-C316
6	B	1006	POV	C32-C33-C34-C35

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Mol	Chain	Res	Type	Atoms
6	D	1002	POV	C22-C23-C24-C25
6	A	1004	POV	C312-C313-C314-C315
6	B	1002	POV	C21-C22-C23-C24
6	D	1002	POV	C32-C33-C34-C35
6	A	1001	POV	C35-C36-C37-C38
6	B	1002	POV	O21-C21-C22-C23
6	A	1003	POV	C214-C215-C216-C217
6	B	1002	POV	C311-C312-C313-C314
6	B	1003	POV	C311-C310-C39-C38
6	D	1004	POV	C212-C213-C214-C215
6	A	1004	POV	C24-C25-C26-C27
6	D	1003	POV	C310-C311-C312-C313
6	A	1002	POV	C214-C215-C216-C217
6	D	1003	POV	C312-C313-C314-C315
6	B	1003	POV	C31-C32-C33-C34
7	D	1005	NAG	C4-C5-C6-O6
6	B	1006	POV	C22-C23-C24-C25
6	A	1003	POV	C39-C310-C311-C312
6	A	1002	POV	O11-C1-C2-O21
6	B	1002	POV	C33-C34-C35-C36
6	B	1001	POV	C212-C213-C214-C215
6	B	1003	POV	C25-C26-C27-C28
6	C	1001	POV	O11-C1-C2-C3
6	D	1002	POV	O11-C1-C2-C3
6	A	1001	POV	C311-C310-C39-C38
6	A	1004	POV	C32-C33-C34-C35
7	C	1005	NAG	C1-C2-N2-C7
6	A	1009	POV	C35-C36-C37-C38
6	D	1001	POV	C311-C310-C39-C38
6	D	1001	POV	C39-C310-C311-C312
6	D	1004	POV	C210-C211-C212-C213
6	A	1002	POV	C29-C210-C211-C212
6	D	1004	POV	C24-C25-C26-C27
7	A	1008	NAG	C3-C2-N2-C7
6	D	1001	POV	C313-C314-C315-C316
6	D	1003	POV	O21-C21-C22-C23
6	B	1006	POV	C35-C36-C37-C38
6	A	1003	POV	C313-C314-C315-C316
6	C	1002	POV	O31-C31-C32-C33
6	A	1009	POV	C213-C214-C215-C216
6	A	1001	POV	C26-C27-C28-C29
6	A	1004	POV	C39-C310-C311-C312

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Mol	Chain	Res	Type	Atoms
6	B	1002	POV	C313-C314-C315-C316
6	B	1003	POV	C27-C28-C29-C210
6	C	1002	POV	C27-C28-C29-C210
6	D	1002	POV	C311-C310-C39-C38
6	D	1003	POV	C11-C12-N-C14
6	C	1001	POV	C210-C211-C212-C213
6	D	1003	POV	O32-C31-O31-C3
6	D	1003	POV	C32-C31-O31-C3
6	D	1004	POV	C29-C210-C211-C212
6	B	1002	POV	C213-C214-C215-C216
6	D	1002	POV	C33-C34-C35-C36
6	A	1001	POV	C27-C28-C29-C210
6	B	1003	POV	C29-C210-C211-C212
6	D	1002	POV	C29-C210-C211-C212
6	D	1003	POV	C29-C210-C211-C212
6	B	1006	POV	O11-C1-C2-C3
6	B	1001	POV	C214-C215-C216-C217
6	C	1001	POV	C11-C12-N-C13
6	B	1003	POV	C22-C23-C24-C25
6	B	1001	POV	C27-C28-C29-C210
6	C	1002	POV	C310-C311-C312-C313
6	B	1002	POV	O31-C31-C32-C33
7	A	1008	NAG	C4-C5-C6-O6
6	D	1003	POV	O12-C11-C12-N
6	D	1001	POV	O21-C21-C22-C23
6	C	1001	POV	C11-C12-N-C14
6	D	1002	POV	O21-C21-C22-C23
6	B	1001	POV	C11-C12-N-C14
6	B	1003	POV	C37-C38-C39-C310
6	D	1003	POV	C25-C26-C27-C28
6	D	1002	POV	O31-C31-C32-C33
6	D	1004	POV	C214-C215-C216-C217
6	A	1003	POV	C32-C33-C34-C35
6	A	1002	POV	C1-C2-O21-C21
6	C	1002	POV	C3-C2-O21-C21
6	D	1001	POV	C29-C210-C211-C212
7	C	1005	NAG	O5-C5-C6-O6
6	D	1001	POV	O22-C21-C22-C23
6	B	1001	POV	C11-C12-N-C15
6	D	1002	POV	O22-C21-C22-C23
6	B	1003	POV	O31-C31-C32-C33
6	A	1004	POV	C311-C310-C39-C38

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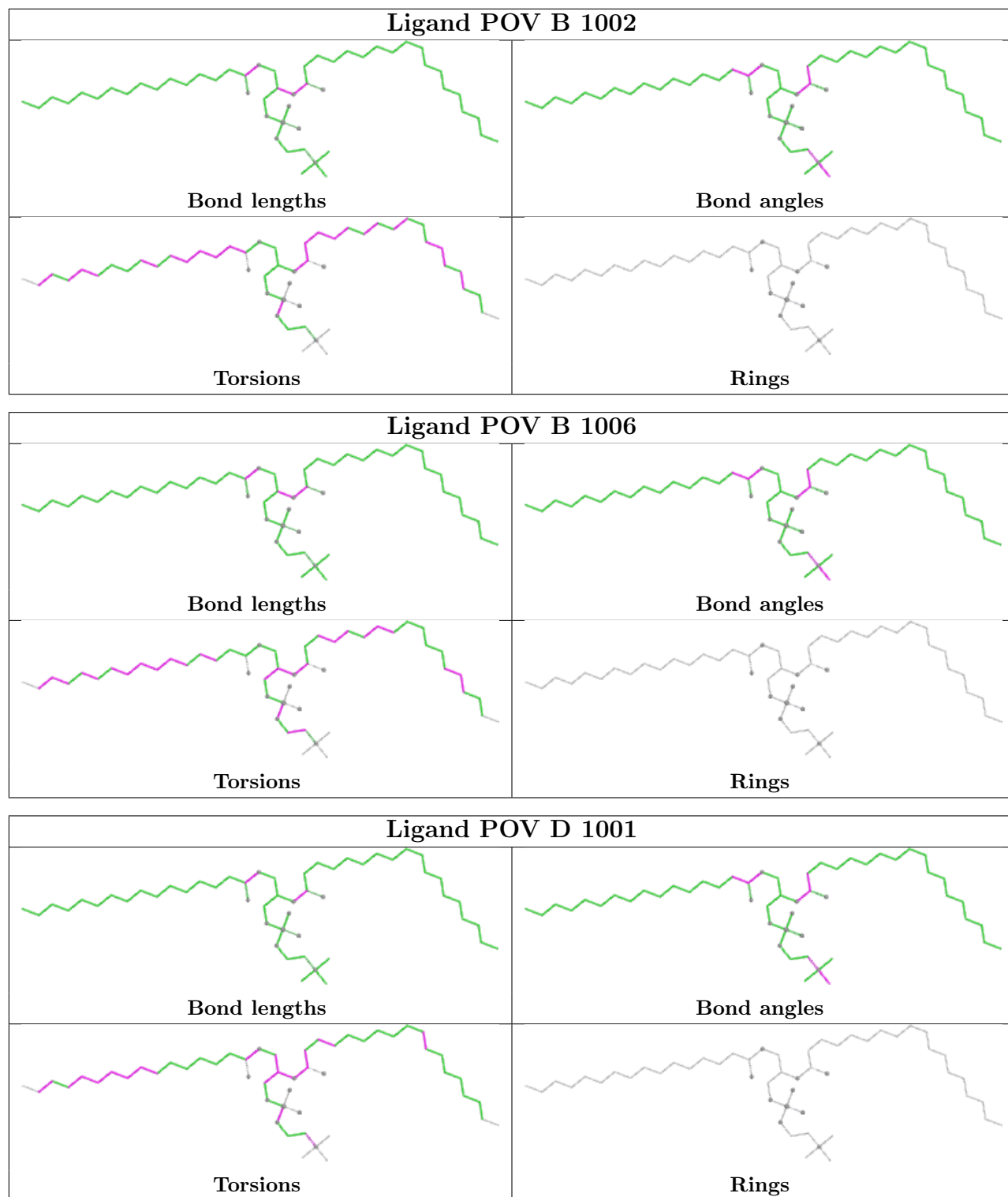
Mol	Chain	Res	Type	Atoms
6	C	1002	POV	C21-C22-C23-C24
6	A	1003	POV	C2-C1-O11-P
6	B	1003	POV	C2-C1-O11-P
6	D	1001	POV	C11-C12-N-C14
6	D	1002	POV	O32-C31-C32-C33
6	B	1001	POV	C310-C311-C312-C313
6	B	1003	POV	O32-C31-C32-C33
6	A	1003	POV	C312-C313-C314-C315

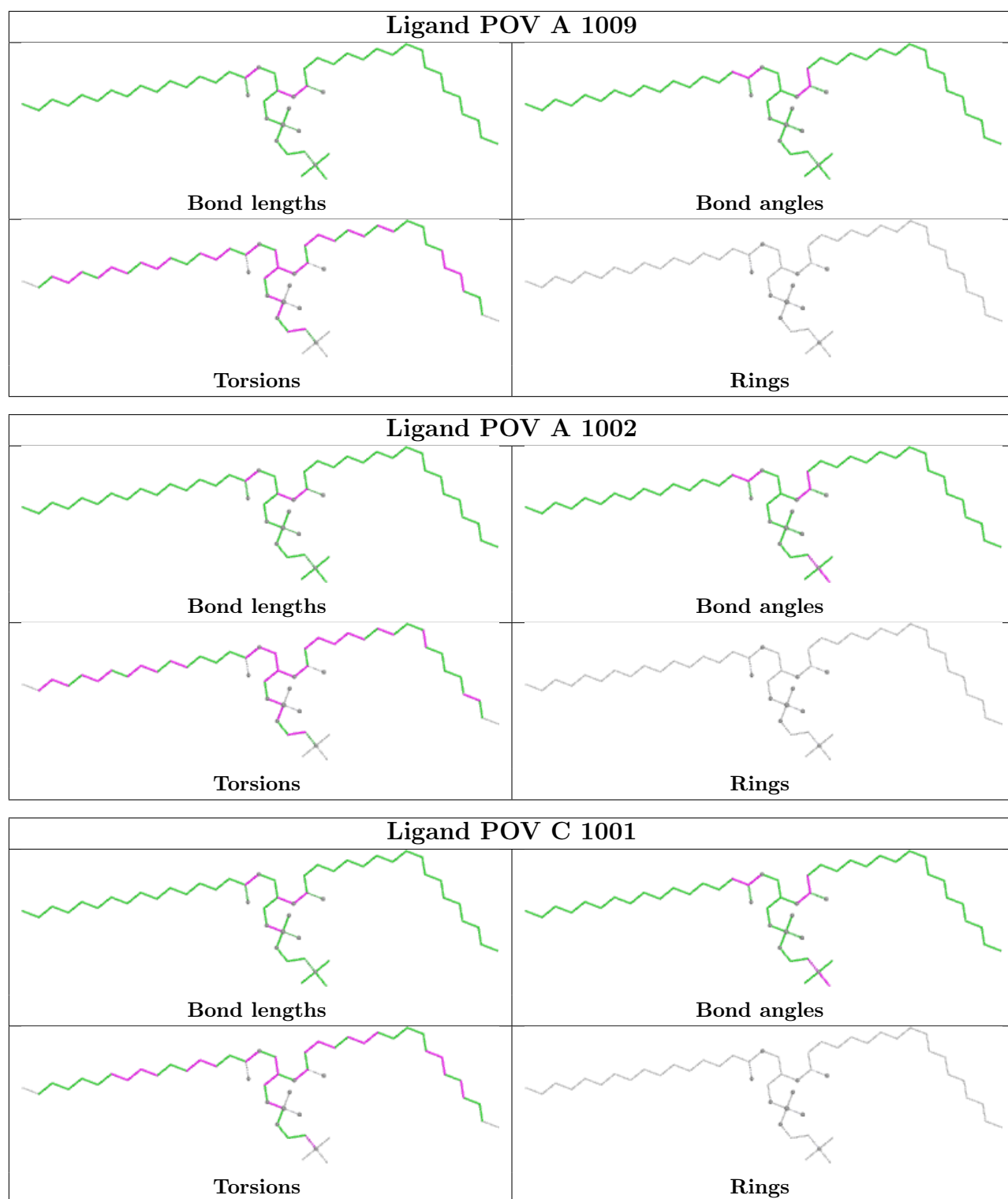
There are no ring outliers.

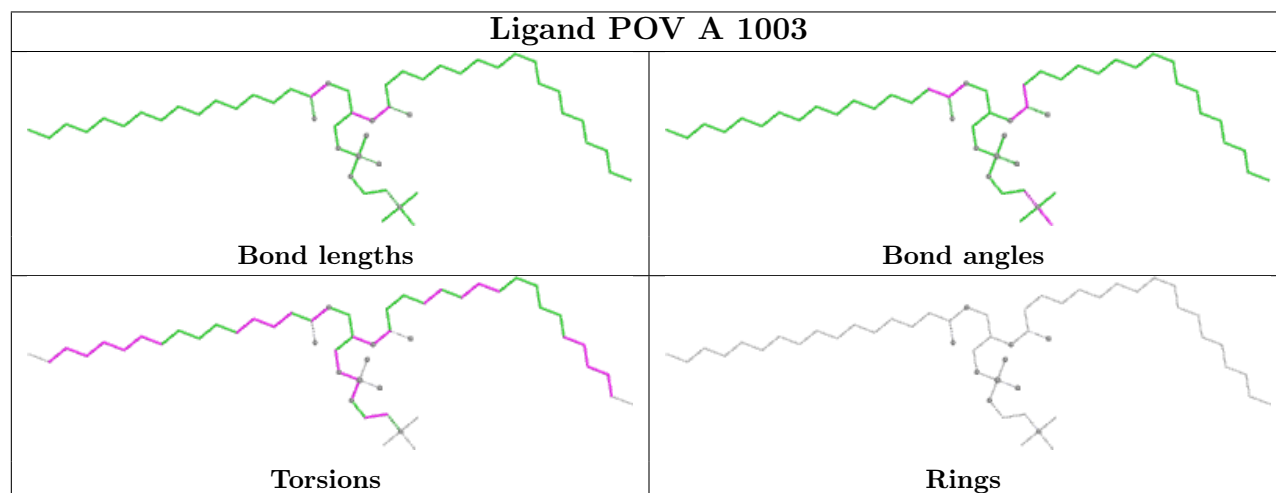
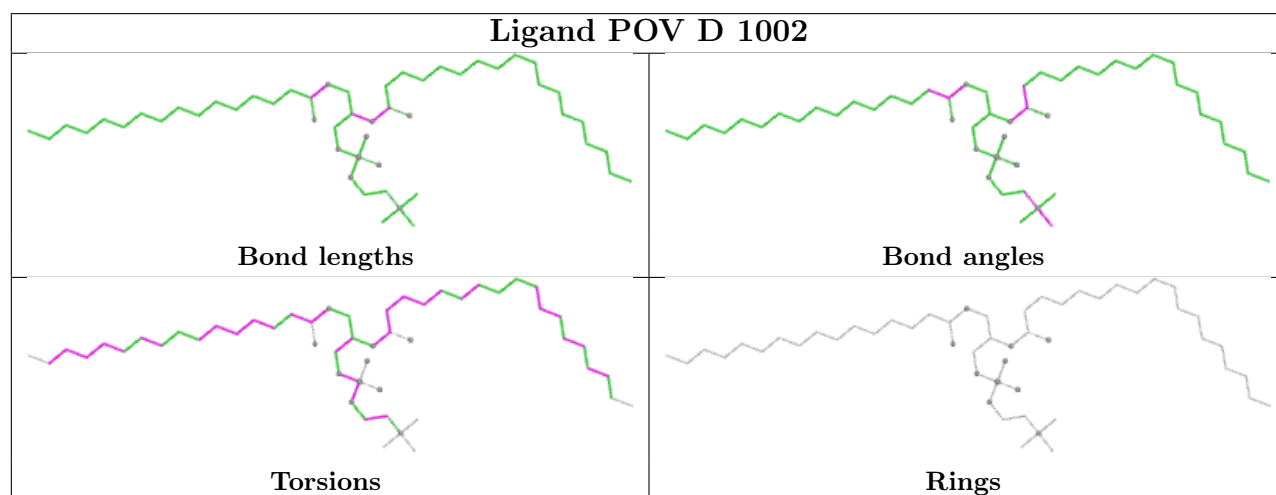
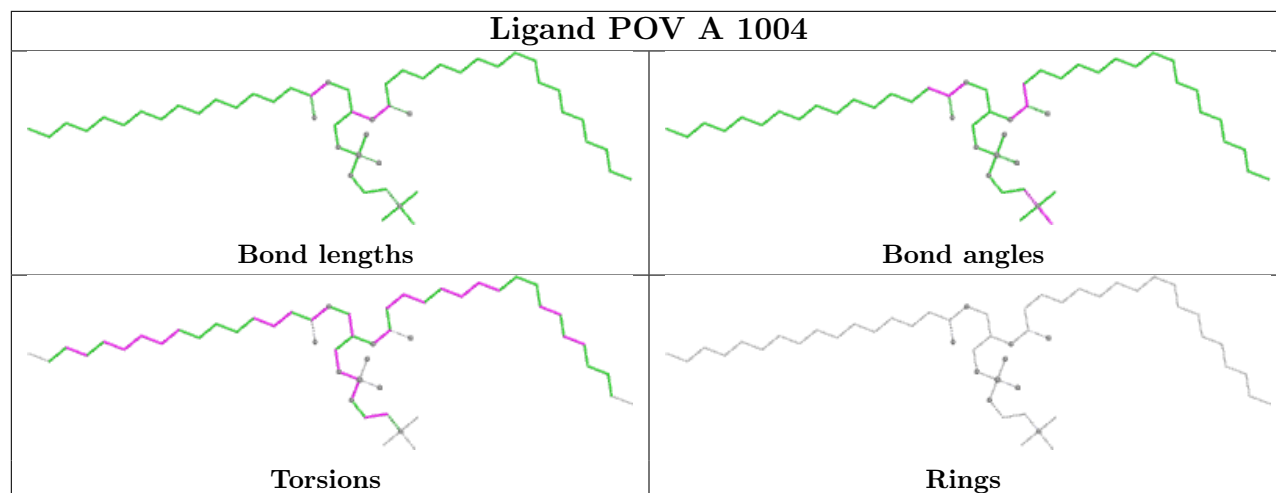
13 monomers are involved in 40 short contacts:

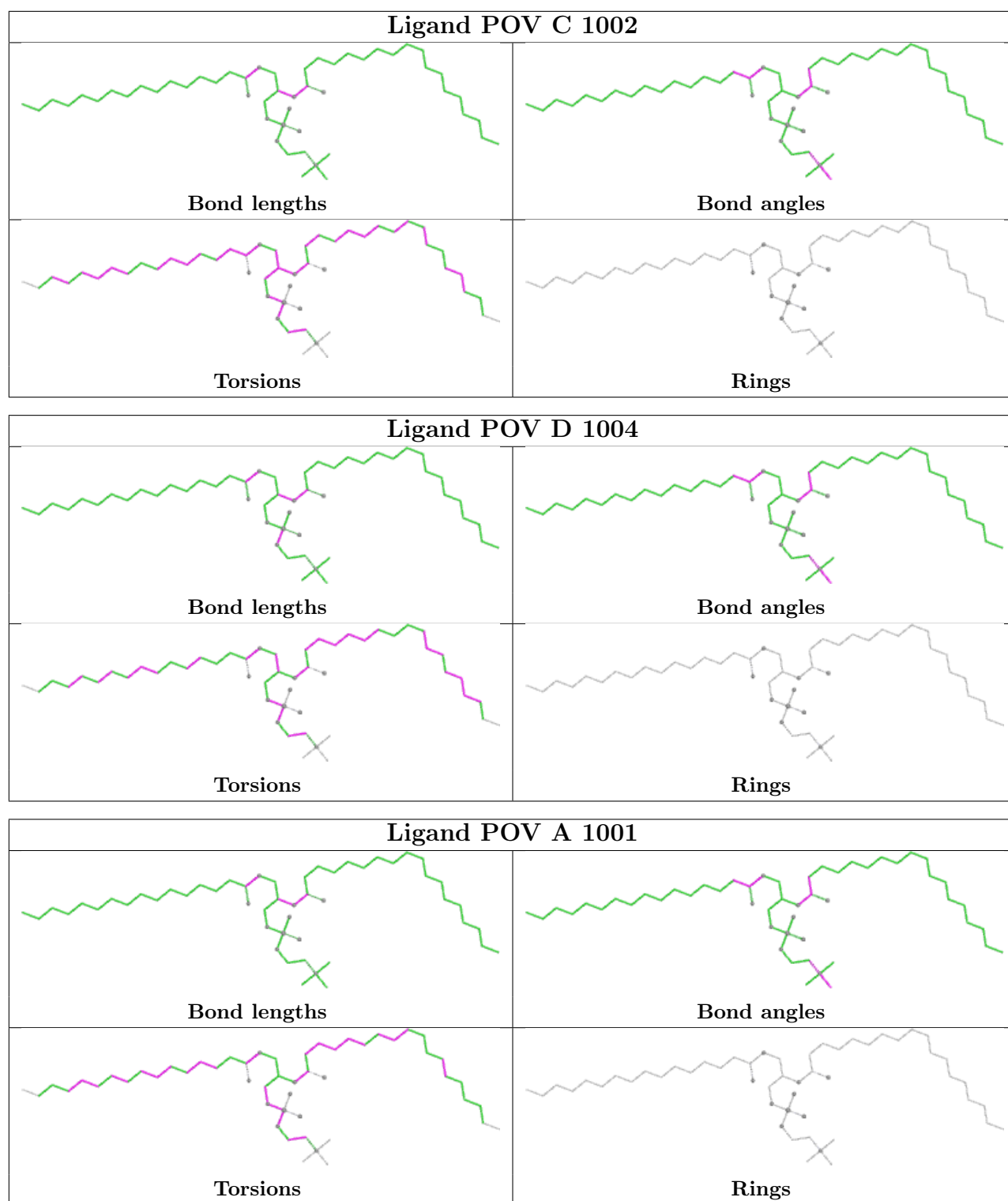
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	D	1001	POV	5	0
6	A	1009	POV	7	0
6	A	1002	POV	4	0
6	C	1001	POV	5	0
6	A	1004	POV	1	0
6	D	1002	POV	2	0
6	A	1003	POV	3	0
6	C	1002	POV	4	0
6	D	1004	POV	1	0
6	A	1001	POV	5	0
6	B	1003	POV	1	0
6	D	1003	POV	2	0
6	B	1001	POV	3	0

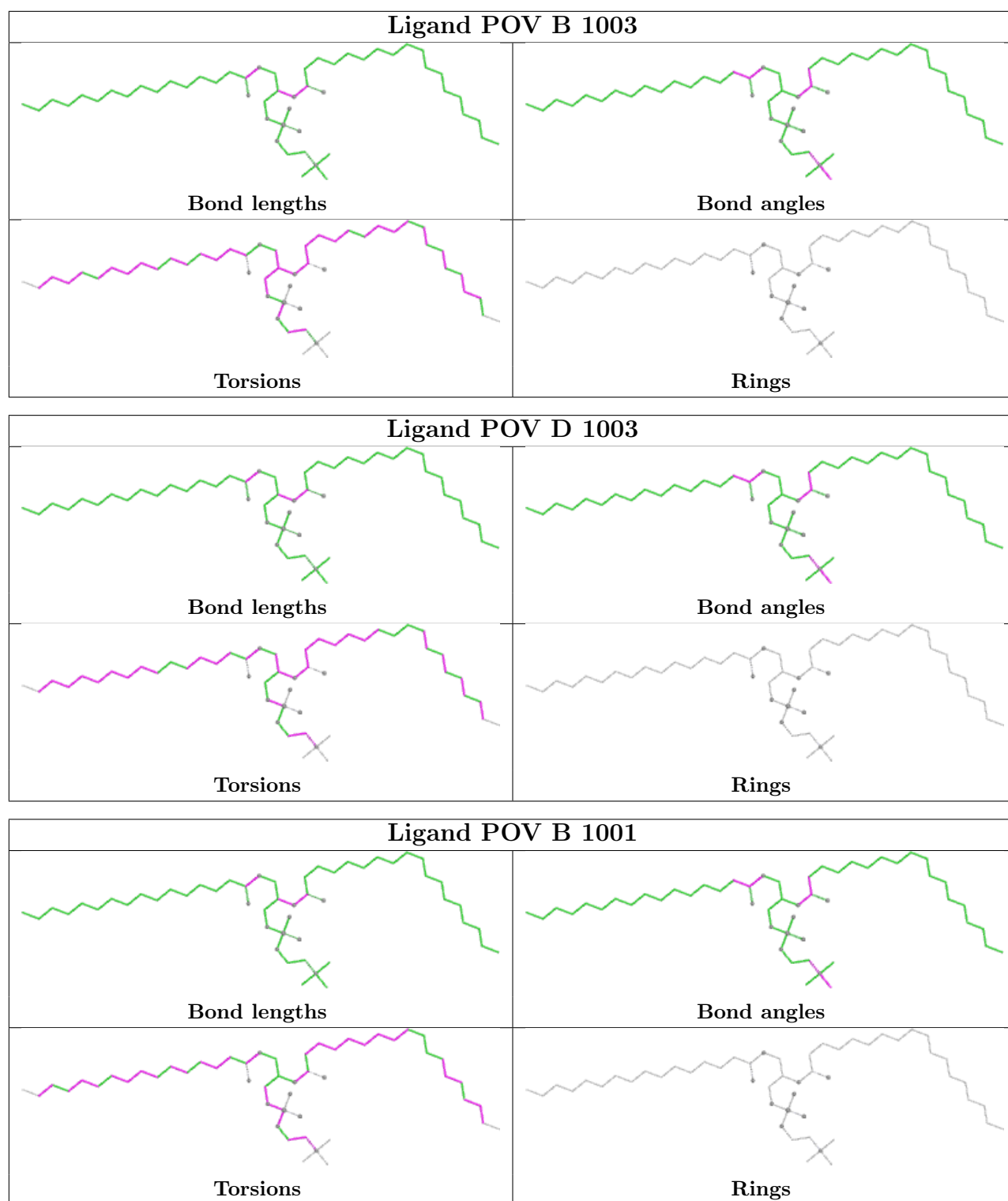
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	E	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	382:THR	C	383:ALA	N	3.47

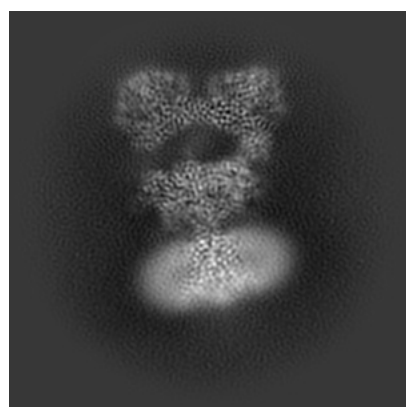
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-48901. These allow visual inspection of the internal detail of the map and identification of artifacts.

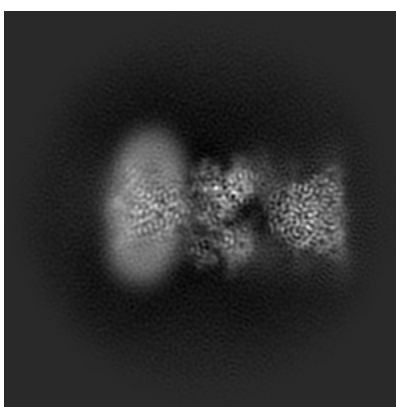
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

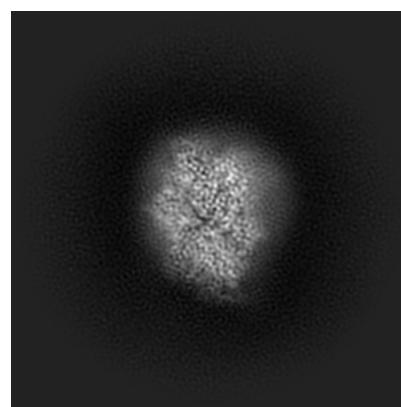
6.1.1 Primary map



X



Y

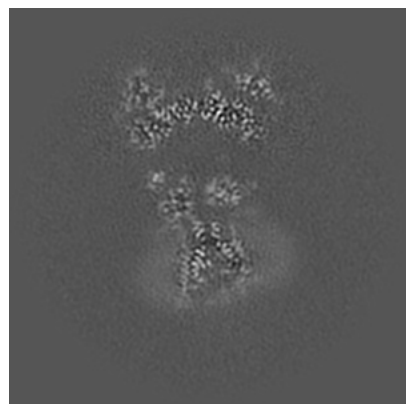


Z

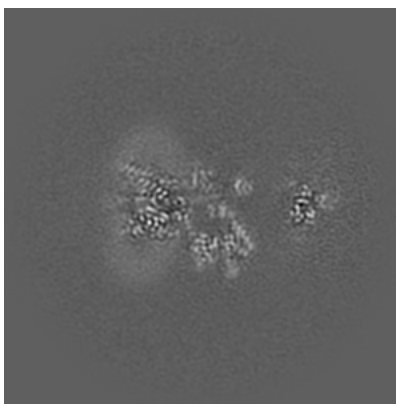
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

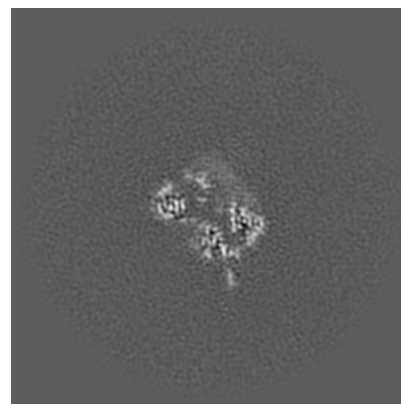
6.2.1 Primary map



X Index: 200



Y Index: 200

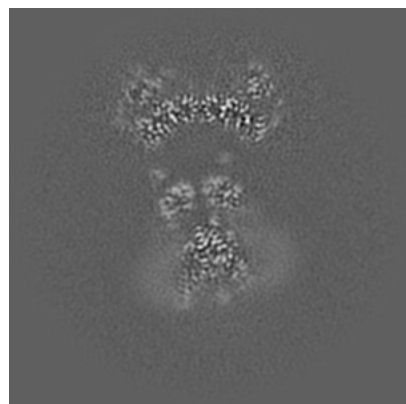


Z Index: 200

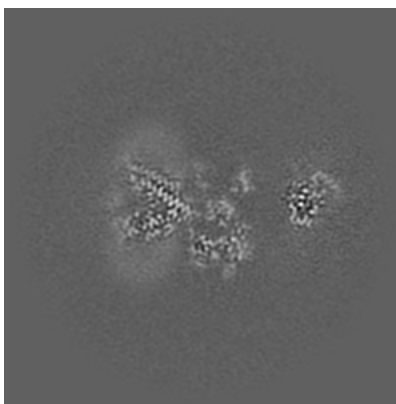
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

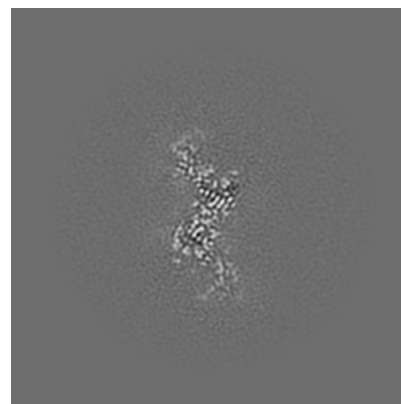
6.3.1 Primary map



X Index: 195



Y Index: 205

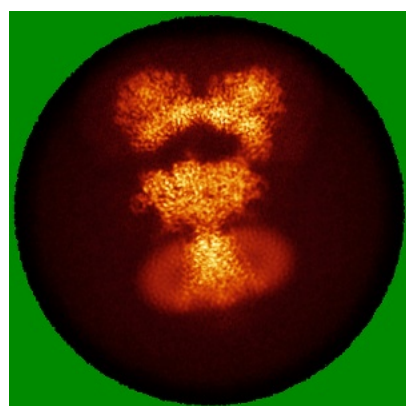


Z Index: 298

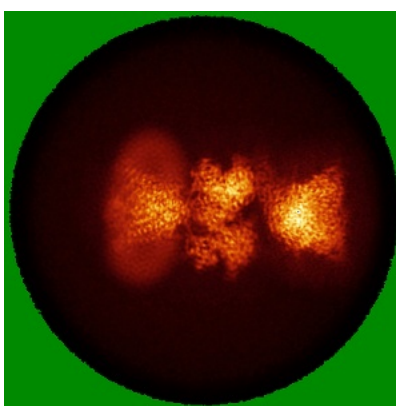
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

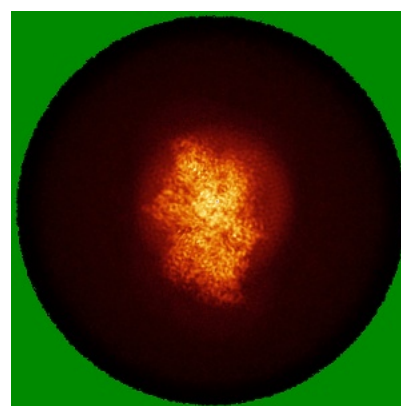
6.4.1 Primary map



X



Y

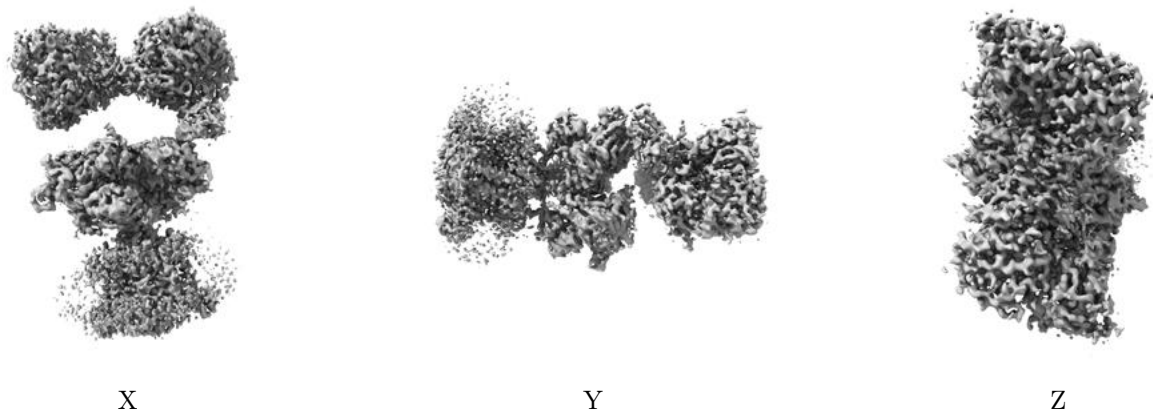


Z

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 5.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

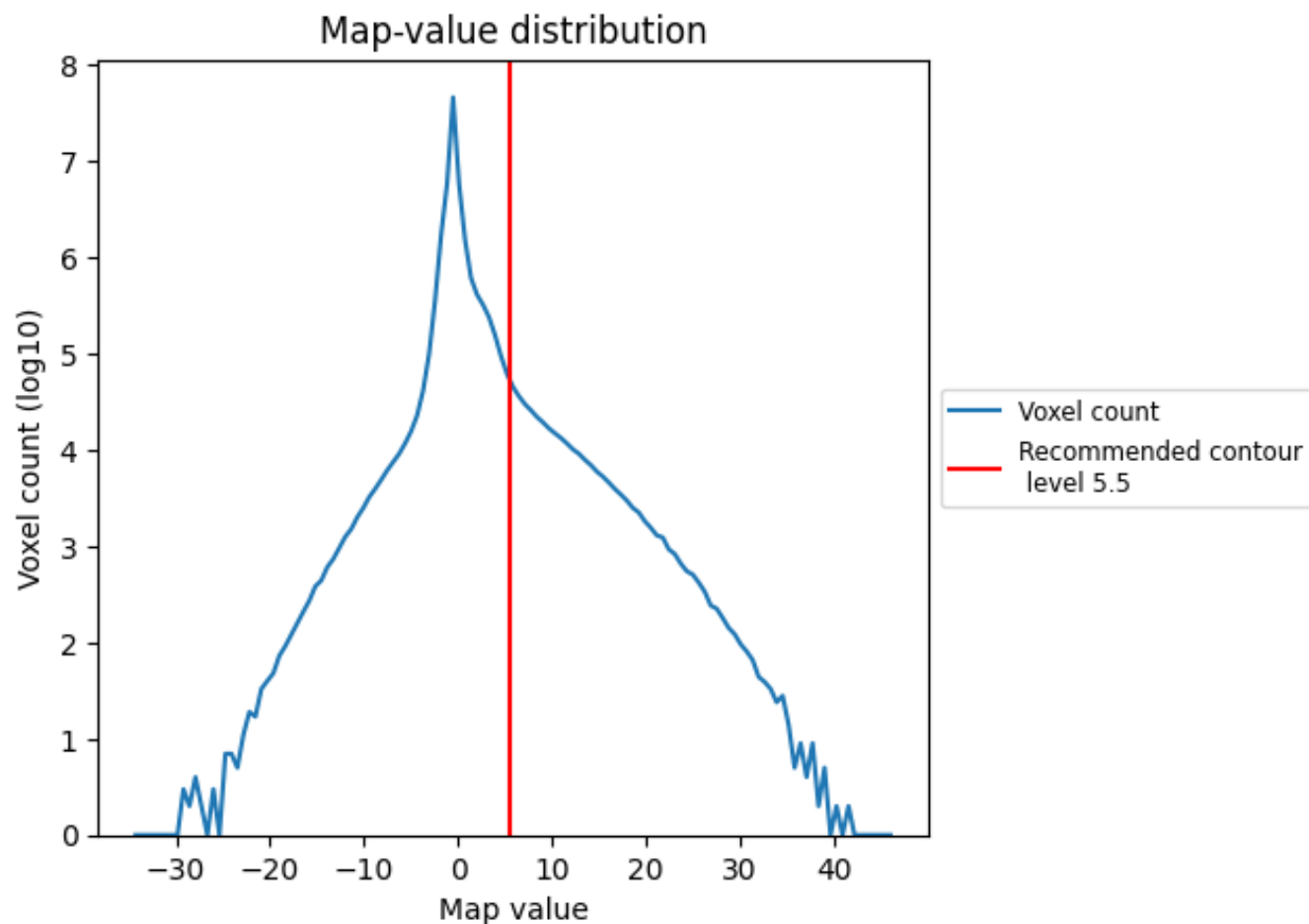
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

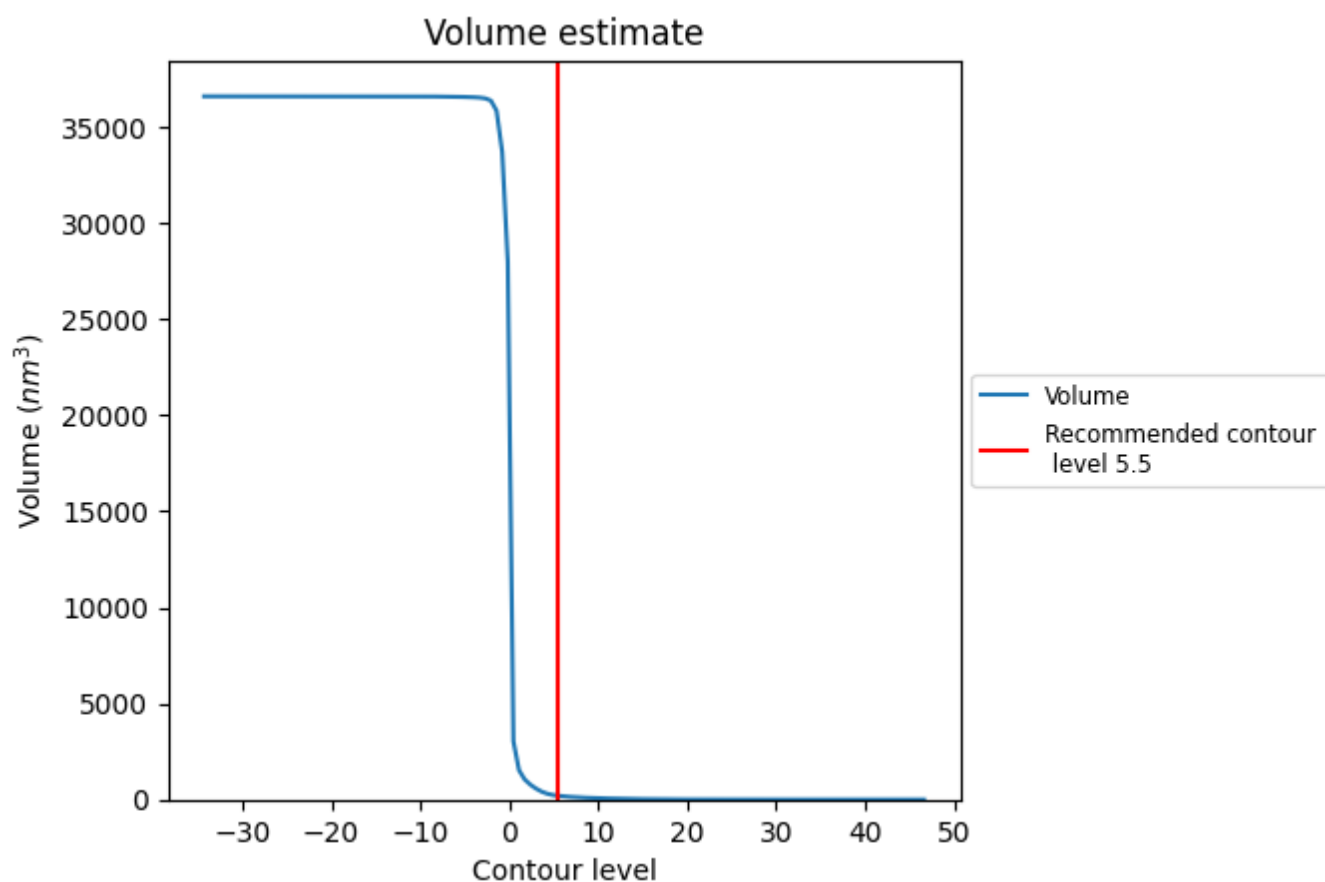
This section contains the results of statistical analysis of the map.

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.

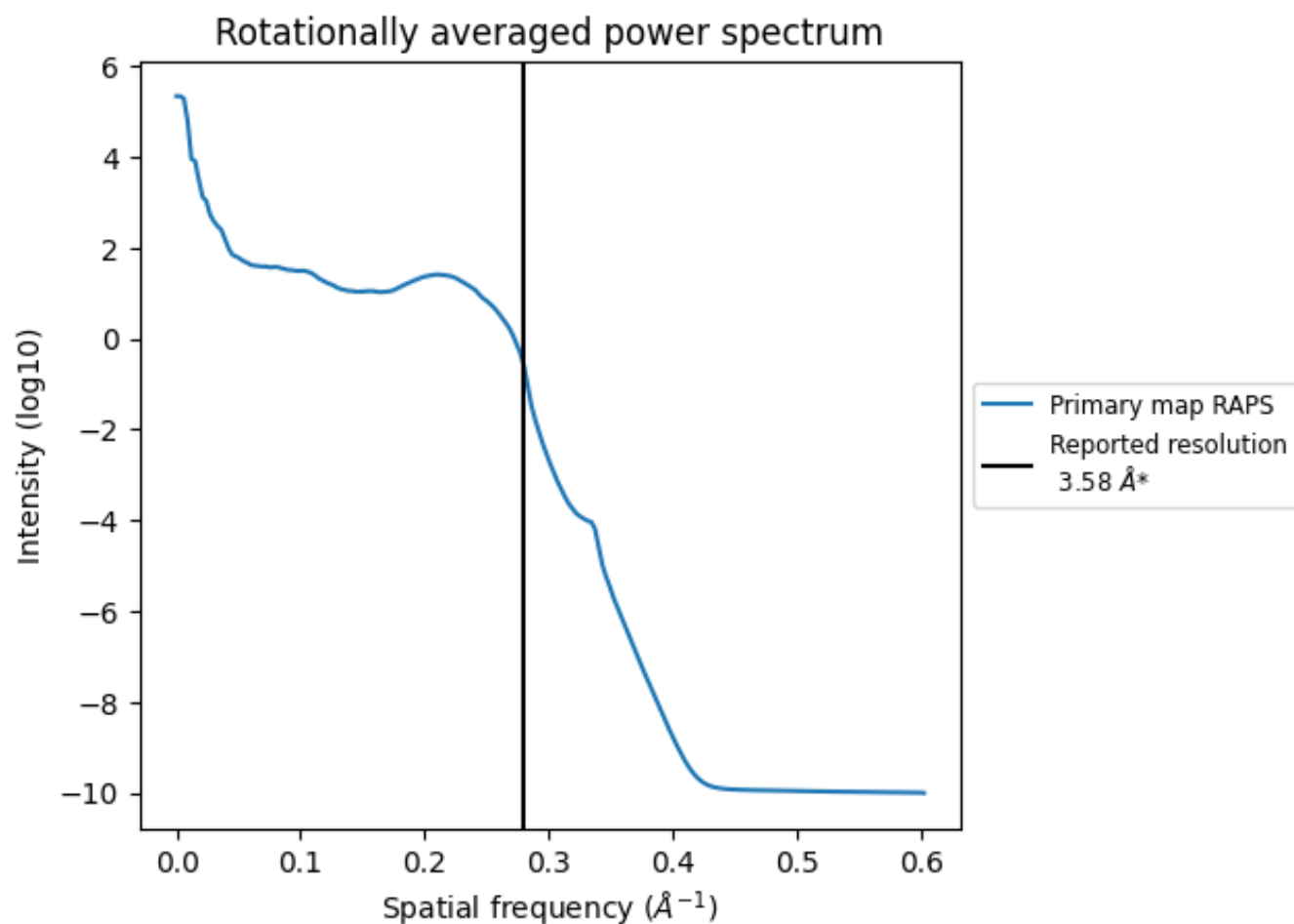
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 196 nm^3 ; this corresponds to an approximate mass of 177 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 0.279 Å⁻¹

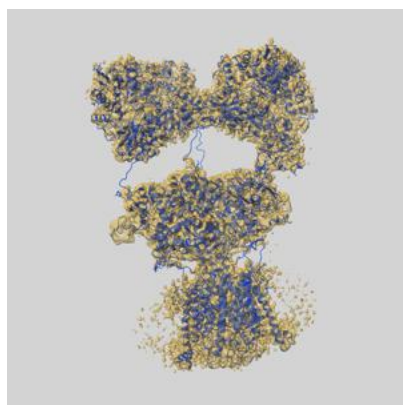
8 Fourier-Shell correlation ⓘ

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

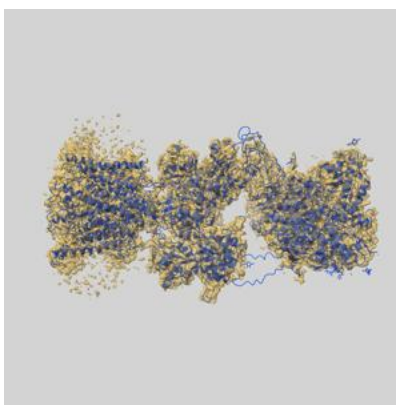
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-48901 and PDB model 9N4P. Per-residue inclusion information can be found in section [3](#) on page [9](#).

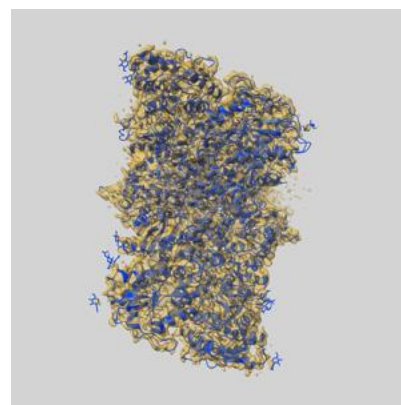
9.1 Map-model overlay [i](#)



X



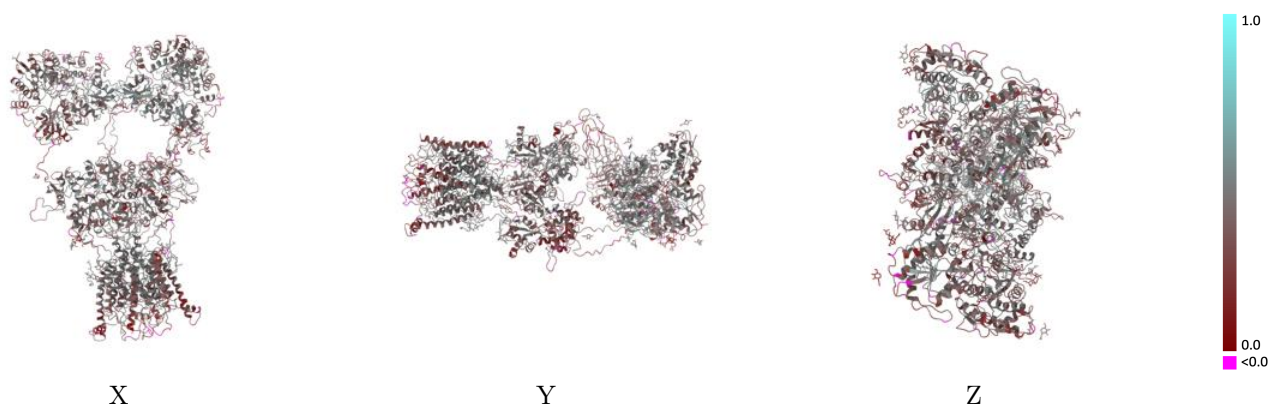
Y



Z

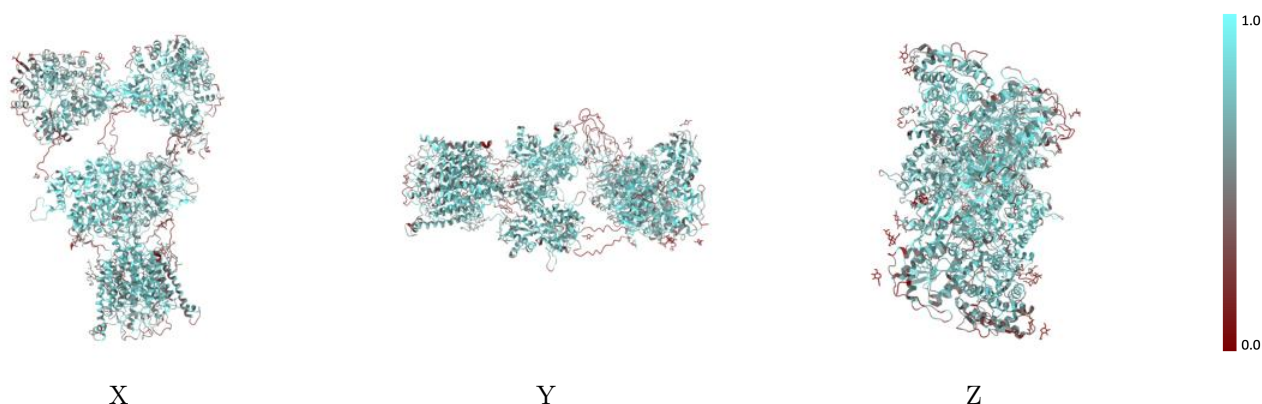
The images above show the 3D surface view of the map at the recommended contour level 5.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



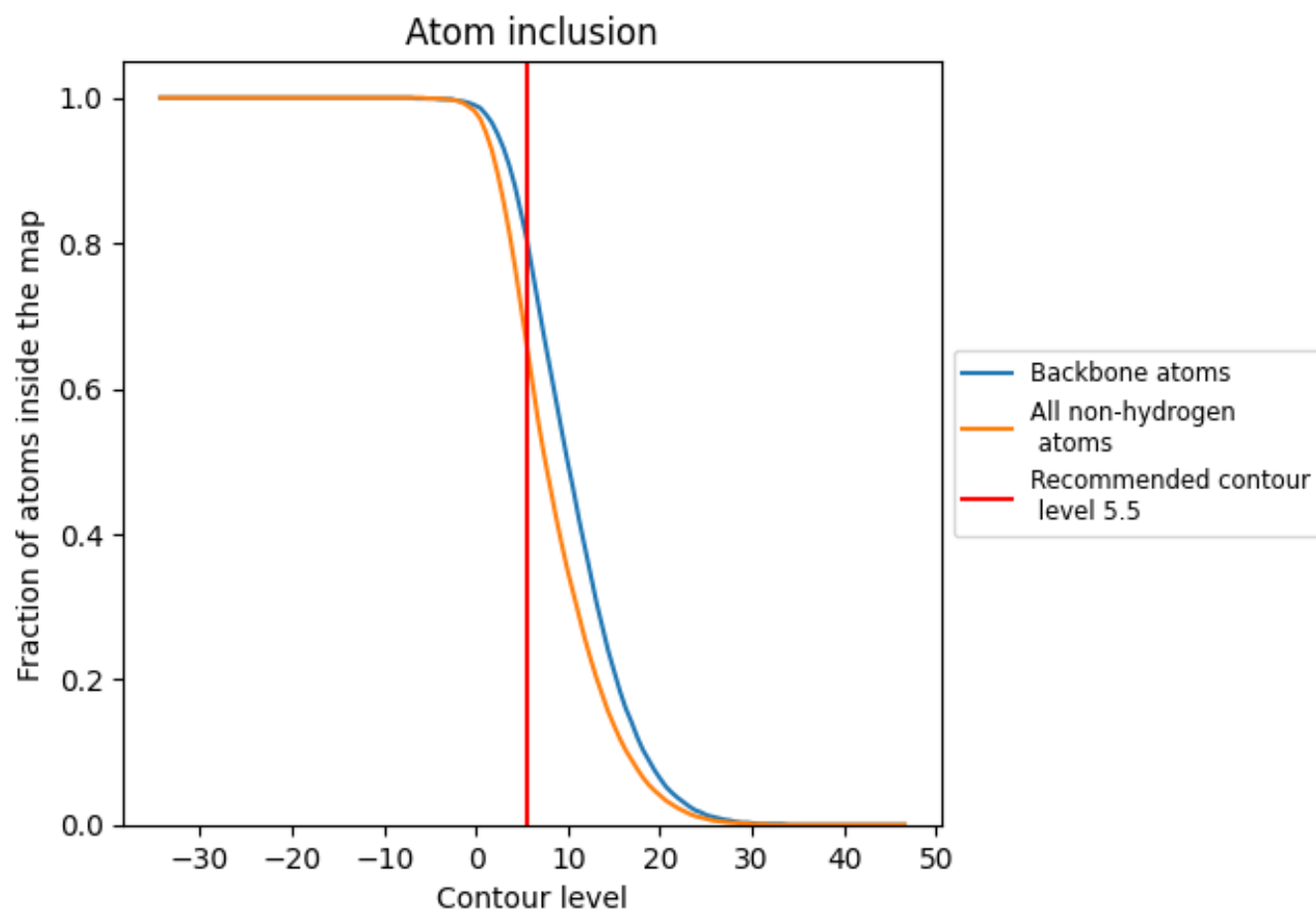
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (5.5).

9.4 Atom inclusion [i](#)



At the recommended contour level, 81% of all backbone atoms, 66% 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 (5.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6620	 0.3810
A	 0.6480	 0.3670
B	 0.6710	 0.3760
C	 0.6720	 0.3750
D	 0.7310	 0.4220
E	 0.5460	 0.3480
F	 0.3930	 0.4080
G	 0.1790	 0.3650
H	 0.2620	 0.2790
I	 0.2860	 0.2950
J	 0.0360	 0.1390
K	 0.5000	 0.3950
L	 0.4590	 0.4050
M	 0.2500	 0.3780
N	 0.6600	 0.4460
O	 0.3570	 0.4210
P	 0.1430	 0.1690
Q	 0.4430	 0.3580
R	 0.0710	 0.3460
S	 0.3210	 0.2840
T	 0.7700	 0.4660
U	 0.3930	 0.3050
V	 0.7140	 0.4740

