



Full wwPDB EM Validation Report ⓘ

Mar 28, 2026 – 11:54 PM UTC

PDB ID : 7WLL / pdb_00007wll
EMDB ID : EMD-32587
Title : CryoEM structure of human low-voltage activated T-type calcium channel Cav3.3 in complex with pimozone(PMZ)
Authors : He, L.; Yu, Z.; Dong, Y.; Chen, Q.; Zhao, Y.
Deposited on : 2022-01-13
Resolution : 3.60 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

EMDB validation analysis : 0.0.1.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

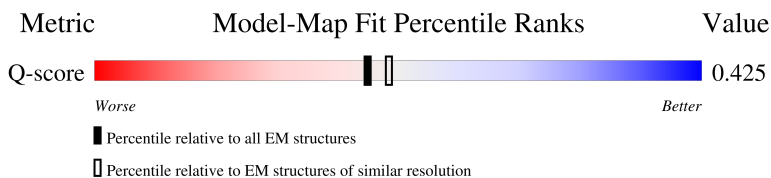
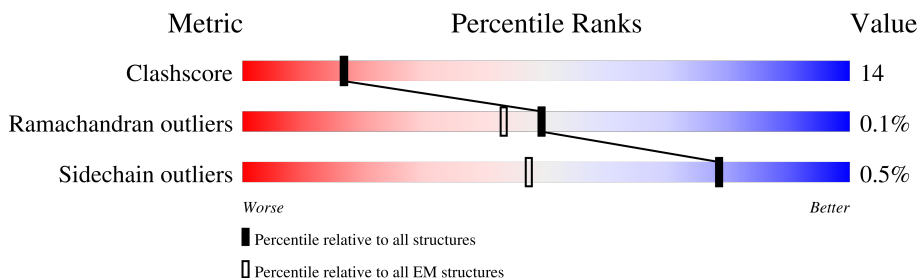
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.60 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	12797 (3.10 - 4.10)

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	2223	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	Y01	A	2312	X	-	-	-

2 Entry composition [i](#)

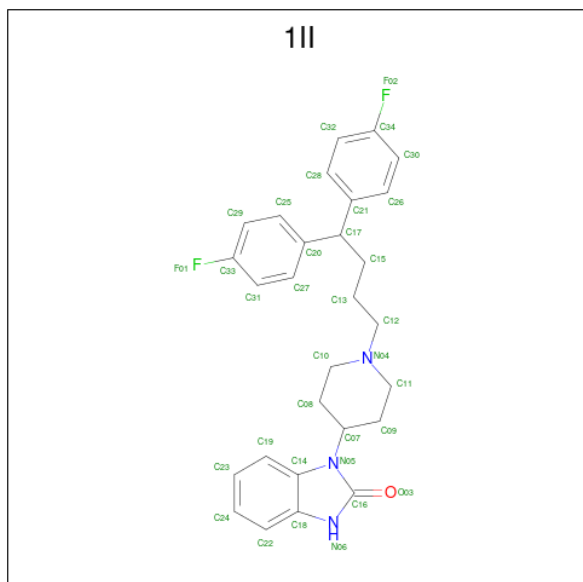
There are 6 unique types of molecules in this entry. The entry contains 9540 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Voltage-dependent T-type calcium channel subunit alpha-1I.

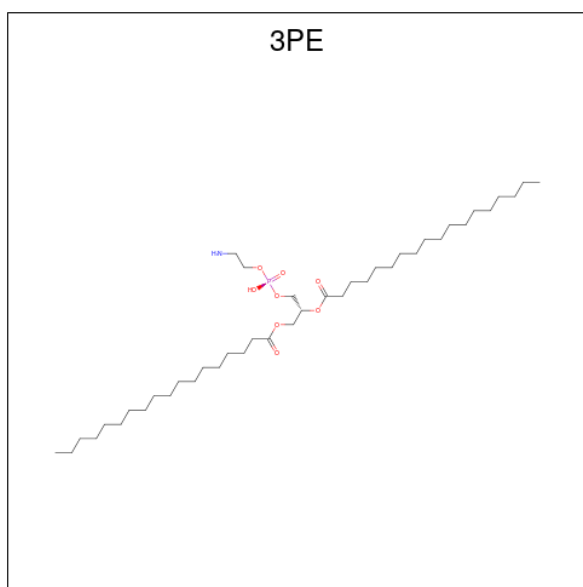
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1135	9111	5979	1499	1555	78	1	0

- Molecule 2 is 3-[1-[4,4-bis(4-fluorophenyl)butyl]piperidin-4-yl]-1 {H}-benzimidazol-2-one (CCD ID: 1II) (formula: C₂₈H₂₉F₂N₃O).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	F	N	O	
2	A	1	34	28	2	3	1	0

- Molecule 3 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (CCD ID: 3PE) (formula: C₄₁H₈₂NO₈P).



Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total	C	O	P	0
			39	30	8	1	
3	A	1	Total	C			0
			11	11			
3	A	1	Total	C			0
			11	11			
3	A	1	Total	C			0
			12	12			
3	A	1	Total	C			0
			12	12			
3	A	1	Total	C			0
			12	12			
3	A	1	Total	C			0
			13	13			
3	A	1	Total	C			0
			14	14			
3	A	1	Total	C			0
			10	10			

- Molecule 4 is CALCIUM ION (CCD ID: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		AltConf
4	A	2	Total	Ca	0
			2	2	

- Molecule 5 is CHOLESTEROL HEMISUCCINATE (CCD ID: Y01) (formula: C₃₁H₅₀O₄).



- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).

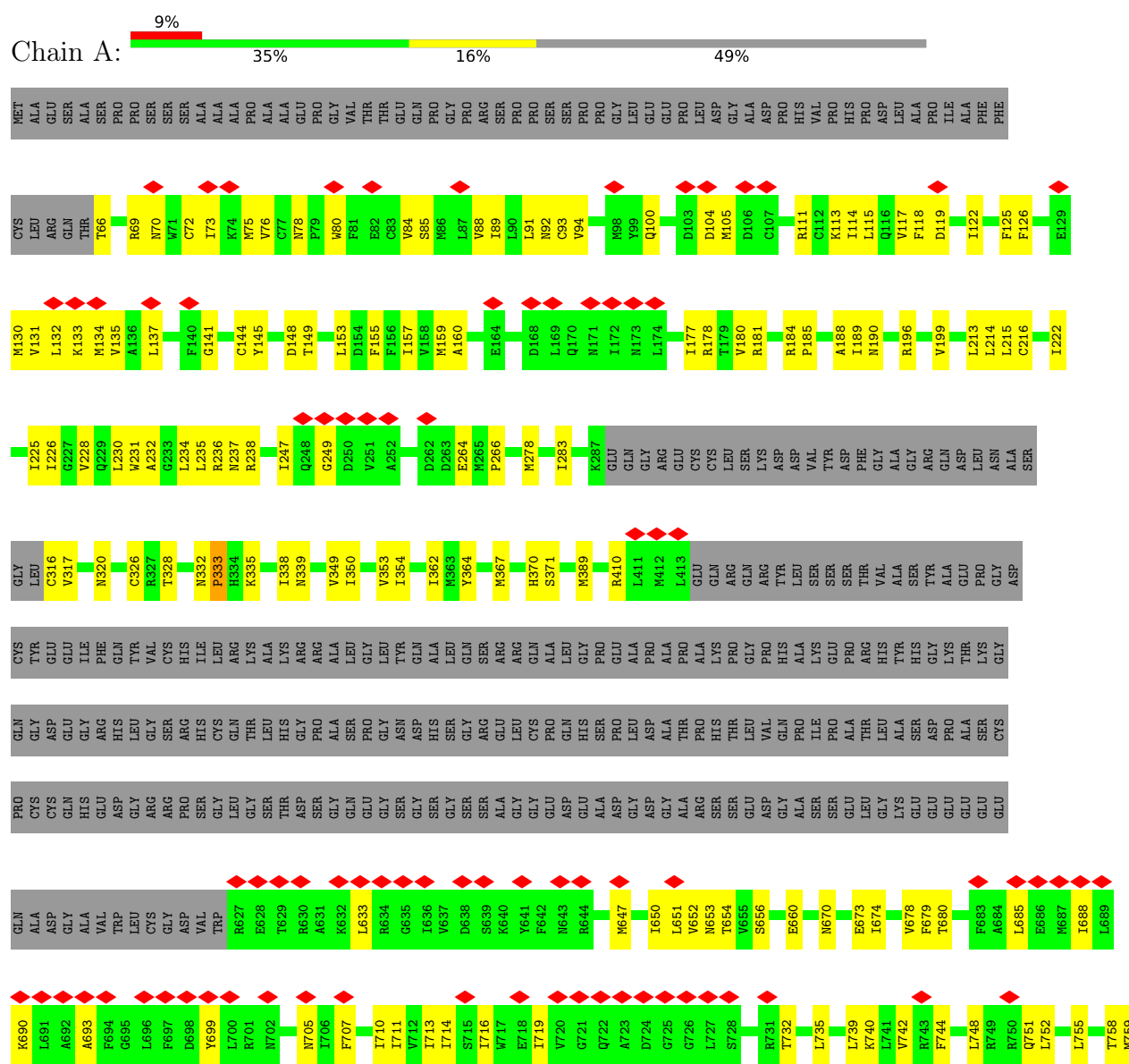


Mol	Chain	Residues	Atoms				AltConf
6	A	1	Total	C	N	O	0
			14	8	1	5	
6	A	1	Total	C	N	O	0
			14	8	1	5	

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: Voltage-dependent T-type calcium channel subunit alpha-1I





[illegible]

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	1623565	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	9.6	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	3.674	Depositor
Minimum map value	-2.404	Depositor
Average map value	-0.004	Depositor
Map value standard deviation	0.106	Depositor
Recommended contour level	0.65	Depositor
Map size ($\text{\AA}$)	266.24, 266.24, 266.24	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	1.04, 1.04, 1.04	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 1II, NAG, CA, 3PE, Y01

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	0.34	2/9314 (0.0%)	0.56	8/12625 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	333	PRO	C-O	-6.23	1.16	1.23
1	A	333	PRO	N-CA	-6.16	1.39	1.47

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1186	THR	N-CA-C	-12.61	97.99	113.50
1	A	1426	PHE	CA-CB-CG	9.37	123.17	113.80
1	A	1434	PHE	CB-CA-C	-6.19	101.42	110.96
1	A	1181	PHE	CA-CB-CG	5.88	119.68	113.80
1	A	177	ILE	N-CA-C	-5.30	108.33	113.53
1	A	1186	THR	CA-C-N	-5.22	113.14	121.02
1	A	1186	THR	C-N-CA	-5.22	113.14	121.02
1	A	865	PHE	CB-CA-C	-5.13	100.86	110.36

There are no chirality outliers.

There are no planarity outliers.

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	9111	0	9291	254	0
2	A	34	0	0	1	0
3	A	134	0	209	7	0
4	A	2	0	0	0	0
5	A	231	0	331	27	0
6	A	28	0	26	1	0
All	All	9540	0	9857	272	0

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

All (272) 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:332:ASN:HD22	1:A:339:ASN:ND2	1.41	1.17
1:A:332:ASN:ND2	1:A:339:ASN:HD22	1.46	1.13
1:A:236:ARG:HG2	1:A:332:ASN:OD1	1.46	1.13
1:A:1183:ASN:O	1:A:1186:THR:HG22	1.52	1.07
1:A:1474:CYS:H	1:A:1478:LEU:HB3	1.35	0.91
1:A:1185:ILE:HG22	1:A:1185:ILE:O	1.72	0.87
1:A:1445:GLU:CG	1:A:1448:ARG:HH21	1.90	0.84
1:A:1545:ARG:HA	1:A:1548:LYS:HB2	1.61	0.82
1:A:1181:PHE:CZ	5:A:2317:Y01:HAB2	2.15	0.81
1:A:680:THR:HG21	1:A:719:ILE:HD11	1.63	0.79
1:A:850:ASN:OD1	2:A:2301:1II:O03	2.03	0.77
1:A:236:ARG:CG	1:A:332:ASN:OD1	2.30	0.75
1:A:1445:GLU:HG3	1:A:1448:ARG:HH21	1.50	0.75
1:A:1190:GLU:HG3	1:A:1204:LEU:HD13	1.69	0.74
1:A:1527:THR:HG22	1:A:1562:SER:HB3	1.71	0.73
1:A:1614:GLN:NE2	1:A:1735:ASP:OD2	2.20	0.73
1:A:1433:ASN:HB3	1:A:1730:MET:SD	2.30	0.71
1:A:1445:GLU:OE2	1:A:1734:ASP:OD1	2.09	0.71
1:A:1377:ALA:HB1	1:A:1418:VAL:HG11	1.73	0.70
1:A:1185:ILE:O	1:A:1185:ILE:CG2	2.40	0.70
1:A:91:LEU:HD22	1:A:122:ILE:HD11	1.74	0.70
1:A:1292:LEU:HD11	1:A:1624:LEU:HD23	1.74	0.69
1:A:1584:ILE:O	1:A:1588:ARG:HG3	1.95	0.66
1:A:660:GLU:OE2	1:A:1326:GLN:NE2	2.28	0.66
1:A:1293:LYS:O	1:A:1297:GLU:HG2	1.96	0.65
1:A:214:LEU:HB3	1:A:1605:MET:HE1	1.77	0.65
1:A:1445:GLU:HG2	1:A:1448:ARG:HH21	1.61	0.65
1:A:1610:ASP:O	1:A:1613:VAL:N	2.29	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:216:CYS:SG	1:A:389:MET:HE3	2.36	0.65
1:A:1524:TYR:OH	1:A:1569:GLU:OE1	2.14	0.64
1:A:190:ASN:O	1:A:196:ARG:NH2	2.30	0.64
1:A:222:ILE:O	1:A:226:ILE:HG12	1.99	0.62
1:A:1181:PHE:CD1	5:A:2317:Y01:HAA3	2.34	0.62
1:A:1555:ASP:OD1	1:A:1597:LYS:NZ	2.32	0.62
1:A:1546:PHE:O	1:A:1553:GLN:NE2	2.32	0.62
1:A:214:LEU:HD22	1:A:1605:MET:HE3	1.80	0.62
1:A:148:ASP:OD1	1:A:149:THR:N	2.34	0.61
1:A:1286:ILE:HD13	1:A:1296:VAL:HG21	1.82	0.61
1:A:1345:ASN:OD1	1:A:1347:SER:OG	2.16	0.61
1:A:1181:PHE:CE2	5:A:2317:Y01:HAB2	2.35	0.61
1:A:1723:ASN:HA	1:A:1726:VAL:HG22	1.84	0.60
1:A:1546:PHE:HZ	1:A:1556:LEU:HD22	1.66	0.60
1:A:231:TRP:HA	1:A:234:LEU:HD12	1.83	0.60
1:A:126:PHE:HE2	1:A:184:ARG:HD3	1.68	0.59
1:A:716:ILE:HA	1:A:719:ILE:HD12	1.85	0.59
1:A:85:SER:O	1:A:89:ILE:HG12	2.02	0.59
1:A:1238:SER:OG	1:A:1241:ASN:OD1	2.17	0.58
1:A:1503:THR:HA	1:A:1506:LEU:HD12	1.85	0.58
1:A:1549:ASP:OD2	1:A:1552:ASN:N	2.36	0.58
1:A:707:PHE:O	1:A:711:ILE:HG12	2.03	0.58
1:A:1448:ARG:O	1:A:1452:LYS:N	2.35	0.58
1:A:410:ARG:HG2	1:A:410:ARG:HH11	1.69	0.58
1:A:1188:ALA:HB1	5:A:2317:Y01:HAE3	1.85	0.58
1:A:1246:PHE:O	1:A:1250:VAL:HG23	2.03	0.58
1:A:1391:ASP:HB3	1:A:1399:PRO:HB2	1.86	0.58
1:A:652:VAL:HG13	1:A:679:PHE:HZ	1.69	0.57
6:A:2313:NAG:H3	6:A:2313:NAG:H83	1.87	0.57
1:A:247:ILE:HG13	1:A:249:GLY:H	1.68	0.57
1:A:316:CYS:SG	1:A:317:VAL:N	2.78	0.57
1:A:770:MET:HE2	5:A:2319:Y01:HAQ2	1.87	0.56
1:A:685:LEU:HD23	1:A:688:ILE:HD11	1.88	0.56
1:A:1223:VAL:O	1:A:1227:GLY:N	2.38	0.56
1:A:1335:CYS:N	1:A:1398:GLN:OE1	2.27	0.55
1:A:1585:ARG:HA	1:A:1588:ARG:HE	1.70	0.55
1:A:652:VAL:HG13	1:A:679:PHE:CZ	2.41	0.55
1:A:353:VAL:HG13	1:A:362:ILE:HD11	1.89	0.55
1:A:1275:ARG:HG2	1:A:1278:ARG:HH21	1.71	0.55
1:A:364:TYR:CD1	1:A:1657:ARG:HD2	2.42	0.55
1:A:1495:PHE:HE1	3:A:2304:3PE:H332	1.72	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1487:HIS:O	1:A:1491:ILE:HG12	2.06	0.54
1:A:332:ASN:ND2	1:A:339:ASN:CB	2.70	0.54
1:A:670:ASN:HA	1:A:673:GLU:HG2	1.88	0.54
1:A:1626:PHE:CE2	1:A:1630:PHE:HE2	2.25	0.53
1:A:707:PHE:CE1	1:A:711:ILE:HD11	2.43	0.53
1:A:1295:VAL:HG21	1:A:1621:ASN:HB3	1.89	0.53
1:A:809:TRP:HA	1:A:812:VAL:HG12	1.91	0.53
1:A:1173:ASP:OD1	1:A:1174:TYR:N	2.42	0.53
1:A:1419:SER:O	1:A:1423:LEU:HG	2.09	0.53
1:A:1613:VAL:HA	1:A:1616:LEU:HD23	1.90	0.53
1:A:1248:VAL:O	1:A:1252:ILE:HG12	2.09	0.52
1:A:1526:PHE:HA	1:A:1529:VAL:HG12	1.92	0.52
1:A:1557:ALA:O	1:A:1561:LEU:HG	2.09	0.52
1:A:1570:GLU:HA	1:A:1573:ILE:HD12	1.90	0.52
1:A:131:VAL:HG13	1:A:132:LEU:HD12	1.90	0.52
1:A:732:THR:HG22	3:A:2316:3PE:H3B2	1.91	0.52
1:A:755:LEU:O	1:A:758:THR:OG1	2.22	0.52
1:A:1472:THR:HG22	1:A:1477:ARG:HE	1.74	0.52
1:A:1480:ILE:HA	1:A:1484:CYS:HB2	1.92	0.51
1:A:1547:PHE:HA	1:A:1553:GLN:HE21	1.75	0.51
1:A:235:LEU:HD12	1:A:333:PRO:HG3	1.93	0.51
1:A:690:LYS:HD3	1:A:705:ASN:ND2	2.26	0.51
1:A:1426:PHE:O	1:A:1427:VAL:C	2.51	0.51
1:A:1452:LYS:HA	1:A:1455:ARG:HE	1.76	0.51
1:A:332:ASN:ND2	1:A:339:ASN:ND2	2.24	0.51
1:A:732:THR:HG21	3:A:2316:3PE:H392	1.93	0.51
1:A:1183:ASN:C	1:A:1186:THR:HG22	2.30	0.50
1:A:1563:VAL:HA	1:A:1566:ILE:HG12	1.93	0.50
1:A:283:ILE:HD12	1:A:320:ASN:HB3	1.94	0.50
1:A:647:MET:HG3	1:A:744:PHE:HD2	1.76	0.50
1:A:1270:VAL:O	1:A:1274:LEU:HG	2.11	0.50
1:A:824:ASN:OD1	1:A:825:VAL:N	2.44	0.50
1:A:1669:LEU:HD12	5:A:2315:Y01:HAQ2	1.94	0.50
1:A:1192:PRO:HG3	1:A:1642:GLY:HA3	1.93	0.50
1:A:843:VAL:HG21	3:A:2320:3PE:H3C2	1.93	0.50
1:A:1358:HIS:CE1	1:A:1362:ASN:HD22	2.30	0.50
1:A:1457:LEU:HD23	1:A:1460:LYS:HD2	1.93	0.50
1:A:69:ARG:O	1:A:73:ILE:HG23	2.11	0.49
1:A:111:ARG:O	1:A:115:LEU:HD23	2.12	0.49
1:A:1454:LEU:HD23	1:A:1457:LEU:HD12	1.93	0.49
1:A:1215:PHE:O	1:A:1218:GLU:HG3	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:73:ILE:HA	1:A:76:VAL:HG22	1.95	0.49
1:A:1376:LEU:HD23	1:A:1382:TRP:HB2	1.95	0.48
5:A:2317:Y01:HAB1	5:A:2317:Y01:HAJ1	1.70	0.48
1:A:100:GLN:O	1:A:104:ASP:N	2.36	0.48
1:A:153:LEU:O	1:A:157:ILE:HD12	2.14	0.48
1:A:1541:PHE:HE2	1:A:1545:ARG:H	1.61	0.48
1:A:350:ILE:O	1:A:354:ILE:HG12	2.14	0.48
1:A:1400:VAL:HG23	1:A:1403:HIS:HB2	1.96	0.48
1:A:1613:VAL:O	1:A:1616:LEU:HD23	2.13	0.48
1:A:1500:ASN:O	1:A:1504:MET:HE2	2.13	0.48
1:A:633:LEU:HD23	1:A:693:ALA:HB2	1.95	0.48
1:A:1500:ASN:HA	1:A:1503:THR:HG22	1.95	0.48
1:A:1445:GLU:HG3	1:A:1448:ARG:NH2	2.25	0.48
1:A:225:ILE:HG21	1:A:1592:ILE:HD13	1.95	0.48
5:A:2314:Y01:HAE2	5:A:2314:Y01:HBB	1.59	0.48
1:A:111:ARG:HD3	1:A:114:ILE:HD11	1.96	0.47
1:A:189:ILE:HD11	1:A:199:VAL:HG21	1.96	0.47
1:A:748:LEU:O	1:A:752:LEU:HD13	2.14	0.47
1:A:1190:GLU:OE1	1:A:1190:GLU:N	2.39	0.47
1:A:234:LEU:HD13	1:A:370:HIS:HB2	1.97	0.47
1:A:1647:ASN:OD1	1:A:1650:ASN:N	2.47	0.47
1:A:266:PRO:HG3	1:A:333:PRO:HB3	1.97	0.47
1:A:710:ILE:O	1:A:714:ILE:HG12	2.14	0.47
1:A:157:ILE:HG21	1:A:184:ARG:HG2	1.97	0.47
1:A:332:ASN:ND2	1:A:339:ASN:HB3	2.30	0.47
1:A:1206:VAL:O	1:A:1210:ILE:HG12	2.15	0.47
1:A:1653:GLU:H	1:A:1686:ASP:CG	2.22	0.47
3:A:2310:3PE:H362	3:A:2316:3PE:H371	1.96	0.47
1:A:335:LYS:NZ	1:A:829:ASN:OD1	2.48	0.47
1:A:1667:ALA:HA	1:A:1670:THR:HG22	1.95	0.46
1:A:72:CYS:HA	1:A:75:MET:HE2	1.96	0.46
1:A:1220:THR:HA	1:A:1223:VAL:HG22	1.97	0.46
1:A:1480:ILE:HG21	1:A:1539:VAL:HG13	1.98	0.46
1:A:840:LEU:HB2	5:A:2314:Y01:HAQ2	1.97	0.46
1:A:1500:ASN:HD21	1:A:1594:ARG:HE	1.63	0.46
1:A:119:ASP:OD1	1:A:184:ARG:NH1	2.45	0.46
1:A:332:ASN:HD22	1:A:339:ASN:CG	2.17	0.46
1:A:1445:GLU:HG2	1:A:1448:ARG:NH2	2.29	0.46
1:A:1648:ASP:OD1	1:A:1648:ASP:N	2.49	0.46
1:A:228:VAL:O	1:A:232:ALA:HB2	2.15	0.46
1:A:92:ASN:HB2	1:A:122:ILE:HG21	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:2317:Y01:HAE2	5:A:2317:Y01:HBB	1.62	0.45
5:A:2319:Y01:HAJ2	5:A:2319:Y01:HAC3	1.72	0.45
1:A:137:LEU:O	1:A:144:CYS:HA	2.17	0.45
1:A:1668:PHE:HE2	5:A:2315:Y01:HAJ1	1.79	0.45
1:A:338:ILE:HD12	1:A:349:VAL:HG22	1.97	0.45
1:A:1183:ASN:HA	1:A:1211:PHE:CE2	2.51	0.45
1:A:735:LEU:HD11	1:A:1322:ILE:HB	1.98	0.45
1:A:105:MET:SD	1:A:105:MET:N	2.89	0.45
1:A:238:ARG:O	1:A:326:CYS:HB2	2.16	0.45
1:A:1434:PHE:O	1:A:1435:HIS:C	2.58	0.45
1:A:118:PHE:O	1:A:122:ILE:HG12	2.16	0.45
1:A:353:VAL:CG1	1:A:362:ILE:HD11	2.47	0.45
1:A:1268:LEU:HD23	1:A:1271:LEU:HD12	1.99	0.45
1:A:1390:LEU:HD23	1:A:1407:MET:HB2	1.98	0.45
1:A:1430:VAL:O	1:A:1431:VAL:C	2.59	0.45
1:A:818:LEU:HD23	1:A:818:LEU:HA	1.86	0.44
5:A:2317:Y01:HAP1	5:A:2317:Y01:HAO2	1.33	0.44
1:A:1268:LEU:HD23	1:A:1268:LEU:HA	1.85	0.44
1:A:1268:LEU:HA	1:A:1271:LEU:HD12	1.99	0.44
1:A:1445:GLU:HA	1:A:1448:ARG:HE	1.82	0.44
1:A:1394:ALA:HB3	1:A:1397:GLN:NE2	2.32	0.44
1:A:1440:HIS:O	1:A:1441:GLN:C	2.59	0.44
1:A:94:VAL:HA	5:A:2319:Y01:HAT2	2.00	0.44
1:A:653:ASN:O	1:A:656:SER:OG	2.29	0.44
1:A:1165:THR:O	1:A:1167:ILE:HG12	2.17	0.44
1:A:1340:THR:O	1:A:1340:THR:HG22	2.17	0.44
1:A:89:ILE:HG21	1:A:188:ALA:HB2	1.98	0.44
1:A:215:LEU:HB2	1:A:1605:MET:SD	2.58	0.44
1:A:349:VAL:HG13	1:A:362:ILE:HD12	1.99	0.44
1:A:1288:ARG:N	1:A:1288:ARG:HD2	2.33	0.44
1:A:1495:PHE:CE1	3:A:2304:3PE:H332	2.52	0.44
1:A:1663:ASN:HB2	1:A:1666:MET:HG3	2.00	0.44
1:A:78:ASN:ND2	1:A:80:TRP:HB2	2.33	0.44
1:A:1344:THR:O	1:A:1397:GLN:HB2	2.18	0.44
1:A:1365:ASN:HB3	5:A:2311:Y01:HAD2	1.98	0.44
1:A:1393:VAL:HA	1:A:1403:HIS:CD2	2.53	0.44
1:A:1527:THR:O	1:A:1531:VAL:HG23	2.18	0.44
1:A:278:MET:HB2	1:A:278:MET:HE3	1.78	0.44
1:A:831:MET:HG3	1:A:836:PRO:HA	1.99	0.44
1:A:1492:PHE:HE1	1:A:1529:VAL:HG21	1.83	0.44
1:A:765:PHE:CE2	1:A:857:LEU:HD22	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1361:TYR:CE2	1:A:1375:VAL:HG21	2.53	0.44
1:A:1688:LEU:HD12	1:A:1688:LEU:O	2.18	0.44
5:A:2311:Y01:HBB	5:A:2311:Y01:HAE2	1.73	0.44
1:A:820:GLN:HG2	1:A:846:MET:CE	2.48	0.43
1:A:770:MET:HE3	1:A:774:PHE:HB2	1.99	0.43
1:A:85:SER:O	1:A:88:VAL:HG22	2.18	0.43
1:A:93:CYS:SG	1:A:185:PRO:HB3	2.59	0.43
1:A:155:PHE:O	1:A:159:MET:HG2	2.18	0.43
5:A:2308:Y01:HAA1	5:A:2308:Y01:HAJ2	1.87	0.43
1:A:1585:ARG:HG3	1:A:1588:ARG:HH21	1.83	0.43
5:A:2312:Y01:HAP1	5:A:2312:Y01:HAO1	1.76	0.43
1:A:364:TYR:OH	1:A:1658:HIS:HB2	2.18	0.43
1:A:1393:VAL:HG23	1:A:1403:HIS:NE2	2.34	0.43
1:A:1707:PRO:HB2	5:A:2312:Y01:HAU2	2.00	0.43
1:A:846:MET:HB3	1:A:846:MET:HE2	1.75	0.43
1:A:88:VAL:HG21	1:A:125:PHE:CE1	2.54	0.43
1:A:1497:ILE:HD11	1:A:1597:LYS:HD3	2.01	0.43
1:A:1569:GLU:OE1	1:A:1573:ILE:HD11	2.19	0.43
1:A:650:ILE:HD13	1:A:740:LYS:HB2	2.01	0.43
1:A:1271:LEU:O	1:A:1275:ARG:HG3	2.19	0.43
1:A:213:LEU:O	1:A:216:CYS:HB2	2.18	0.43
1:A:1354:TYR:O	1:A:1355:ARG:HB2	2.19	0.43
1:A:1500:ASN:O	1:A:1503:THR:HG22	2.18	0.43
1:A:1611:THR:HG21	1:A:1732:HIS:CD2	2.54	0.43
1:A:1282:PRO:O	1:A:1628:LEU:HD11	2.19	0.42
1:A:1654:GLY:N	1:A:1686:ASP:OD2	2.34	0.42
1:A:1210:ILE:O	1:A:1214:ILE:HG12	2.19	0.42
1:A:1240:TRP:HB3	1:A:1287:SER:HB3	2.00	0.42
5:A:2308:Y01:HBB	5:A:2308:Y01:HAE2	1.75	0.42
5:A:2311:Y01:HAP1	5:A:2311:Y01:HAO1	1.51	0.42
1:A:111:ARG:HD3	1:A:111:ARG:HA	1.89	0.42
1:A:759:MET:HA	1:A:762:VAL:HB	2.01	0.42
1:A:1367:GLY:C	5:A:2312:Y01:HAD3	2.44	0.42
1:A:1586:ILE:HA	1:A:1589:VAL:HG12	2.01	0.42
1:A:133:LYS:HD2	1:A:145:TYR:HE1	1.84	0.42
1:A:1529:VAL:O	1:A:1533:GLU:OE1	2.38	0.42
1:A:178:ARG:HH21	1:A:181:ARG:HH22	1.67	0.42
1:A:1421:PHE:O	1:A:1425:MET:HG3	2.20	0.42
1:A:332:ASN:HD22	1:A:339:ASN:HD22	0.63	0.42
1:A:367:MET:HA	1:A:371:SER:O	2.20	0.42
1:A:1220:THR:O	1:A:1224:VAL:HG13	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1505:SER:O	1:A:1505:SER:OG	2.31	0.42
1:A:790:LEU:HD23	1:A:791:ARG:O	2.20	0.42
1:A:1346:ARG:HH21	1:A:1356:TRP:NE1	2.18	0.41
5:A:2312:Y01:HAP2	5:A:2312:Y01:HAE2	1.92	0.41
1:A:690:LYS:HG2	1:A:699:TYR:HD1	1.85	0.41
1:A:761:ASN:O	1:A:764:THR:HG22	2.20	0.41
1:A:831:MET:CG	1:A:836:PRO:HA	2.50	0.41
1:A:113:LYS:O	1:A:117:VAL:HG23	2.21	0.41
1:A:713:ILE:HA	1:A:716:ILE:HG12	2.02	0.41
1:A:861:LEU:HB2	1:A:1427:VAL:HG21	2.02	0.41
1:A:1426:PHE:CE1	1:A:1726:VAL:HG12	2.55	0.41
5:A:2315:Y01:HAQ1	5:A:2315:Y01:HAE3	1.83	0.41
1:A:226:ILE:O	1:A:230:LEU:HG	2.21	0.41
5:A:2314:Y01:HAP1	5:A:2314:Y01:HAO2	1.23	0.41
1:A:237:ASN:HA	1:A:328:THR:HA	2.03	0.41
1:A:739:LEU:O	1:A:742:VAL:HG12	2.20	0.41
1:A:1304:LYS:HA	1:A:1304:LYS:HD2	1.76	0.41
3:A:2310:3PE:H3A1	3:A:2310:3PE:H372	1.81	0.41
1:A:130:MET:C	1:A:134:MET:HE3	2.46	0.41
1:A:332:ASN:HB3	1:A:333:PRO:HD2	2.02	0.41
1:A:332:ASN:CG	1:A:339:ASN:HB3	2.45	0.41
1:A:651:LEU:O	1:A:654:THR:HG22	2.20	0.41
1:A:674:ILE:O	1:A:678:VAL:HG23	2.21	0.41
1:A:264:GLU:OE1	1:A:264:GLU:N	2.53	0.41
1:A:1227:GLY:O	1:A:1235:TYR:N	2.41	0.41
1:A:66:THR:O	1:A:70:ASN:ND2	2.54	0.40
1:A:141:GLY:N	1:A:144:CYS:HB2	2.35	0.40
1:A:1200:GLU:O	1:A:1204:LEU:HG	2.21	0.40
1:A:1373:LEU:HD23	1:A:1373:LEU:HA	1.86	0.40
1:A:1445:GLU:CG	1:A:1448:ARG:NH2	2.70	0.40
1:A:84:VAL:O	1:A:88:VAL:HG13	2.21	0.40
1:A:160:ALA:HB1	1:A:180:VAL:HG11	2.03	0.40
1:A:1526:PHE:N	1:A:1526:PHE:CD1	2.89	0.40
5:A:2314:Y01:HAD1	5:A:2314:Y01:HAR2	1.88	0.40
1:A:1426:PHE:O	1:A:1428:GLY:N	2.54	0.40
1:A:125:PHE:CD1	1:A:125:PHE:C	2.99	0.40
1:A:132:LEU:HA	1:A:135:VAL:HG22	2.03	0.40
1:A:751:GLN:O	1:A:755:LEU:HG	2.22	0.40
5:A:2308:Y01:HAP1	5:A:2308:Y01:HAO2	1.46	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	1128/2223 (51%)	1045 (93%)	82 (7%)	1 (0%)	48 79

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1441	GLN

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	1006/1879 (54%)	1001 (100%)	5 (0%)	81 80

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	866	GLN
1	A	1182	LEU
1	A	1426	PHE
1	A	1436	LYS
1	A	1438	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	70	ASN
1	A	334	HIS
1	A	339	ASN
1	A	391	ASN
1	A	409	HIS
1	A	866	GLN
1	A	1183	ASN
1	A	1403	HIS
1	A	1500	ASN
1	A	1523	ASN

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](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 21 ligands modelled in this entry, 2 are monoatomic - leaving 19 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	3PE	A	2302	-	38,38,50	2.39	11 (28%)	41,43,55	1.19	2 (4%)
3	3PE	A	2318	-	12,12,50	1.69	0	11,11,55	0.81	0
3	3PE	A	2303	-	10,10,50	1.67	0	9,9,55	0.82	0
5	Y01	A	2312	-	38,38,38	0.75	1 (2%)	57,57,57	4.61	20 (35%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	Y01	A	2315	-	32,32,38	0.89	2 (6%)	49,49,57	1.66	10 (20%)
6	NAG	A	2313	1	14,14,15	0.40	0	17,19,21	1.35	2 (11%)
3	3PE	A	2320	-	13,13,50	1.66	0	12,12,55	0.90	0
6	NAG	A	2309	-	14,14,15	0.20	0	17,19,21	0.49	0
3	3PE	A	2316	-	11,11,50	1.70	0	10,10,55	0.85	0
3	3PE	A	2305	-	11,11,50	1.64	0	10,10,55	0.95	0
5	Y01	A	2317	-	38,38,38	0.74	1 (2%)	57,57,57	1.67	16 (28%)
3	3PE	A	2310	-	11,11,50	1.65	0	10,10,55	0.90	0
2	1II	A	2301	-	38,38,38	2.86	9 (23%)	53,53,53	1.62	13 (24%)
3	3PE	A	2321	-	9,9,50	1.63	0	8,8,55	0.82	0
5	Y01	A	2314	-	38,38,38	0.69	0	57,57,57	1.93	14 (24%)
5	Y01	A	2311	-	34,34,38	0.73	1 (2%)	52,52,57	1.91	13 (25%)
5	Y01	A	2319	-	38,38,38	0.74	1 (2%)	57,57,57	1.54	11 (19%)
5	Y01	A	2308	-	34,34,38	0.84	1 (2%)	52,52,57	1.74	12 (23%)
3	3PE	A	2304	-	10,10,50	1.64	0	9,9,55	0.91	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	3PE	A	2302	-	-	16/40/40/54	-
3	3PE	A	2318	-	-	2/10/10/54	-
3	3PE	A	2303	-	-	4/8/8/54	-
5	Y01	A	2312	-	1/1/12/13	8/19/77/77	0/4/4/4
5	Y01	A	2315	-	-	10/12/70/77	0/4/4/4
6	NAG	A	2313	1	-	6/6/23/26	0/1/1/1
3	3PE	A	2320	-	-	3/11/11/54	-
6	NAG	A	2309	-	-	2/6/23/26	0/1/1/1
3	3PE	A	2316	-	-	4/9/9/54	-
3	3PE	A	2305	-	-	3/9/9/54	-
5	Y01	A	2317	-	-	13/19/77/77	0/4/4/4
3	3PE	A	2310	-	-	4/9/9/54	-
2	1II	A	2301	-	-	6/18/28/28	0/5/5/5
3	3PE	A	2321	-	-	2/7/7/54	-
5	Y01	A	2314	-	-	13/19/77/77	0/4/4/4

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	Y01	A	2311	-	-	11/14/72/77	0/4/4/4
5	Y01	A	2319	-	-	4/19/77/77	0/4/4/4
5	Y01	A	2308	-	-	6/14/72/77	0/4/4/4
3	3PE	A	2304	-	-	4/8/8/54	-

All (27) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2301	1II	C12-N04	-11.67	1.20	1.47
2	A	2301	1II	O03-C16	9.56	1.40	1.23
3	A	2302	3PE	P-O13	4.96	1.73	1.54
3	A	2302	3PE	O31-C31	4.86	1.47	1.33
3	A	2302	3PE	O21-C21	4.61	1.47	1.34
3	A	2302	3PE	P-O11	4.21	1.73	1.60
2	A	2301	1II	C16-N06	-4.16	1.32	1.37
2	A	2301	1II	C07-N05	3.81	1.55	1.48
2	A	2301	1II	C16-N05	-3.73	1.31	1.38
3	A	2302	3PE	C22-C21	3.50	1.60	1.50
3	A	2302	3PE	C32-C31	3.40	1.60	1.50
3	A	2302	3PE	C1-C2	3.26	1.61	1.50
3	A	2302	3PE	C3-C2	3.18	1.60	1.50
2	A	2301	1II	C08-C07	-2.99	1.44	1.52
5	A	2308	Y01	CBH-CBF	-2.74	1.51	1.56
3	A	2302	3PE	P-O14	2.65	1.58	1.50
5	A	2312	Y01	CBH-CBF	-2.57	1.52	1.56
5	A	2319	Y01	CBH-CBF	-2.52	1.52	1.56
5	A	2315	Y01	CBH-CBF	-2.49	1.52	1.56
3	A	2302	3PE	C23-C22	2.36	1.60	1.52
2	A	2301	1II	C14-N05	-2.31	1.36	1.40
2	A	2301	1II	C18-C14	-2.26	1.36	1.40
3	A	2302	3PE	C33-C32	2.25	1.60	1.52
5	A	2315	Y01	OAW-CAY	-2.22	1.34	1.42
5	A	2317	Y01	CBH-CBF	-2.19	1.52	1.56
5	A	2311	Y01	CBH-CBF	-2.15	1.52	1.56
2	A	2301	1II	C09-C07	-2.04	1.47	1.52

All (113) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	2312	Y01	CAE-CBI-CAU	-19.53	81.82	110.61
5	A	2312	Y01	CAE-CBI-CBE	-16.78	81.25	111.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	2312	Y01	CAE-CBI-CBG	-13.04	88.02	111.68
5	A	2312	Y01	CBG-CBI-CBE	9.14	110.59	100.10
5	A	2312	Y01	CAU-CBI-CBE	8.38	128.94	116.60
5	A	2312	Y01	CAU-CBI-CBG	6.21	116.53	107.25
5	A	2308	Y01	CBI-CBE-CBB	-5.49	111.02	119.50
5	A	2314	Y01	CBI-CBG-CBD	-5.41	106.74	114.41
5	A	2311	Y01	OAW-CAY-CAM	5.33	120.59	111.09
5	A	2314	Y01	CBI-CBE-CBB	-5.29	111.33	119.50
5	A	2311	Y01	CBI-CBE-CBB	-4.72	112.21	119.50
5	A	2314	Y01	CBD-CAK-CAI	-4.64	106.34	112.76
6	A	2313	NAG	C2-N2-C7	4.52	128.95	122.90
5	A	2317	Y01	CBI-CBE-CBB	-4.26	112.92	119.50
3	A	2302	3PE	O21-C21-C22	4.22	120.61	111.48
5	A	2312	Y01	OAW-CAY-CAM	4.20	120.57	111.48
5	A	2308	Y01	OAW-CAY-CAM	4.19	118.57	111.09
5	A	2312	Y01	CBI-CBE-CBB	-3.94	113.41	119.50
5	A	2311	Y01	CBF-CBH-CAZ	3.86	115.30	109.65
5	A	2319	Y01	OAW-CAY-CAM	3.83	119.78	111.48
5	A	2315	Y01	CBI-CBE-CBB	-3.83	113.59	119.50
5	A	2314	Y01	OAW-CAY-CAM	3.81	119.72	111.48
5	A	2312	Y01	CAS-CAU-CBI	-3.79	106.34	112.74
5	A	2311	Y01	CBF-CBD-CBG	-3.64	104.33	109.09
5	A	2311	Y01	CBI-CBG-CBD	-3.63	109.27	114.41
5	A	2317	Y01	OAW-CAY-CAM	3.59	119.26	111.48
5	A	2312	Y01	CBC-CAV-CAZ	-3.54	106.22	111.45
2	A	2301	1II	C18-N06-C16	-3.53	108.10	110.27
5	A	2311	Y01	CBC-CAV-CAZ	-3.40	106.44	111.45
2	A	2301	1II	C21-C17-C20	-3.35	101.85	111.65
5	A	2315	Y01	CAQ-CBG-CBI	-3.35	99.90	103.84
5	A	2315	Y01	CBI-CBG-CBD	-3.32	109.70	114.41
5	A	2317	Y01	CBI-CBG-CBD	-3.29	109.74	114.41
5	A	2314	Y01	CAV-CAZ-CAI	-3.21	116.22	120.57
5	A	2312	Y01	CAQ-CBG-CBI	-3.20	100.08	103.84
5	A	2308	Y01	CAC-CBB-CBE	-3.17	108.13	112.88
5	A	2315	Y01	CAK-CBD-CBG	-3.12	106.52	110.93
5	A	2308	Y01	CAR-CBC-CAV	-3.09	106.68	110.97
5	A	2314	Y01	CBF-CBH-CAZ	3.05	114.12	109.65
5	A	2311	Y01	CAC-CBB-CBE	-3.03	108.33	112.88
5	A	2319	Y01	CAQ-CBG-CBI	-3.03	100.28	103.84
2	A	2301	1II	C10-C08-C07	2.98	116.23	110.78
5	A	2308	Y01	CBI-CBG-CBD	-2.97	110.19	114.41
5	A	2312	Y01	CAK-CBD-CBG	-2.94	106.77	110.93

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	2315	Y01	CAP-CAQ-CBG	-2.92	99.42	105.14
5	A	2308	Y01	CAQ-CBG-CBI	-2.91	100.42	103.84
5	A	2314	Y01	CAC-CBB-CBE	-2.88	108.56	112.88
5	A	2317	Y01	CBF-CBH-CAZ	2.88	113.86	109.65
5	A	2314	Y01	CAQ-CBG-CBI	-2.87	100.46	103.84
5	A	2315	Y01	CAQ-CBG-CBD	-2.86	114.54	119.10
5	A	2319	Y01	CBI-CBE-CBB	-2.83	115.13	119.50
5	A	2317	Y01	CAQ-CBG-CBI	-2.80	100.55	103.84
2	A	2301	1II	C11-N04-C10	2.78	114.83	108.84
2	A	2301	1II	O03-C16-N06	-2.77	125.10	127.49
5	A	2315	Y01	CAD-CBH-CBF	-2.76	108.56	111.66
5	A	2312	Y01	CAR-CBC-CAV	-2.76	107.14	110.97
3	A	2302	3PE	O31-C31-C32	2.72	120.13	111.83
2	A	2301	1II	C08-C10-N04	2.69	115.43	111.08
2	A	2301	1II	N06-C16-N05	2.67	109.91	106.69
5	A	2311	Y01	CAS-CBF-CBD	-2.66	108.07	111.78
5	A	2311	Y01	CBD-CAK-CAI	-2.66	109.08	112.76
5	A	2308	Y01	CAS-CAU-CBI	-2.65	108.28	112.74
5	A	2311	Y01	CAQ-CBG-CBI	-2.61	100.77	103.84
5	A	2317	Y01	CAC-CBB-CBE	-2.60	108.98	112.88
5	A	2319	Y01	CAQ-CBG-CBD	-2.59	114.96	119.10
5	A	2312	Y01	CAP-CBE-CBB	-2.59	108.25	112.18
2	A	2301	1II	C11-C09-C07	2.55	115.45	110.78
2	A	2301	1II	C27-C20-C25	2.52	121.42	118.30
5	A	2317	Y01	CBG-CBI-CBE	2.51	102.98	100.10
5	A	2319	Y01	CAP-CBE-CBB	-2.51	108.39	112.18
5	A	2311	Y01	CAR-CBC-CAV	-2.47	107.54	110.97
5	A	2312	Y01	CAQ-CBG-CBD	-2.47	115.16	119.10
5	A	2315	Y01	CBF-CBD-CBG	-2.46	105.87	109.09
5	A	2319	Y01	CAR-CBC-CAV	-2.46	107.55	110.97
5	A	2314	Y01	CBC-CAV-CAZ	-2.46	107.82	111.45
5	A	2315	Y01	CBC-CAV-CAZ	-2.43	107.86	111.45
5	A	2311	Y01	CAS-CAU-CBI	-2.42	108.66	112.74
5	A	2319	Y01	CAD-CBH-CBF	-2.41	108.95	111.66
5	A	2314	Y01	CBF-CBD-CBG	-2.41	105.94	109.09
2	A	2301	1II	C28-C21-C26	2.40	121.28	118.30
5	A	2314	Y01	CAS-CBF-CBD	-2.39	108.45	111.78
5	A	2308	Y01	CAK-CBD-CBG	-2.38	107.56	110.93
5	A	2314	Y01	CAK-CAI-CAZ	-2.37	121.02	125.02
5	A	2312	Y01	CBI-CBG-CBD	-2.37	111.05	114.41
5	A	2317	Y01	CAD-CBH-CBF	-2.35	109.02	111.66
5	A	2319	Y01	CAS-CAU-CBI	-2.33	108.82	112.74

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	2301	1II	C31-C27-C20	-2.32	118.87	121.18
5	A	2308	Y01	CAD-CBH-CBF	-2.30	109.08	111.66
5	A	2317	Y01	CAS-CAU-CBI	-2.30	108.86	112.74
5	A	2315	Y01	CBF-CBH-CAZ	2.28	112.99	109.65
5	A	2312	Y01	CAS-CBF-CBH	-2.26	110.30	113.08
5	A	2312	Y01	CAD-CBH-CBF	-2.26	109.12	111.66
5	A	2317	Y01	CBH-CBF-CBD	-2.25	109.42	112.71
5	A	2311	Y01	CAV-CAZ-CAI	-2.23	117.54	120.57
5	A	2314	Y01	CAQ-CBG-CBD	-2.23	115.54	119.10
5	A	2319	Y01	CAK-CBD-CBG	-2.22	107.79	110.93
2	A	2301	1II	C30-C26-C21	-2.20	118.99	121.18
5	A	2317	Y01	CAQ-CBG-CBD	-2.17	115.63	119.10
5	A	2319	Y01	CBC-CAV-CAZ	-2.17	108.24	111.45
5	A	2319	Y01	CBI-CBG-CBD	-2.16	111.35	114.41
5	A	2308	Y01	CAQ-CBG-CBD	-2.13	115.70	119.10
6	A	2313	NAG	C1-C2-N2	2.11	113.76	110.43
5	A	2317	Y01	CAP-CAQ-CBG	-2.11	101.01	105.14
5	A	2317	Y01	CAR-CBC-CAV	-2.11	108.04	110.97
5	A	2312	Y01	CBF-CBH-CAZ	2.10	112.73	109.65
5	A	2314	Y01	CBG-CBI-CBE	2.09	102.50	100.10
5	A	2317	Y01	CBC-CAV-CAZ	-2.07	108.39	111.45
5	A	2312	Y01	OAW-CBC-CAV	2.06	112.29	108.04
5	A	2308	Y01	CBF-CBD-CBG	-2.05	106.41	109.09
5	A	2317	Y01	CBD-CAK-CAI	-2.01	109.98	112.76
2	A	2301	1II	C08-C07-N05	-2.01	107.28	112.27
5	A	2308	Y01	CBF-CBH-CAZ	2.01	112.59	109.65
5	A	2317	Y01	CAV-CAZ-CAI	-2.00	117.86	120.57

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	A	2312	Y01	CBI

All (121) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	2301	1II	C12-C13-C15-C17
2	A	2301	1II	C13-C15-C17-C21
5	A	2308	Y01	CAC-CBB-CBE-CBI
5	A	2311	Y01	CAC-CBB-CBE-CBI
5	A	2311	Y01	OAG-CAY-OAW-CBC
5	A	2312	Y01	CAM-CAY-OAW-CBC

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Mol	Chain	Res	Type	Atoms
5	A	2314	Y01	CAC-CBB-CBE-CBI
5	A	2314	Y01	CAR-CBC-OAW-CAY
5	A	2314	Y01	CAM-CAY-OAW-CBC
5	A	2317	Y01	CAO-CBB-CBE-CAP
5	A	2317	Y01	CAC-CBB-CBE-CBI
5	A	2311	Y01	CAM-CAY-OAW-CBC
5	A	2311	Y01	CAC-CBB-CBE-CAP
5	A	2314	Y01	CAC-CBB-CBE-CAP
5	A	2317	Y01	CAC-CBB-CBE-CAP
5	A	2314	Y01	CAO-CBB-CBE-CAP
5	A	2308	Y01	CAO-CBB-CBE-CBI
5	A	2314	Y01	CAO-CBB-CBE-CBI
5	A	2317	Y01	CAO-CBB-CBE-CBI
5	A	2312	Y01	OAG-CAY-OAW-CBC
5	A	2314	Y01	OAG-CAY-OAW-CBC
2	A	2301	1II	C13-C15-C17-C20
5	A	2308	Y01	CAJ-CAO-CBB-CAC
5	A	2315	Y01	CAJ-CAO-CBB-CAC
5	A	2308	Y01	CAC-CBB-CBE-CAP
5	A	2311	Y01	CAO-CBB-CBE-CBI
5	A	2314	Y01	CAJ-CAO-CBB-CAC
5	A	2317	Y01	CAJ-CAO-CBB-CAC
5	A	2308	Y01	CAO-CBB-CBE-CAP
5	A	2311	Y01	CAO-CBB-CBE-CAP
6	A	2313	NAG	C4-C5-C6-O6
3	A	2302	3PE	C22-C21-O21-C2
2	A	2301	1II	C13-C12-N04-C10
5	A	2308	Y01	CAJ-CAO-CBB-CBE
3	A	2302	3PE	O22-C21-O21-C2
5	A	2311	Y01	CAJ-CAO-CBB-CBE
6	A	2313	NAG	O5-C5-C6-O6
5	A	2315	Y01	CAC-CBB-CBE-CBI
5	A	2314	Y01	CAJ-CAO-CBB-CBE
6	A	2309	NAG	C8-C7-N2-C2
6	A	2309	NAG	O7-C7-N2-C2
6	A	2313	NAG	C8-C7-N2-C2
6	A	2313	NAG	O7-C7-N2-C2
5	A	2315	Y01	CAJ-CAO-CBB-CBE
5	A	2317	Y01	CAJ-CAO-CBB-CBE
3	A	2302	3PE	C31-C32-C33-C34
5	A	2312	Y01	CAO-CAJ-CAN-CBA
5	A	2317	Y01	CAO-CAJ-CAN-CBA

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Mol	Chain	Res	Type	Atoms
5	A	2315	Y01	CAO-CBB-CBE-CBI
5	A	2312	Y01	CAV-CBC-OAW-CAY
5	A	2312	Y01	CAR-CBC-OAW-CAY
5	A	2311	Y01	CAJ-CAO-CBB-CAC
5	A	2311	Y01	CAN-CAJ-CAO-CBB
5	A	2314	Y01	CAN-CAJ-CAO-CBB
2	A	2301	1II	C13-C12-N04-C11
5	A	2311	Y01	CAJ-CAN-CBA-CAB
5	A	2319	Y01	CAM-CAY-OAW-CBC
5	A	2317	Y01	CAX-CAL-CAM-CAY
5	A	2311	Y01	CAJ-CAN-CBA-CAA
3	A	2302	3PE	C27-C28-C29-C2A
3	A	2302	3PE	C21-C22-C23-C24
3	A	2305	3PE	C35-C36-C37-C38
3	A	2316	3PE	C35-C36-C37-C38
5	A	2319	Y01	OAG-CAY-OAW-CBC
5	A	2315	Y01	CAJ-CAN-CBA-CAA
3	A	2302	3PE	C36-C37-C38-C39
3	A	2320	3PE	C32-C33-C34-C35
5	A	2317	Y01	CAJ-CAN-CBA-CAA
3	A	2302	3PE	C22-C23-C24-C25
3	A	2302	3PE	C35-C36-C37-C38
5	A	2315	Y01	CAC-CBB-CBE-CAP
3	A	2302	3PE	C37-C38-C39-C3A
3	A	2303	3PE	C3B-C3C-C3D-C3E
3	A	2318	3PE	C34-C35-C36-C37
3	A	2316	3PE	C3B-C3C-C3D-C3E
5	A	2312	Y01	CAN-CAJ-CAO-CBB
5	A	2315	Y01	CAJ-CAN-CBA-CAB
5	A	2315	Y01	CAO-CBB-CBE-CAP
5	A	2319	Y01	CAN-CAJ-CAO-CBB
5	A	2317	Y01	CAJ-CAN-CBA-CAB
3	A	2304	3PE	C31-C32-C33-C34
3	A	2320	3PE	C34-C35-C36-C37
5	A	2317	Y01	CAN-CAJ-CAO-CBB
3	A	2310	3PE	C3C-C3D-C3E-C3F
3	A	2321	3PE	C25-C26-C27-C28
5	A	2319	Y01	CAC-CBB-CBE-CBI
3	A	2302	3PE	C3-C2-O21-C21
2	A	2301	1II	N04-C12-C13-C15
3	A	2302	3PE	C34-C35-C36-C37
3	A	2321	3PE	C22-C23-C24-C25

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Mol	Chain	Res	Type	Atoms
3	A	2320	3PE	C31-C32-C33-C34
3	A	2304	3PE	C36-C37-C38-C39
5	A	2317	Y01	CAM-CAY-OAW-CBC
3	A	2302	3PE	C23-C24-C25-C26
3	A	2302	3PE	C32-C33-C34-C35
3	A	2305	3PE	C33-C34-C35-C36
5	A	2317	Y01	OAG-CAY-OAW-CBC
3	A	2303	3PE	C36-C37-C38-C39
3	A	2303	3PE	C38-C39-C3A-C3B
3	A	2304	3PE	C33-C34-C35-C36
5	A	2312	Y01	CAM-CAL-CAX-OAH
3	A	2303	3PE	C39-C3A-C3B-C3C
5	A	2312	Y01	CAM-CAL-CAX-OAF
6	A	2313	NAG	C1-C2-N2-C7
3	A	2305	3PE	C39-C3A-C3B-C3C
3	A	2310	3PE	C35-C36-C37-C38
6	A	2313	NAG	C3-C2-N2-C7
5	A	2315	Y01	CAR-CBC-OAW-CAY
3	A	2310	3PE	C39-C3A-C3B-C3C
3	A	2316	3PE	C34-C35-C36-C37
5	A	2314	Y01	CAM-CAL-CAX-OAH
5	A	2314	Y01	CAM-CAL-CAX-OAF
3	A	2316	3PE	C38-C39-C3A-C3B
5	A	2315	Y01	CAV-CBC-OAW-CAY
3	A	2318	3PE	C31-C32-C33-C34
3	A	2302	3PE	O32-C31-O31-C3
3	A	2302	3PE	C33-C34-C35-C36
5	A	2314	Y01	CAO-CAJ-CAN-CBA
3	A	2302	3PE	C32-C31-O31-C3
3	A	2310	3PE	C34-C35-C36-C37
3	A	2304	3PE	C32-C33-C34-C35

There are no ring outliers.

13 monomers are involved in 36 short contacts:

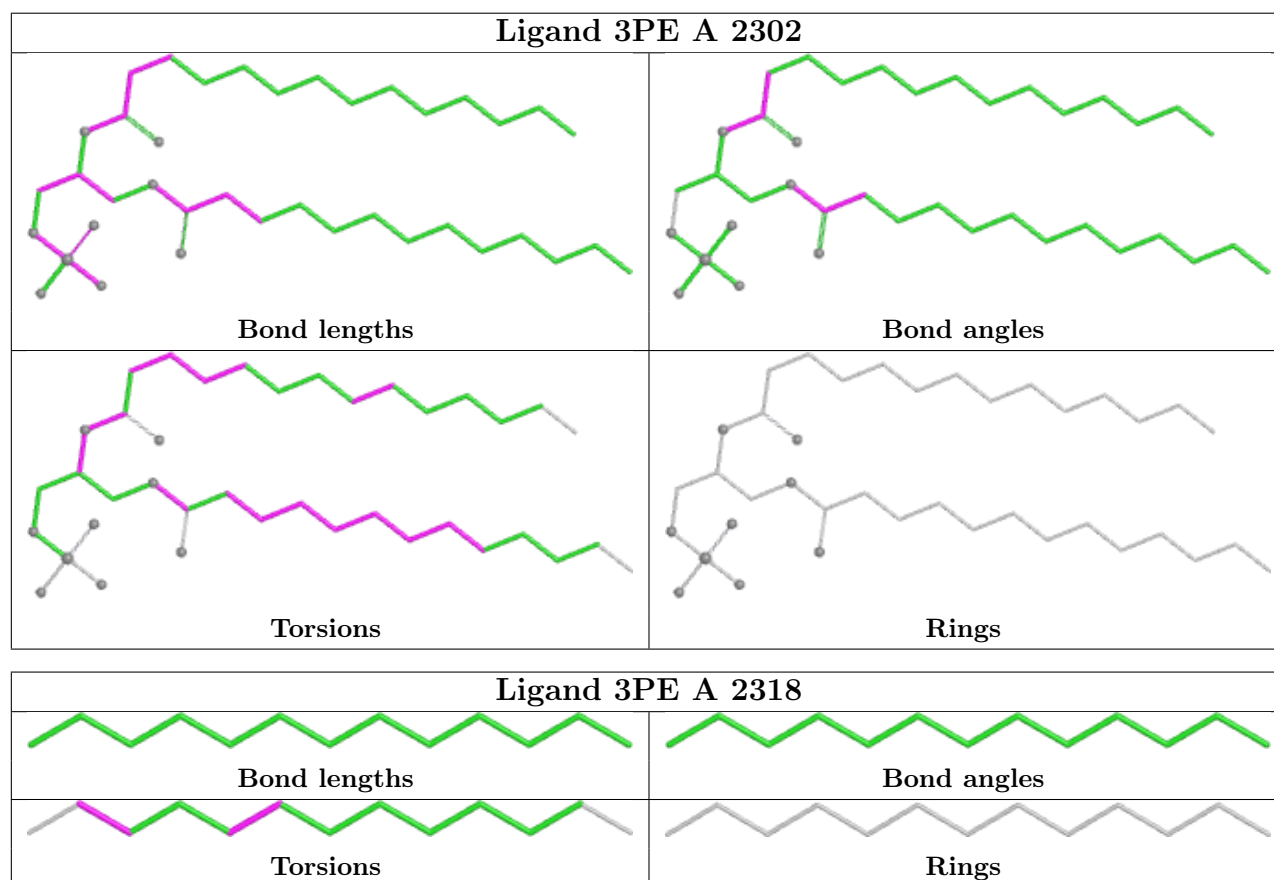
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	2312	Y01	4	0
5	A	2315	Y01	3	0
6	A	2313	NAG	1	0
3	A	2320	3PE	1	0
3	A	2316	3PE	3	0
5	A	2317	Y01	7	0

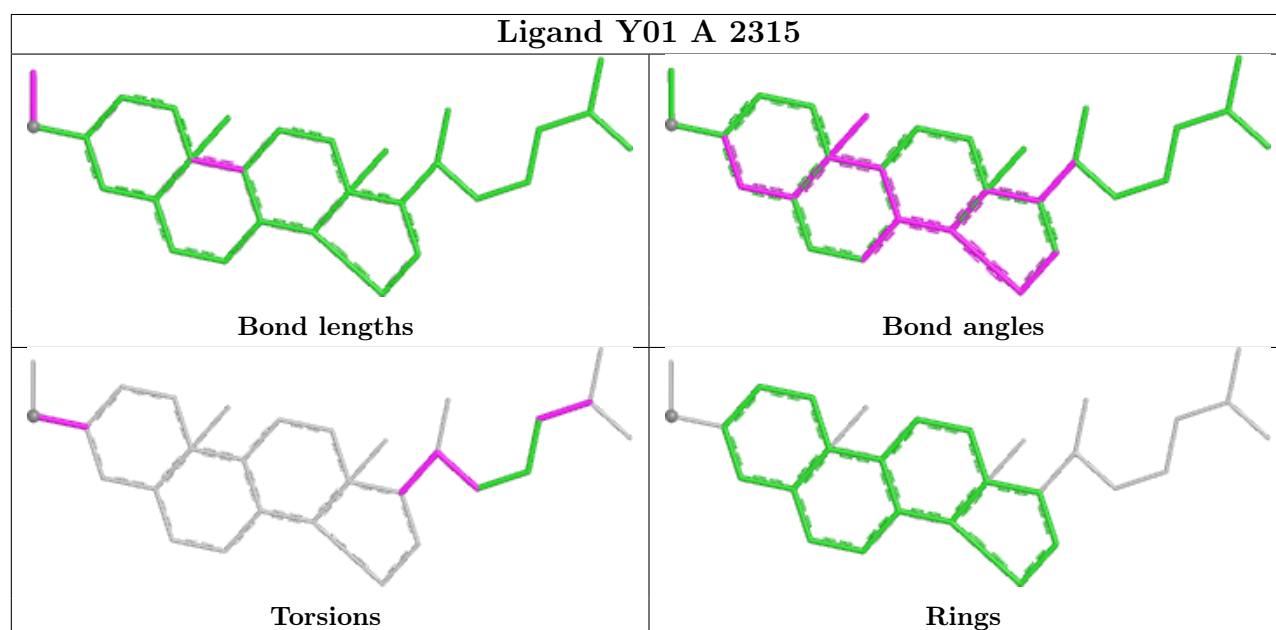
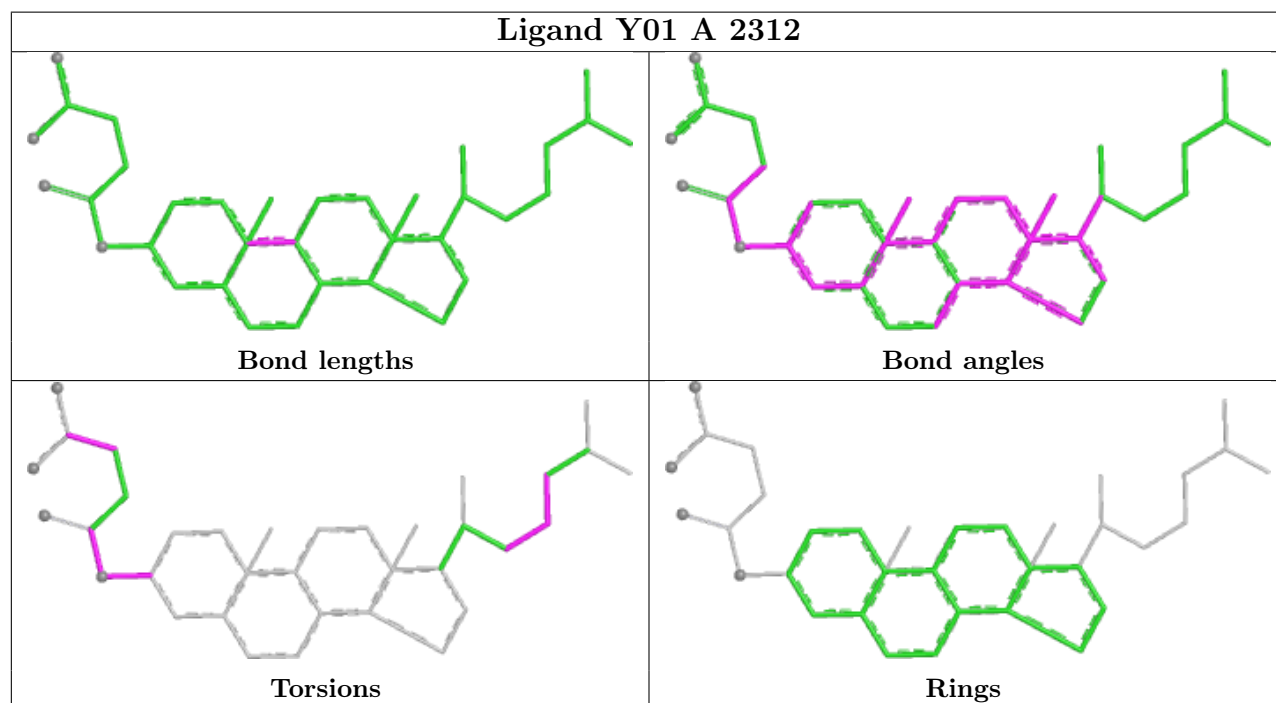
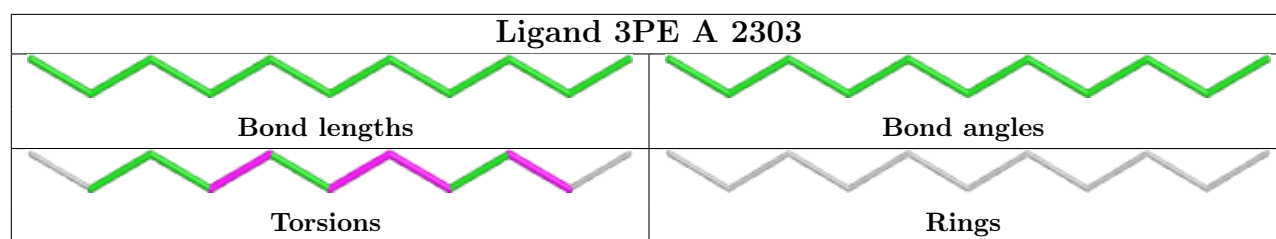
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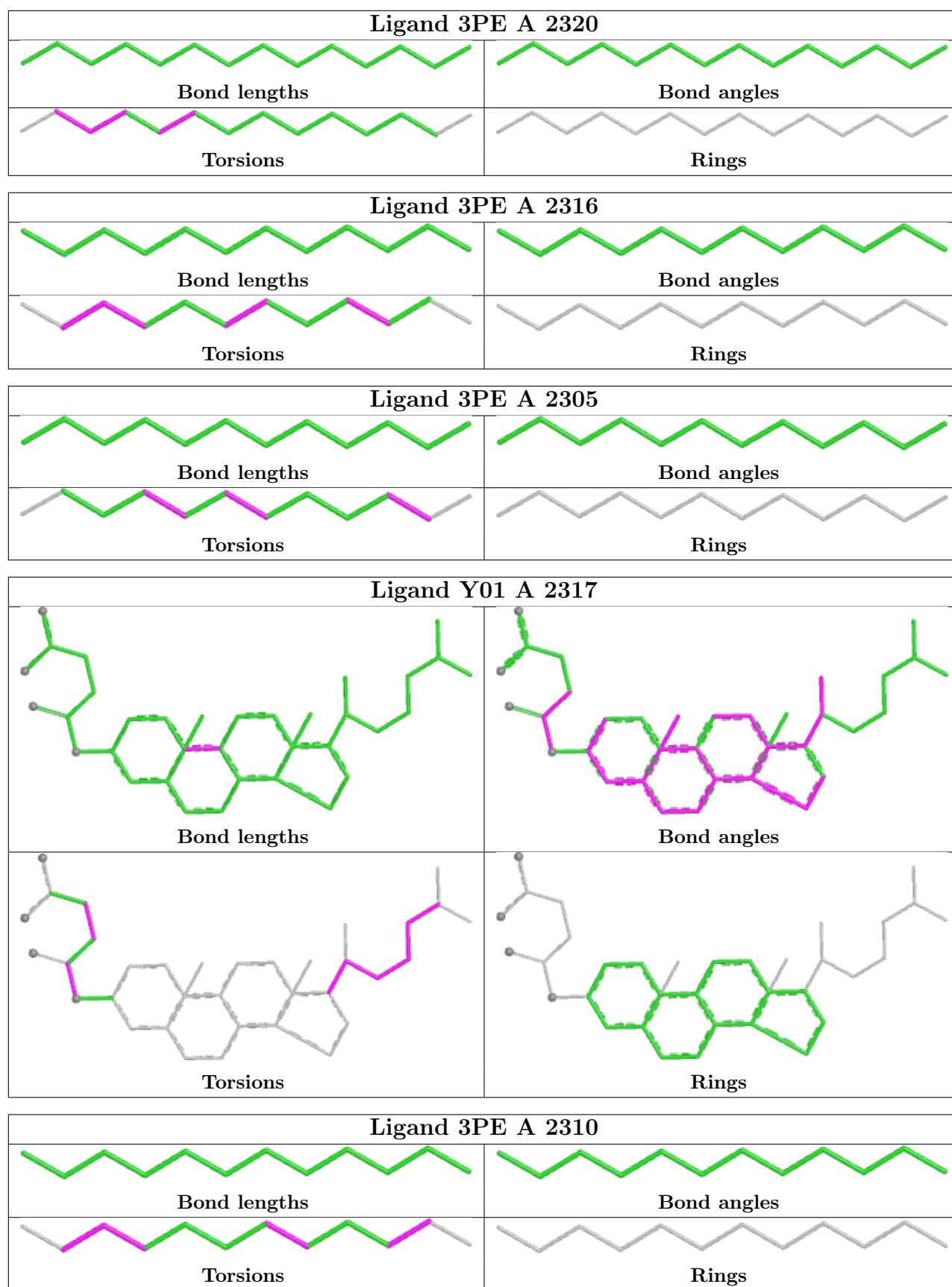
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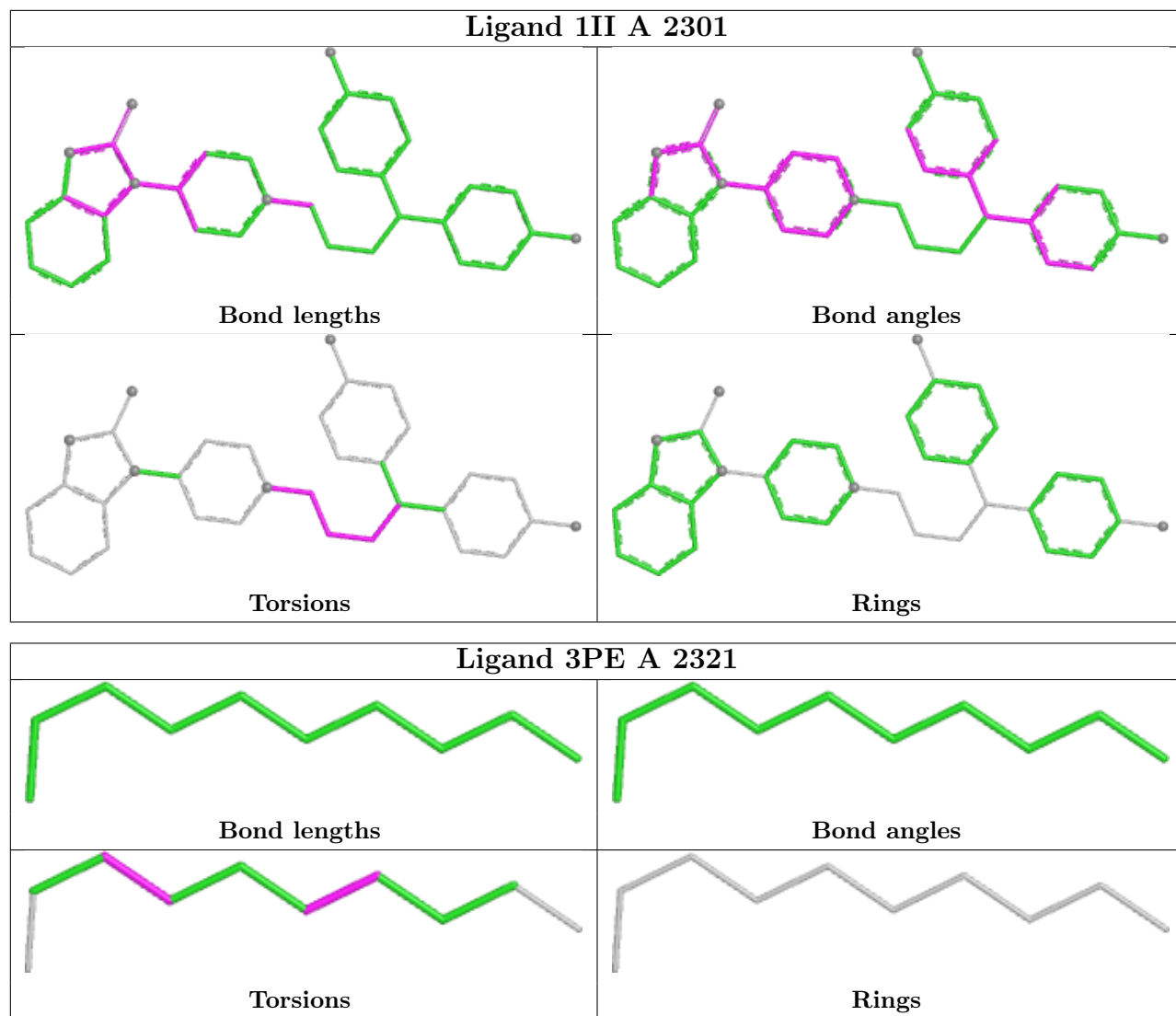
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	2310	3PE	2	0
2	A	2301	1II	1	0
5	A	2314	Y01	4	0
5	A	2311	Y01	3	0
5	A	2319	Y01	3	0
5	A	2308	Y01	3	0
3	A	2304	3PE	2	0

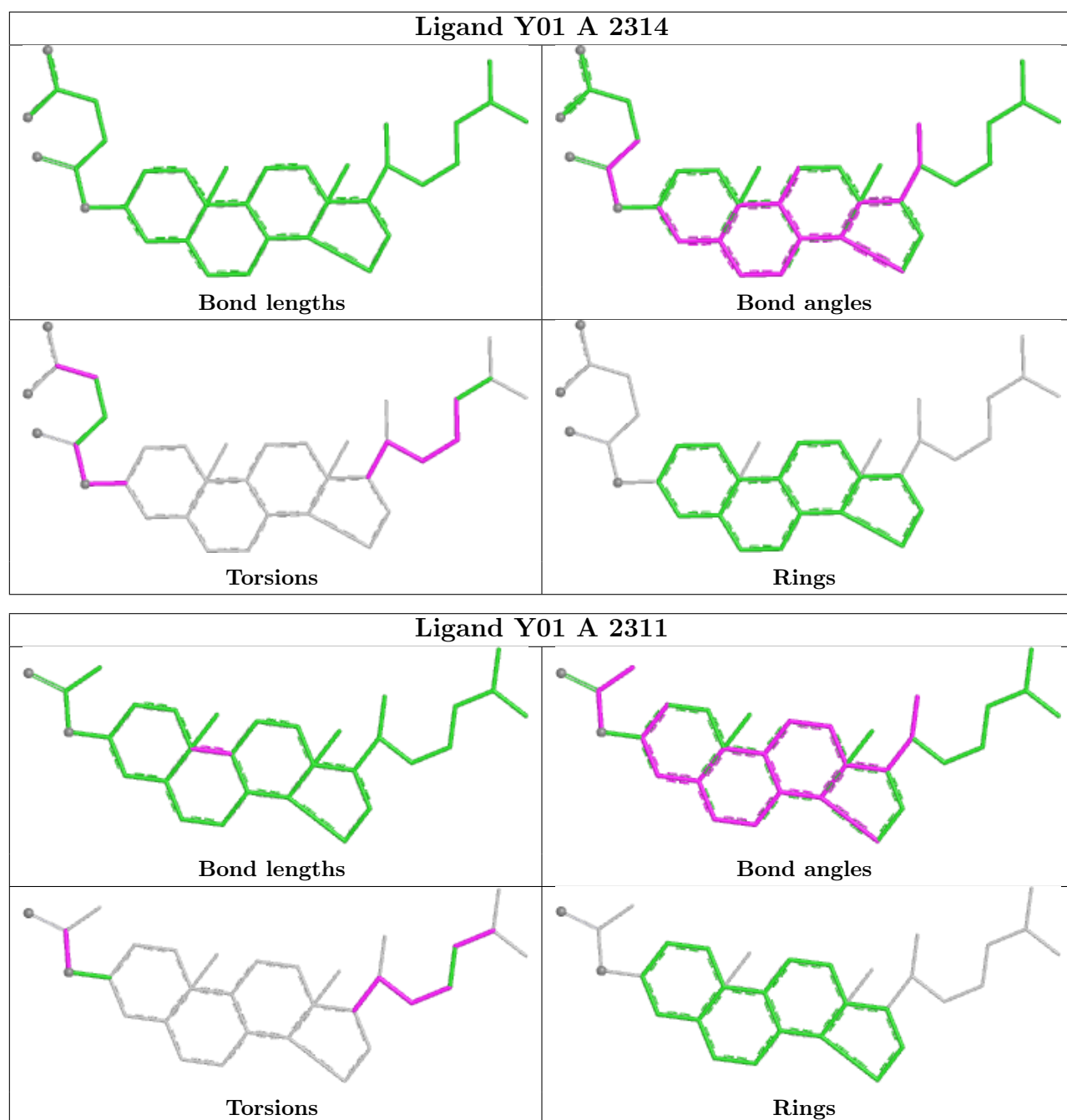
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

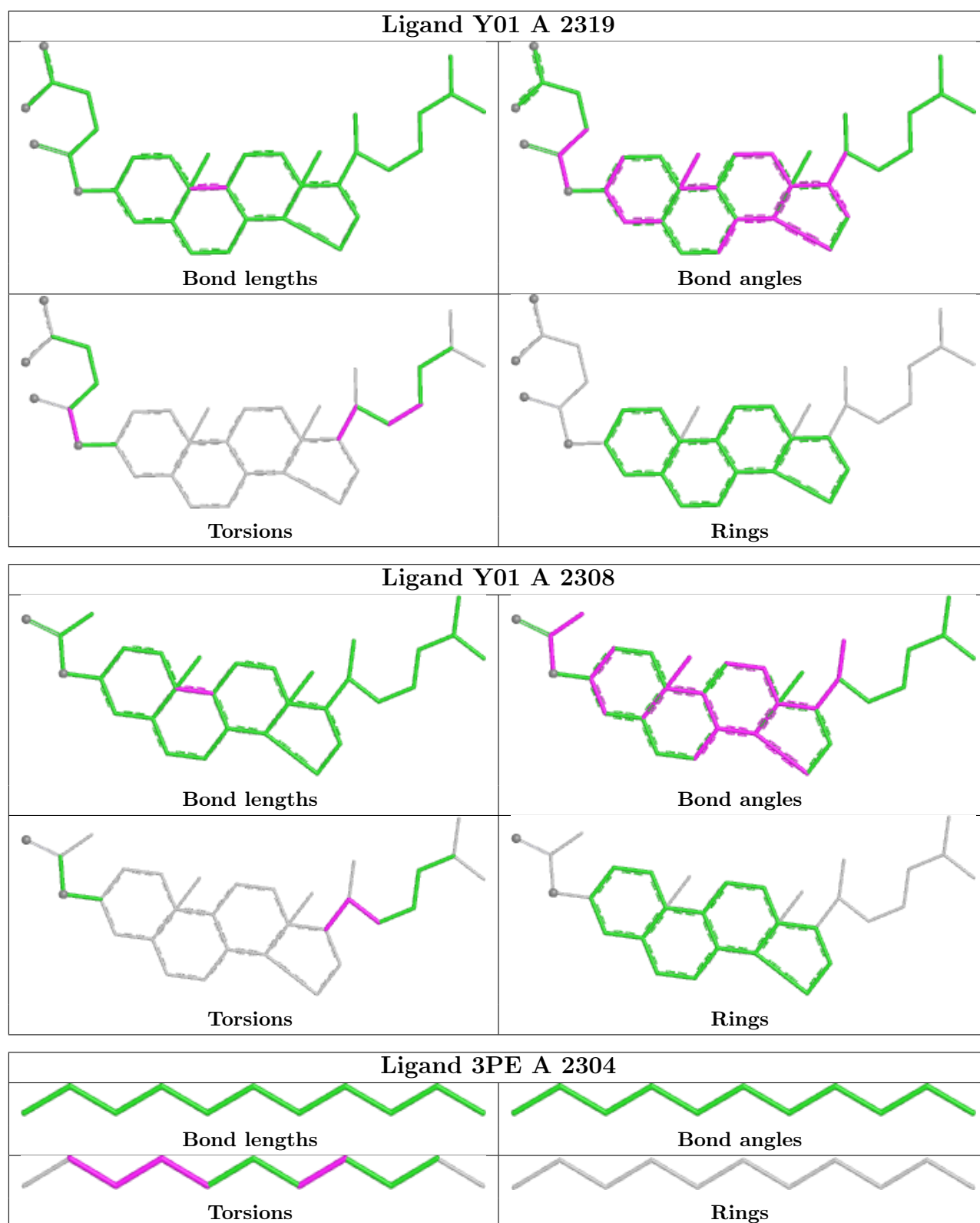












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

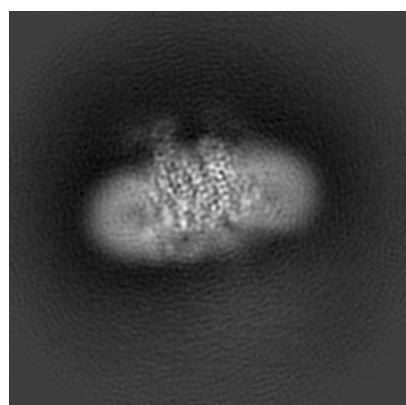
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-32587. These allow visual inspection of the internal detail of the map and identification of artifacts.

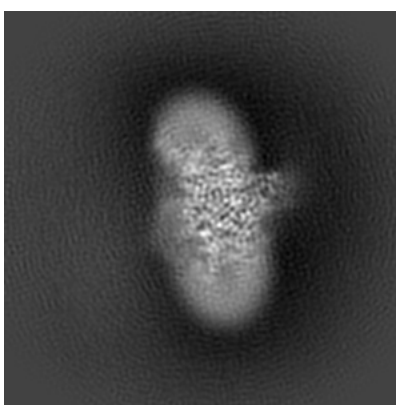
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

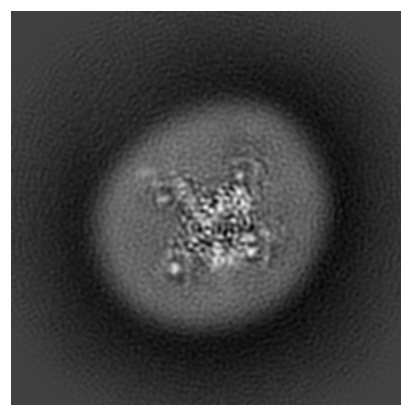
6.1.1 Primary map



X



Y

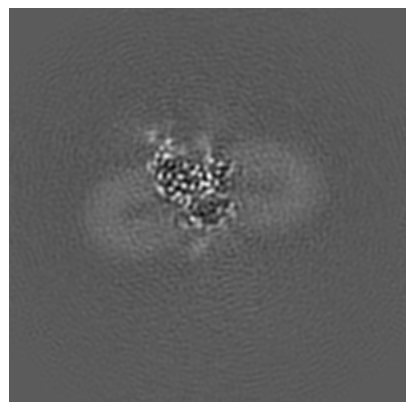


Z

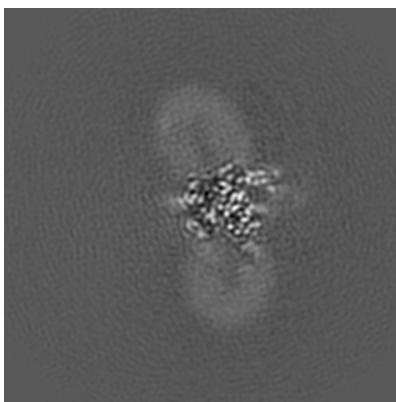
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

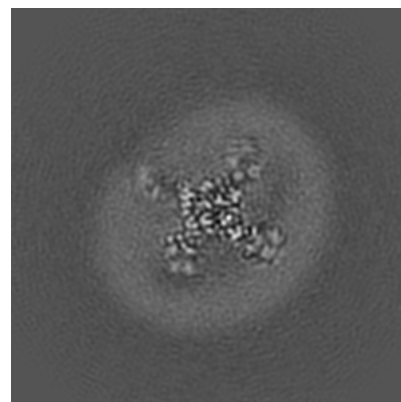
6.2.1 Primary map



X Index: 128



Y Index: 128

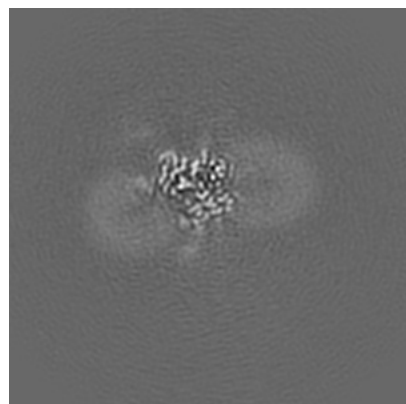


Z Index: 128

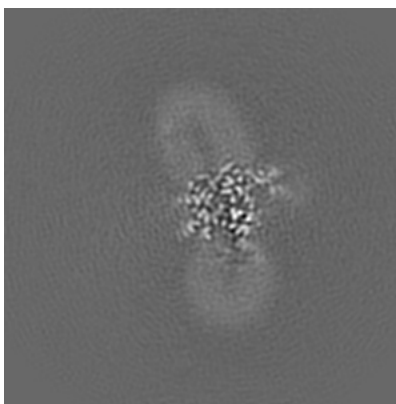
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

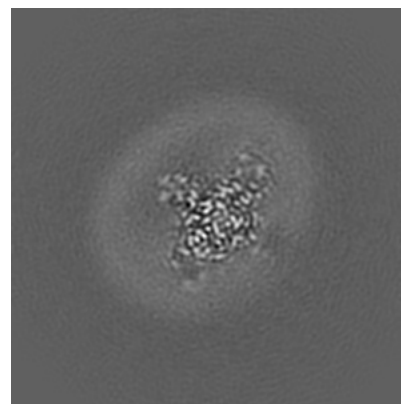
6.3.1 Primary map



X Index: 122



Y Index: 130

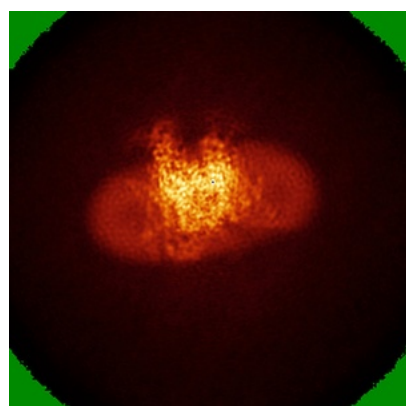


Z Index: 146

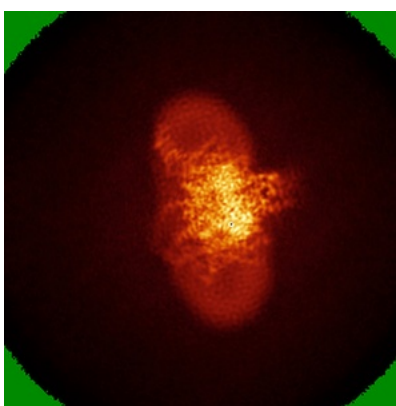
The images above show the largest variance slices of the map in three orthogonal directions.

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

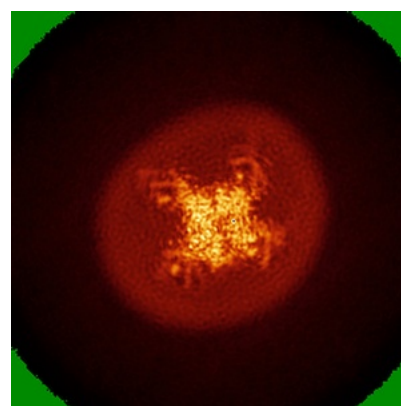
6.4.1 Primary map



X



Y

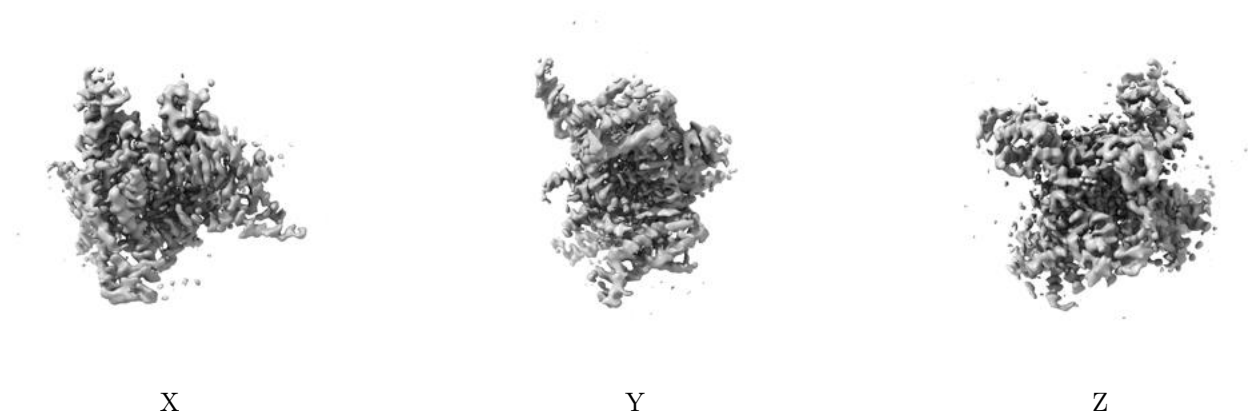


Z

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

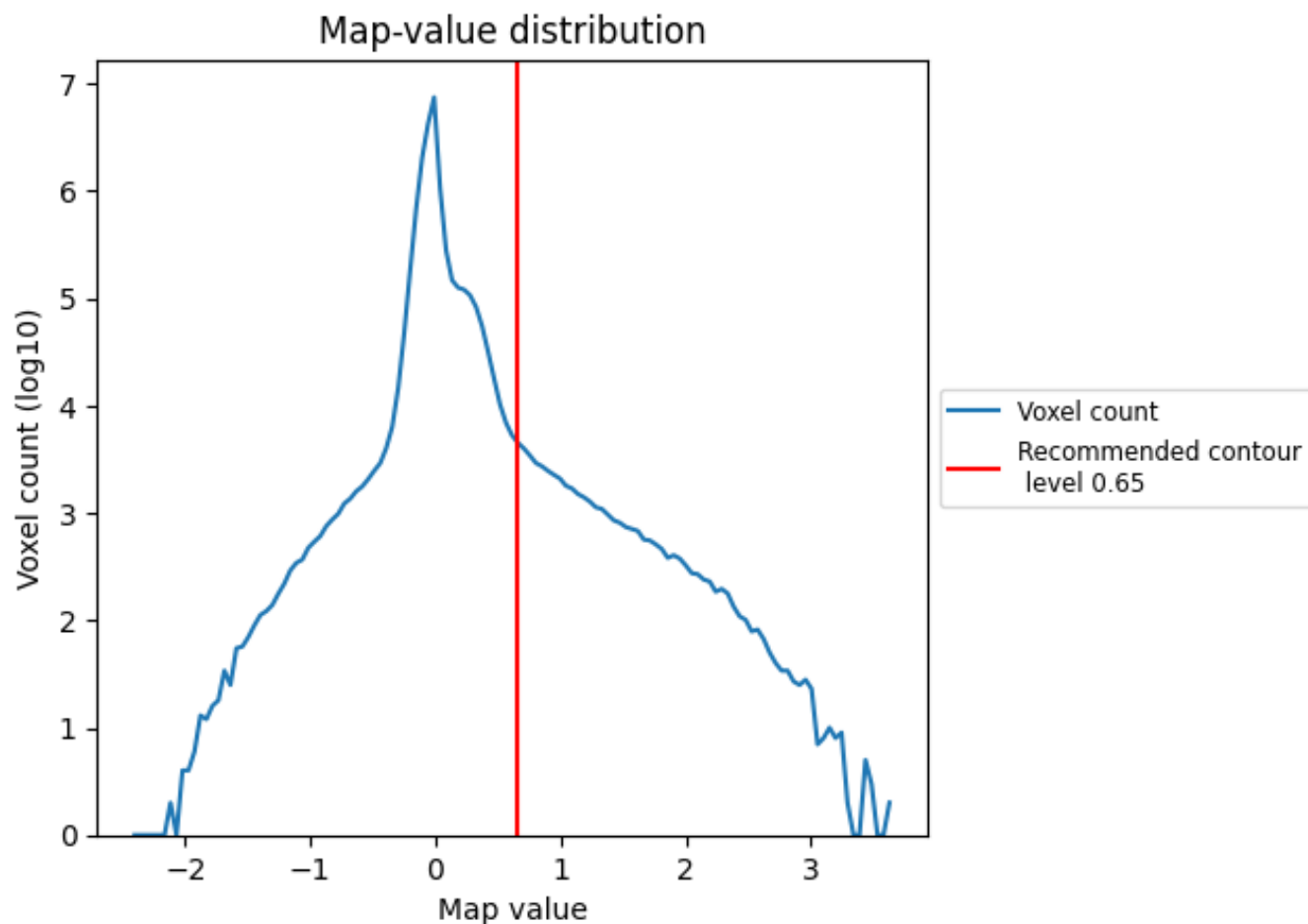
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

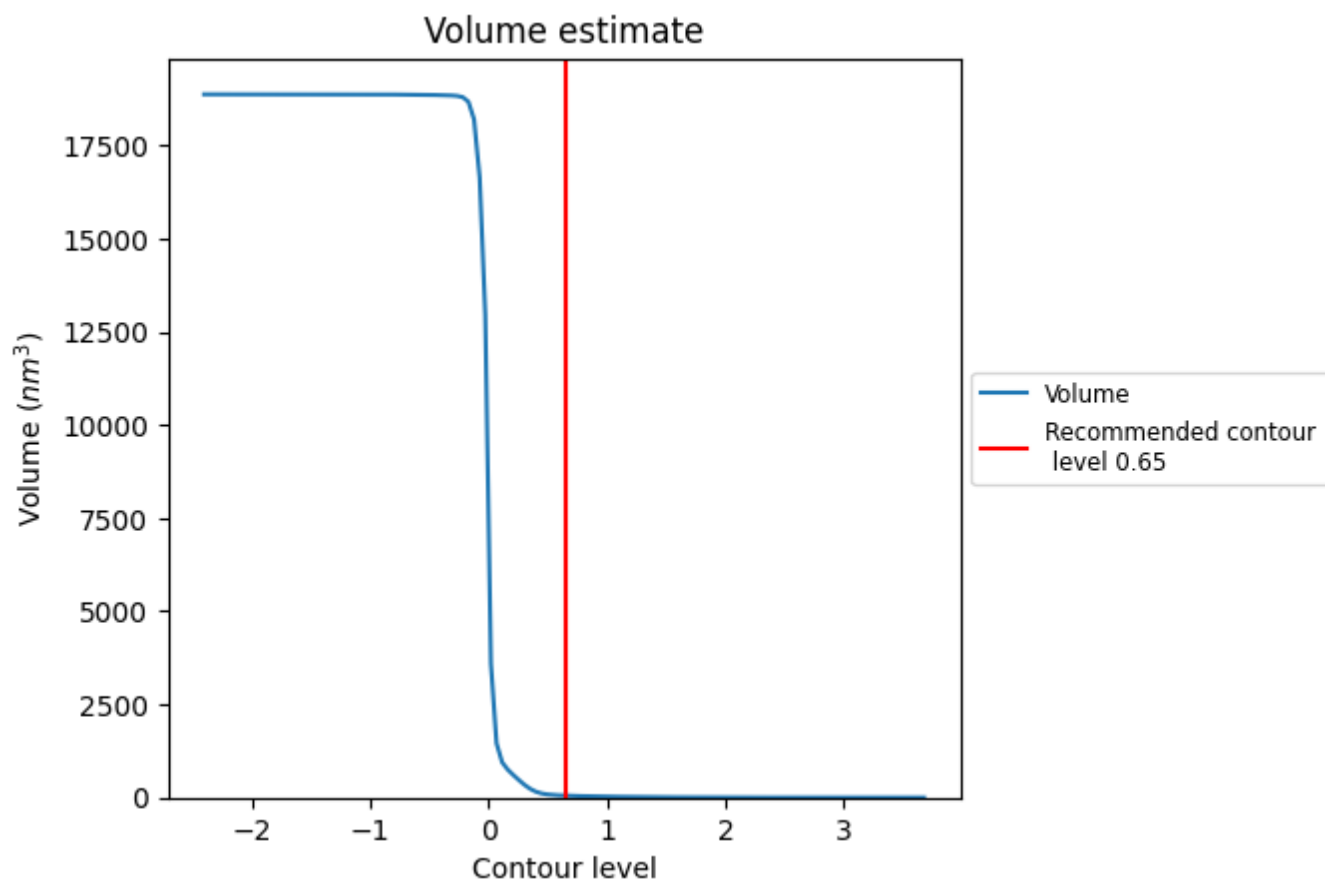
This section contains the results of statistical analysis of the map.

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.

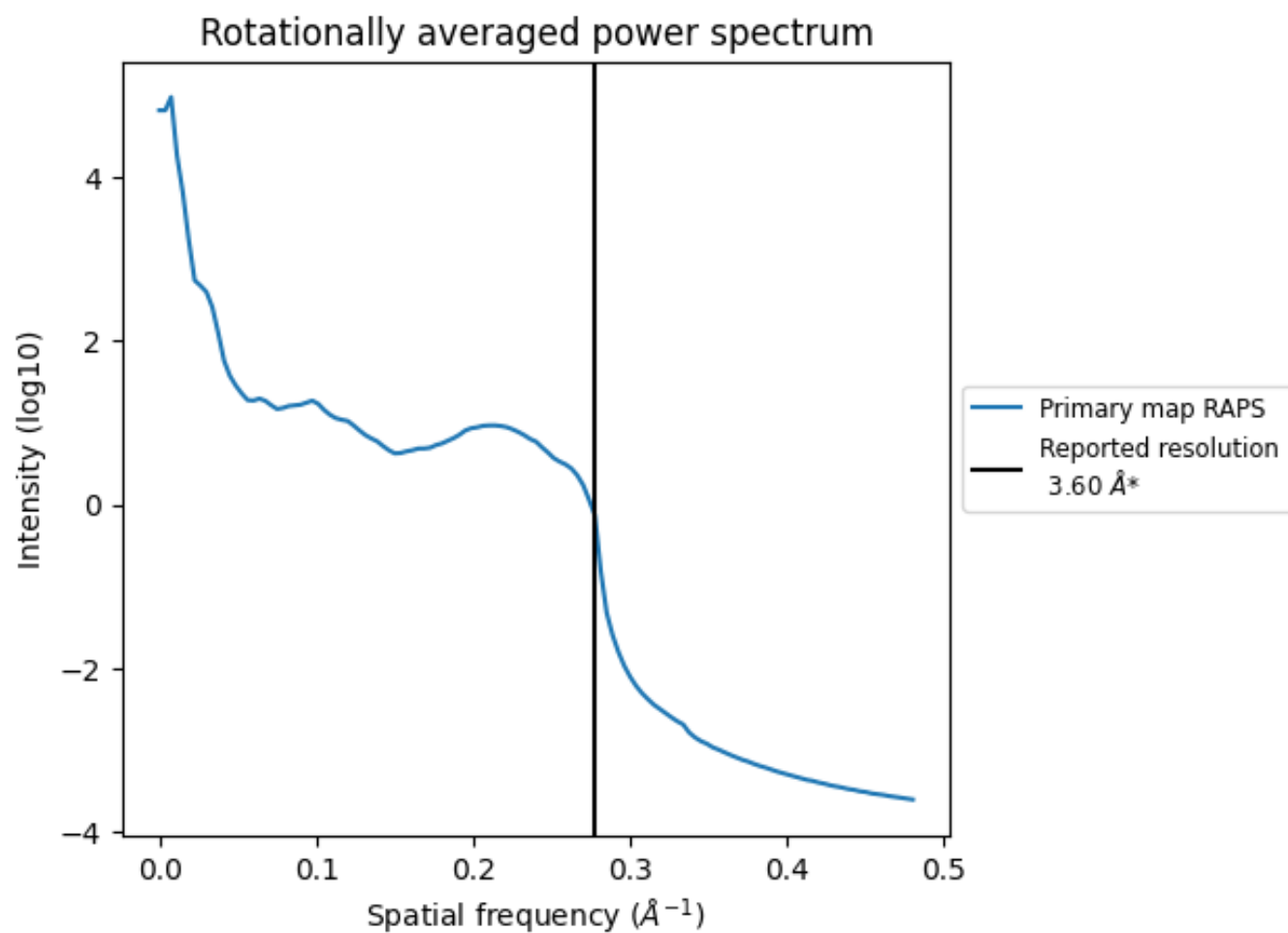
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 52 nm³; this corresponds to an approximate mass of 47 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 0.278 Å⁻¹

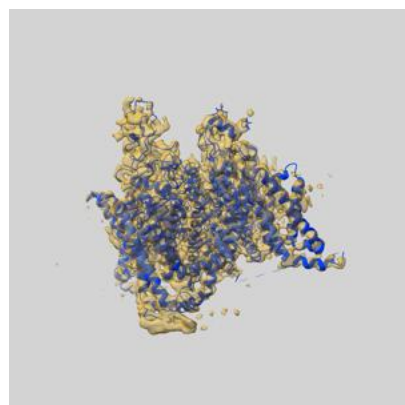
8 Fourier-Shell correlation ⓘ

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

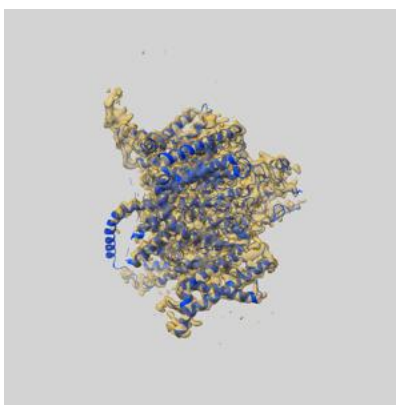
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-32587 and PDB model 7WLL. Per-residue inclusion information can be found in [section 3](#) on [page 8](#).

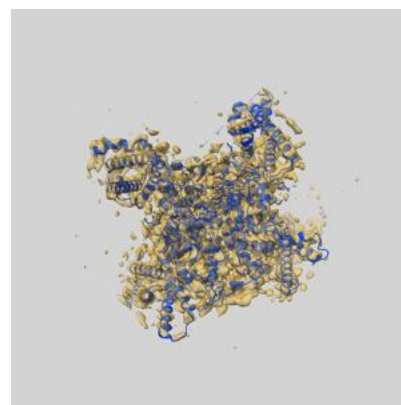
9.1 Map-model overlay [i](#)



X



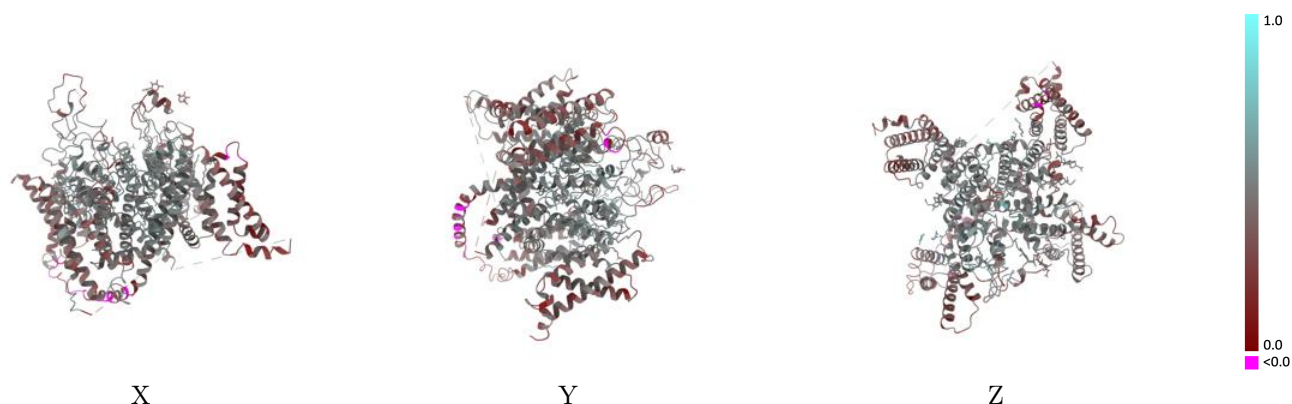
Y



Z

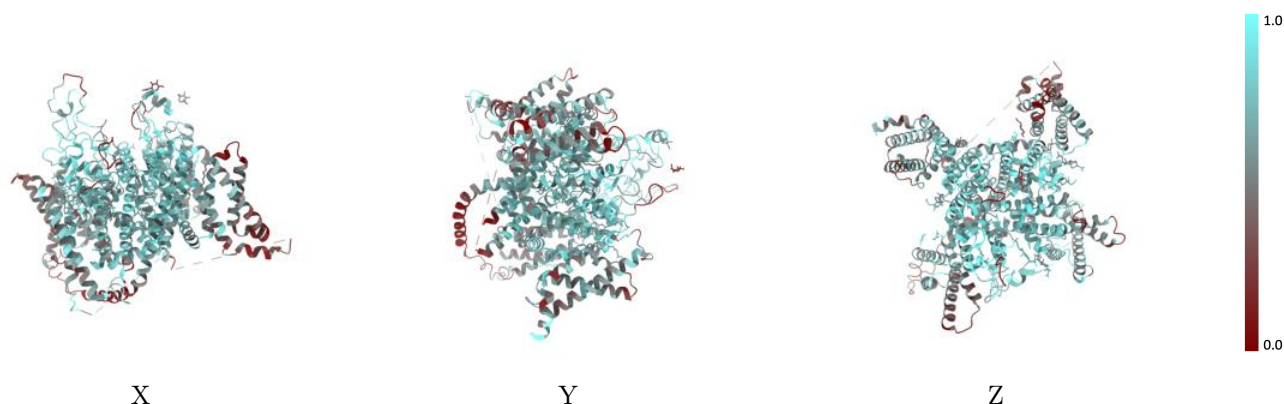
The images above show the 3D surface view of the map at the recommended contour level 0.65 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



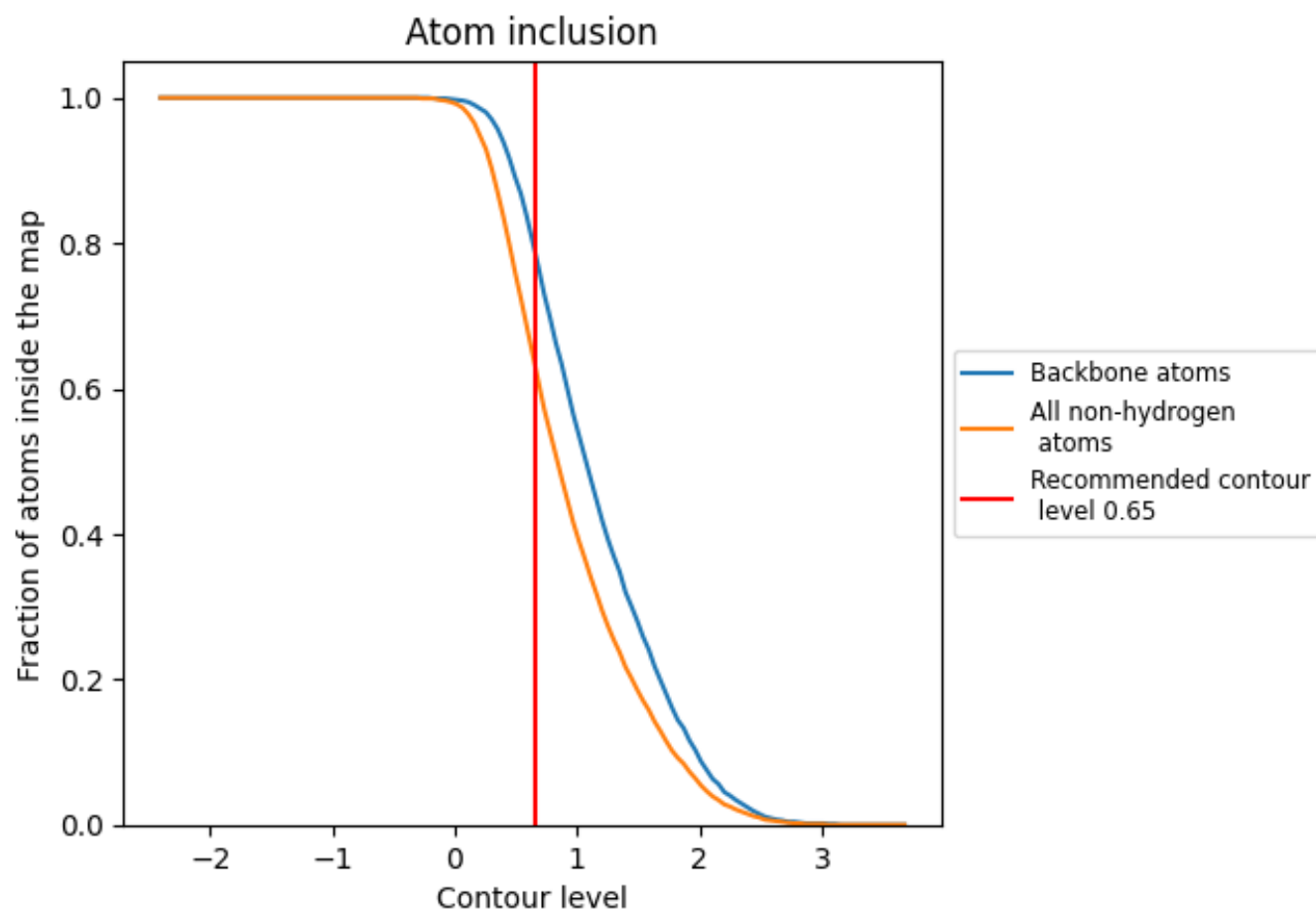
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.65).

9.4 Atom inclusion [i](#)



At the recommended contour level, 79% of all backbone atoms, 64% 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 (0.65) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6360	0.4250
A	0.6360	0.4250

