



wwPDB EM Validation Summary Report ⓘ

Aug 7, 2024 – 12:31 PM EDT

PDB ID : 9CTH
EMDB ID : EMD-42405
Title : Preliminary map of the Prothrombin-prothrombinase complex on nano discs
Authors : Stojanovski, B.M.; Mohammed, B.M.; Di Cera, E.
Deposited on : 2024-07-25
Resolution : 6.47 Å(reported)
Based on initial models : 1fjs, 8TN9, ., 6bjr

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev92
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

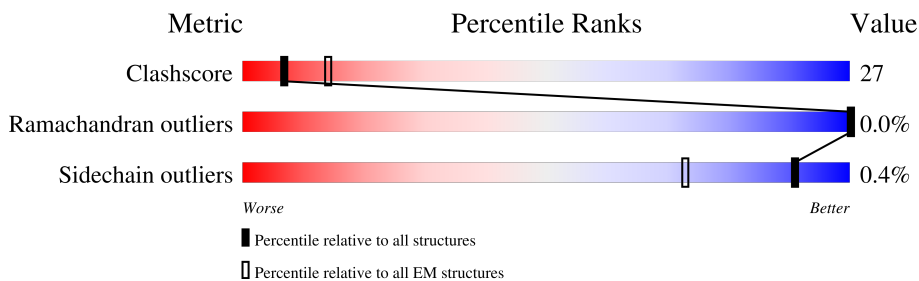
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 6.47 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	709	
2	E	651	
3	B	142	
4	C	235	
5	D	579	

2 Entry composition i

There are 6 unique types of molecules in this entry. The entry contains 18147 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 Activated Factor V (FVa) heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	663	5340	3389	903	1020	28	0	0

- Molecule 2 is a protein called Activated Factor V (FVa) light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	E	651	5304	3376	916	987	25	0	0

- Molecule 3 is a protein called Activated Factor X light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	B	139	1088	657	184	230	17	0	0

- Molecule 4 is a protein called Activated Factor X heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	C	235	1863	1172	327	350	14	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	195	ALA	SER	engineered mutation	UNP P00742

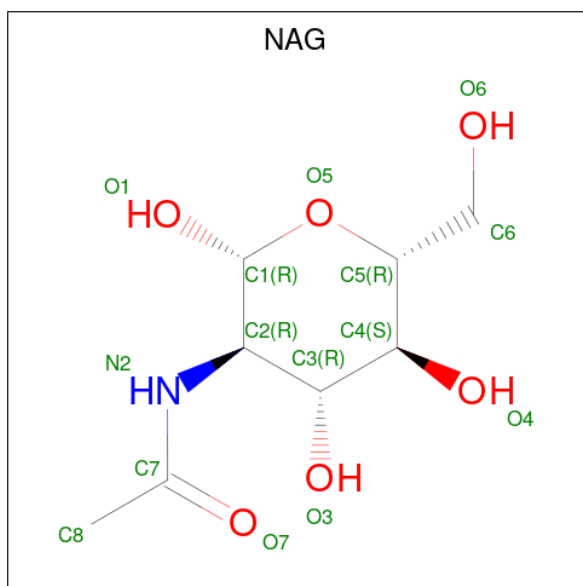
- Molecule 5 is a protein called Prothrombin.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	D	563	4468	2788	785	863	32	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	525	ALA	SER	engineered mutation	UNP P00734

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).

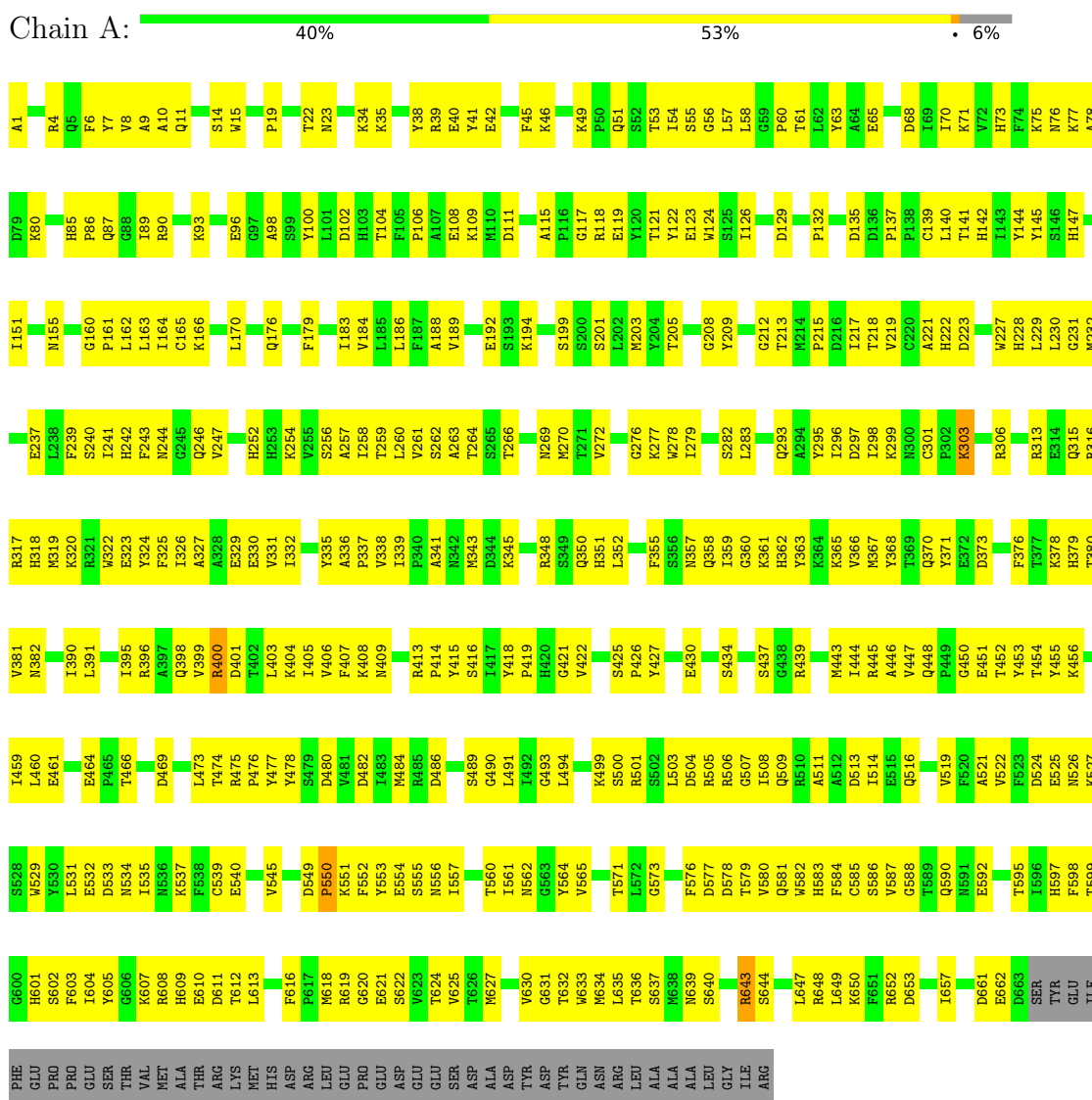


Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
6	A	1	Total	C	N	O	0
			14	8	1	5	
6	A	1	Total	C	N	O	0
			14	8	1	5	
6	E	1	Total	C	N	O	0
			14	8	1	5	
6	E	1	Total	C	N	O	0
			14	8	1	5	
6	D	1	Total	C	N	O	0
			14	8	1	5	
6	D	1	Total	C	N	O	0
			14	8	1	5	

3 Residue-property plots [i](#)

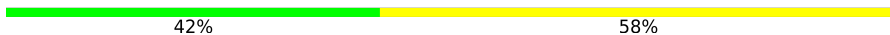
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: Activated Factor V (FVa) heavy chain



- Molecule 2: Activated Factor V (FVa) light chain

Chain E:



S1546	N1547	G1548	G1549	N1550	R1551	L1552	N1553	Y1554	I1555	I1556	I1557	A1558	E1559	E1560	I1561	S1562	H1563	D1564	Y1565	S1566	S1567	F1568	Y1569	Q1570	T1573	A1574	I1581	T1585	T1586	K1589	V1590	V1591	F1592	R1593	K1594	L1595	D1597	S1598	K1602	R1603	D1604	P1605	R1606	G1607	E1608	E1609	E1610	L1613	G1614	L1615	L1616	G1617
P1618	I1619	I1620	R1621	V1624	D1625	D1626	V1630	R1631	F1632	K1633	N1634	L1635	R1638	P1639	H1640	S1641	L1642	H1643	A1644	H1645	K1651	S1652	S1653	E1654	G1655	T1656	Y1658	E1659	D1660	D1661	S1662	F1666	D1669	N1670	P1674	M1675	S1677	Y1678	T1679	Y1680	Y1681	W1682	H1683	T1685	E1686	R1687	S1688	P1689	L1690			
E1691	S1695	A1696	C1697	R1698	A1699	W1700	A1701	Y1702	Y1703	S1704	K1710	D1711	I1712	H1713	S1714	G1715	L1716	I1717	L1720	L1721	I1722	C1723	Q1724	I1727	L1728	H1729	K1730	M1733	M1734	P1735	M1736	D1737	M1738	R1739	E1740	L1743	L1744	F1745	M1746	T1747	F1748	D1749	E1750	K1751	K1752	S1753	W1754	T1755	K1758	R1761	W1764	
R1765	L1766	T1767	S1768	S1769	E1770	M1771	S1774	H1775	E1776	F1777	H1778	A1779	I1780	M1781	G1782	L1783	I1784	L1785	S1786	G1861	L1787	P1788	L1790	L1791	E1794	Q1795	L1798	R1799	L1800	N1804	I1805	G1806	G1807	S1808	Q1809	V1813	H1814	H1815	F1816	H1817	H1818	Q1819	T1820	L1821	L1822	E1823	K1827	Q1828	Q1830	L1831	L1836	
L1837	P1838	G1839	L1844	E1845	M1846	K1847	A1848	S1849	K1850	H1851	G1852	W1853	W1854	L1855	L1856	M1857	L1858	E1859	V1860	G1861	L1862	H1863	A1864	R1865	G1867	M1868	Q1869	T1870	P1871	F1872	L1873	M1874	M1875	D1876	R1877	M1881	G1884	T1887	I1890	Q1894	I1895	K1896	A1897	S1898	E1899	F1900	L1901	W1904	E1905	P1906	R1907	
L1908	A1909	R1910	L1911	M1912	A1919	W1920	V1922	L1925	K1932	P1933	M1934	L1935	Q1936	V1937	D1938	Q1940	V1943	I1944	Q1951	Y1956	L1957	K1958	Y1961	T1962	T1963	E1964	F1965	Y1966	V1967	A1968	S1970	H1976	Q1977	I1978	F1979	K1980	G1981	M1982	S1983	M1986	E1989	F1990	M1988	Y1989	N1993	S1994	D1995					
A1996	S1997	T1998	I1999	K2000	E2001	D2005	P2006	A2010	R2011	Y2012	L2013	R2014	I2015	S2016	P2017	T2018	R2019	A2020	Y2021	N2022	R2023	P2024	T2025	L2026	R2027	G2032	C2033	E2034	V2035	S2039	T2040	G2043	M2044	E2045	I2049	E2050	N2051	K2052	Q2053	I2054	T2055	F2059	K2060	K2061	S2062	D2066	Y2067	W2068	E2069	P2070	F2071	
R2072	A2073	R2074	L2075	N2076	A2077	Q2078	G2079	R2080	W2081	N2082	A2083	H2084	Q2085	A2086	K2087	W2094	L2095	E2096	L2097	D2098	S2183	L2100	K2101	T2102	K2103	K2104	A2107	I2108	Q2111	S2115	S2118	E2119	K2120	V2122	K2123	S2124	Y2125	H2128	Y2129	I2054	S2130	K2136	K2137	P2138	Y2139	R2140	L2141	W2145	K2148			
G2152	N2153	T2154	N2155	T2156	K2157	G2158	H2159	V2160	P2166	S2170	R2171	F2172	I2173	R2174	V2175	L2176	P2177	K2178	Q2182	S2183	L2184	A2185	L2186	R2187	L2188	F2191	G2192	I2195	Y2196																							

• Molecule 3: Activated Factor X light chain

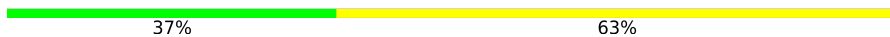
Chain B:



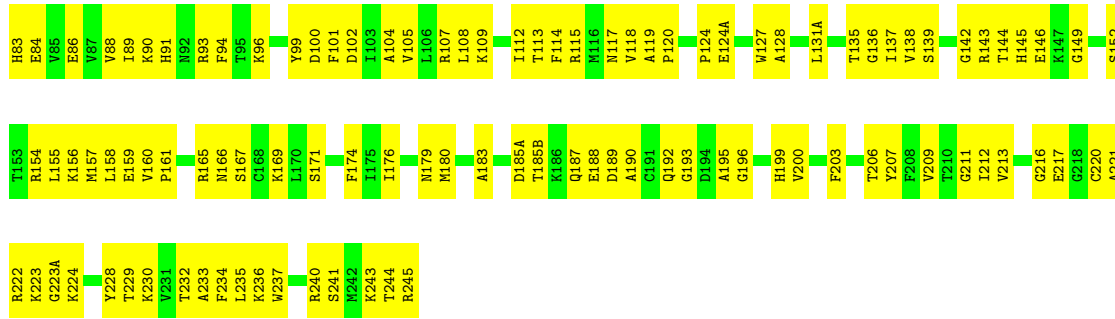
A1	E6	E7	M8	K9	E14	R15	E16	M18	C22	S23	A27	R28	E32	D33	S34	D35	K36	W41	Y44	K45	C50	Q56	N57	D63	G64	L65	K79	M80	C81	E82	L83	F84	T85	R86	L91	D92	M93	Q98	F99	C100	V107	Y115
Y130	P131	C132	G133	R139	ARG	LYS	ARG																																			

• Molecule 4: Activated Factor X heavy chain

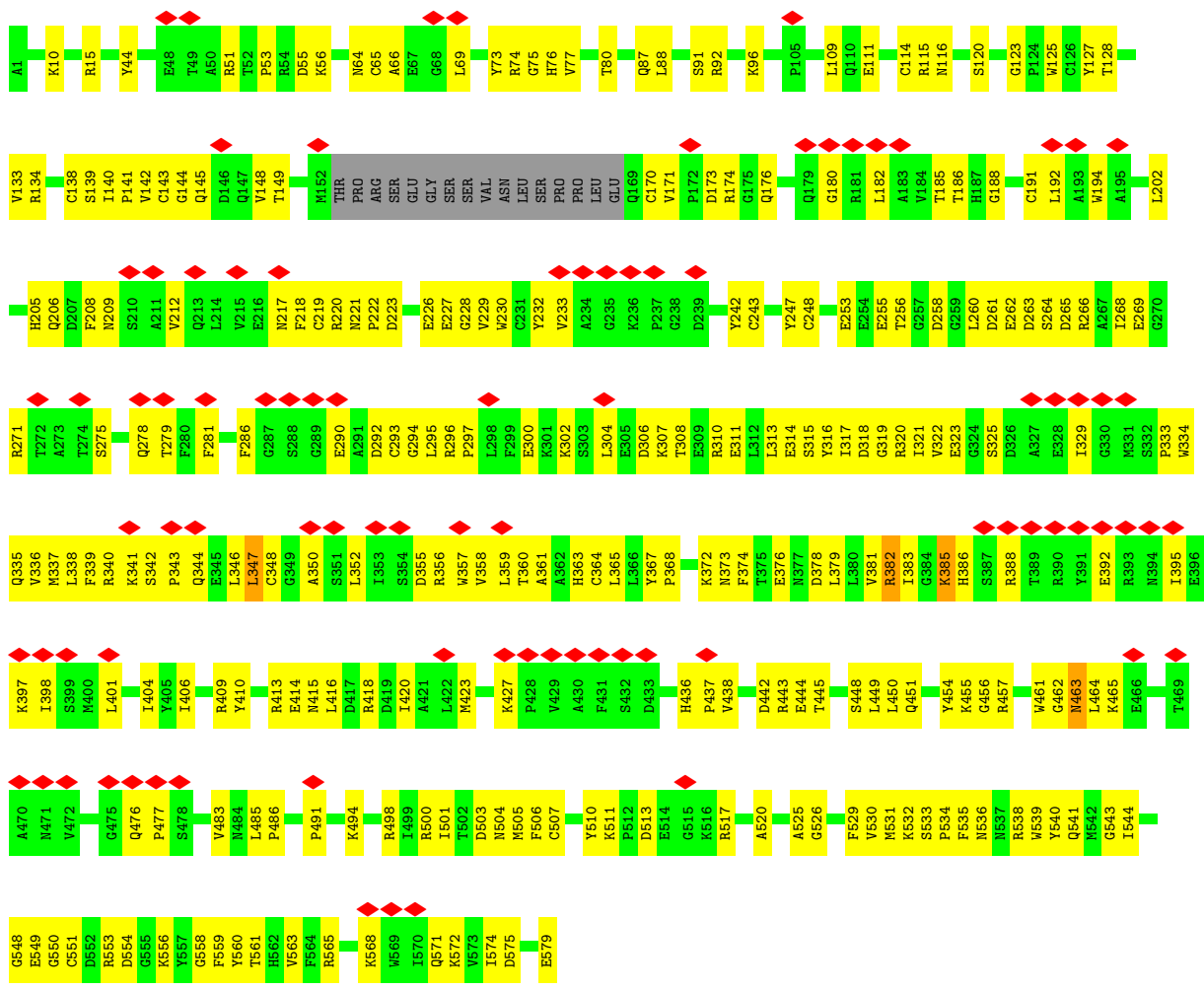
Chain C:



L16	V17	G18	H19	Q20	E21	C22	K23	D24	P28	W29	Q30	A31	L32	L33	I34	N35	E36	E37	N38	E39	G40	F41	C42	G43	G44	T45	I46	L47	S48	E49	F50	Y51	I52	L53	A56	H57	C58	L59	Y60	Q61	R63	F64	K65	V66	R67	V68	G69	D70	R71	N72	T73	E74	Q75	G79
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



● Molecule 5: Prothrombin



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	4988	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	51.28	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.768	Depositor
Minimum map value	-0.199	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.028	Depositor
Recommended contour level	0.0839	Depositor
Map size (Å)	481.28, 481.28, 481.28	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.94, 0.94, 0.94	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.26	0/5478	0.54	0/7426
2	E	0.26	0/5447	0.53	0/7370
3	B	0.26	0/1106	0.49	0/1483
4	C	0.26	0/1901	0.52	0/2559
5	D	0.25	0/4573	0.54	1/6193 (0.0%)
All	All	0.26	0/18505	0.53	1/25031 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
5	D	347	LEU	CA-CB-CG	5.08	126.98	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5340	0	5183	319	0
2	E	5304	0	5152	325	0
3	B	1088	0	981	31	0
4	C	1863	0	1821	144	0
5	D	4468	0	4247	209	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	A	28	0	26	2	0
6	D	28	0	26	0	0
6	E	28	0	26	6	0
All	All	18147	0	17462	977	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 27.

The worst 5 of 977 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:1758:LYS:HB2	2:E:1761:ARG:HG3	1.52	0.91
5:D:87:GLN:HG2	5:D:127:TYR:HB2	1.58	0.86
1:A:409:ASN:HB2	1:A:447:VAL:HG13	1.58	0.85
5:D:296:ARG:H	5:D:300:GLU:HB2	1.46	0.80
5:D:56:LYS:NZ	5:D:145:GLN:OE1	2.16	0.79

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	661/709 (93%)	570 (86%)	90 (14%)	1 (0%)	47	81
2	E	649/651 (100%)	569 (88%)	80 (12%)	0	100	100
3	B	137/142 (96%)	130 (95%)	7 (5%)	0	100	100
4	C	233/235 (99%)	213 (91%)	20 (9%)	0	100	100
5	D	559/579 (96%)	516 (92%)	43 (8%)	0	100	100
All	All	2239/2316 (97%)	1998 (89%)	240 (11%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	550	PRO

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	597/637 (94%)	594 (100%)	3 (0%)	88	93
2	E	576/576 (100%)	575 (100%)	1 (0%)	93	96
3	B	122/125 (98%)	122 (100%)	0	100	100
4	C	199/199 (100%)	199 (100%)	0	100	100
5	D	480/495 (97%)	477 (99%)	3 (1%)	86	92
All	All	1974/2032 (97%)	1967 (100%)	7 (0%)	91	94

5 of 7 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	E	2140	ARG
5	D	382	ARG
5	D	463	ASN
5	D	385	LYS
1	A	643	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 15 such sidechains are listed below:

Mol	Chain	Res	Type
2	E	1869	GLN
5	D	476	GLN
2	E	1894	GLN
5	D	562	HIS
4	C	75	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](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

6 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
6	NAG	D	602	5	14,14,15	0.73	0	17,19,21	0.92	0
6	NAG	E	2201	2	14,14,15	1.08	1 (7%)	17,19,21	2.07	3 (17%)
6	NAG	A	2202	1	14,14,15	0.70	0	17,19,21	0.85	0
6	NAG	A	2201	1	14,14,15	0.81	0	17,19,21	1.19	1 (5%)
6	NAG	E	2202	2	14,14,15	0.69	0	17,19,21	1.92	4 (23%)
6	NAG	D	601	5	14,14,15	0.70	0	17,19,21	1.42	3 (17%)

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
6	NAG	D	602	5	-	2/6/23/26	0/1/1/1
6	NAG	E	2201	2	-	5/6/23/26	0/1/1/1
6	NAG	A	2202	1	-	2/6/23/26	0/1/1/1
6	NAG	A	2201	1	-	1/6/23/26	0/1/1/1
6	NAG	E	2202	2	-	3/6/23/26	0/1/1/1
6	NAG	D	601	5	-	4/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	E	2201	NAG	C1-C2	3.60	1.57	1.52

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	E	2201	NAG	C2-N2-C7	6.92	132.75	122.90
6	E	2202	NAG	O5-C5-C6	4.84	114.80	107.20
6	A	2201	NAG	O5-C1-C2	-3.61	105.59	111.29
6	D	601	NAG	O5-C1-C2	-3.36	105.97	111.29
6	E	2202	NAG	C2-N2-C7	3.30	127.61	122.90

There are no chirality outliers.

5 of 17 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	D	601	NAG	O5-C5-C6-O6
6	D	601	NAG	C4-C5-C6-O6
6	D	602	NAG	C4-C5-C6-O6
6	E	2201	NAG	C8-C7-N2-C2
6	E	2201	NAG	O7-C7-N2-C2

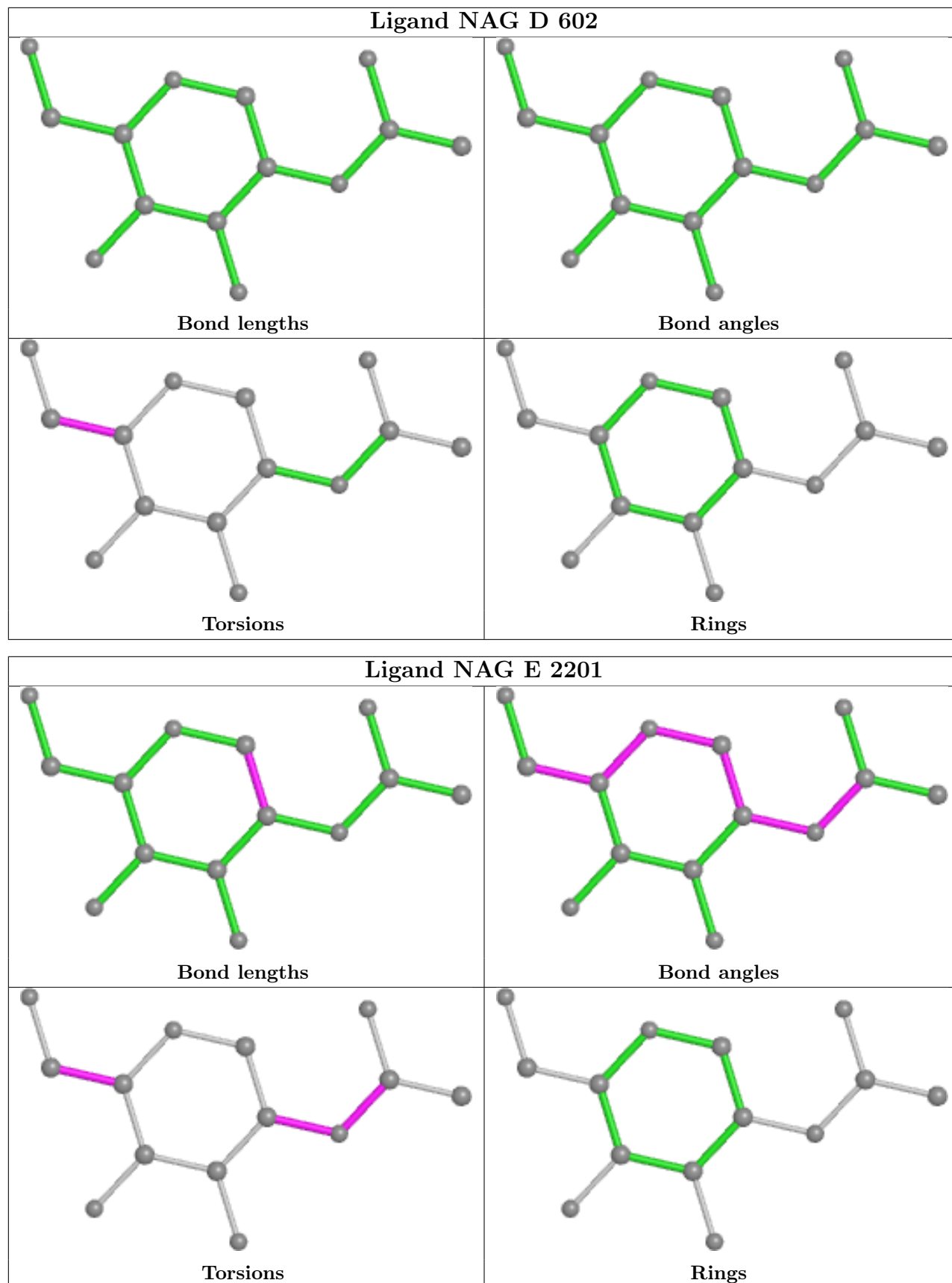
There are no ring outliers.

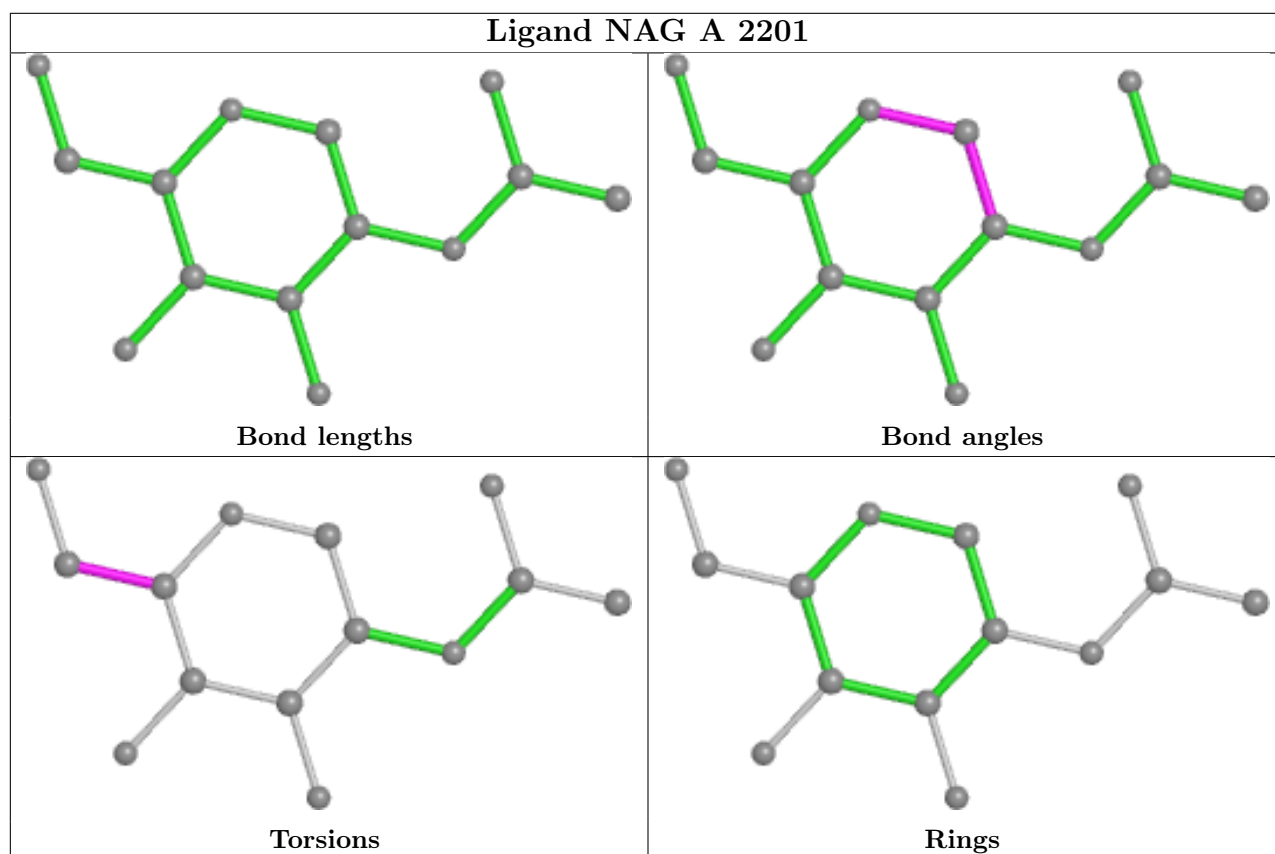
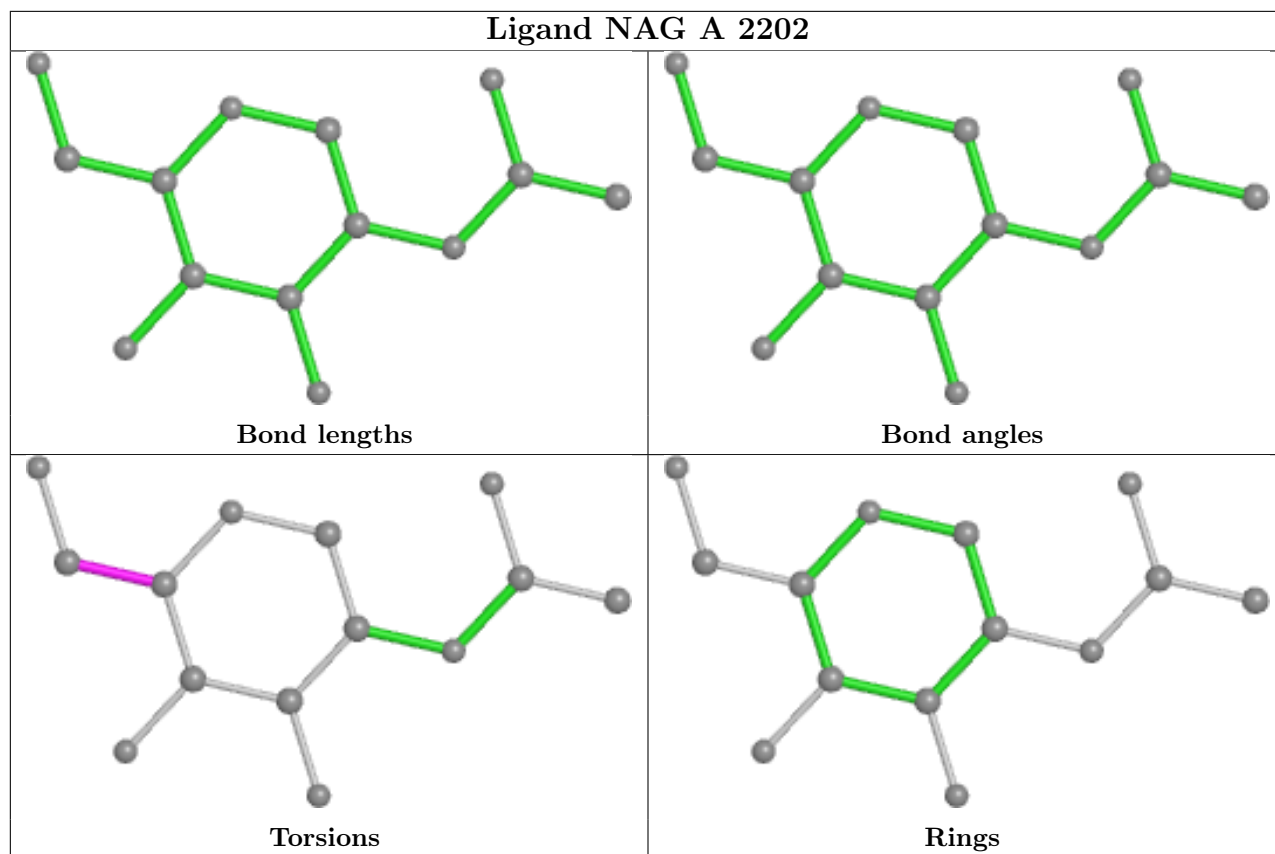
4 monomers are involved in 8 short contacts:

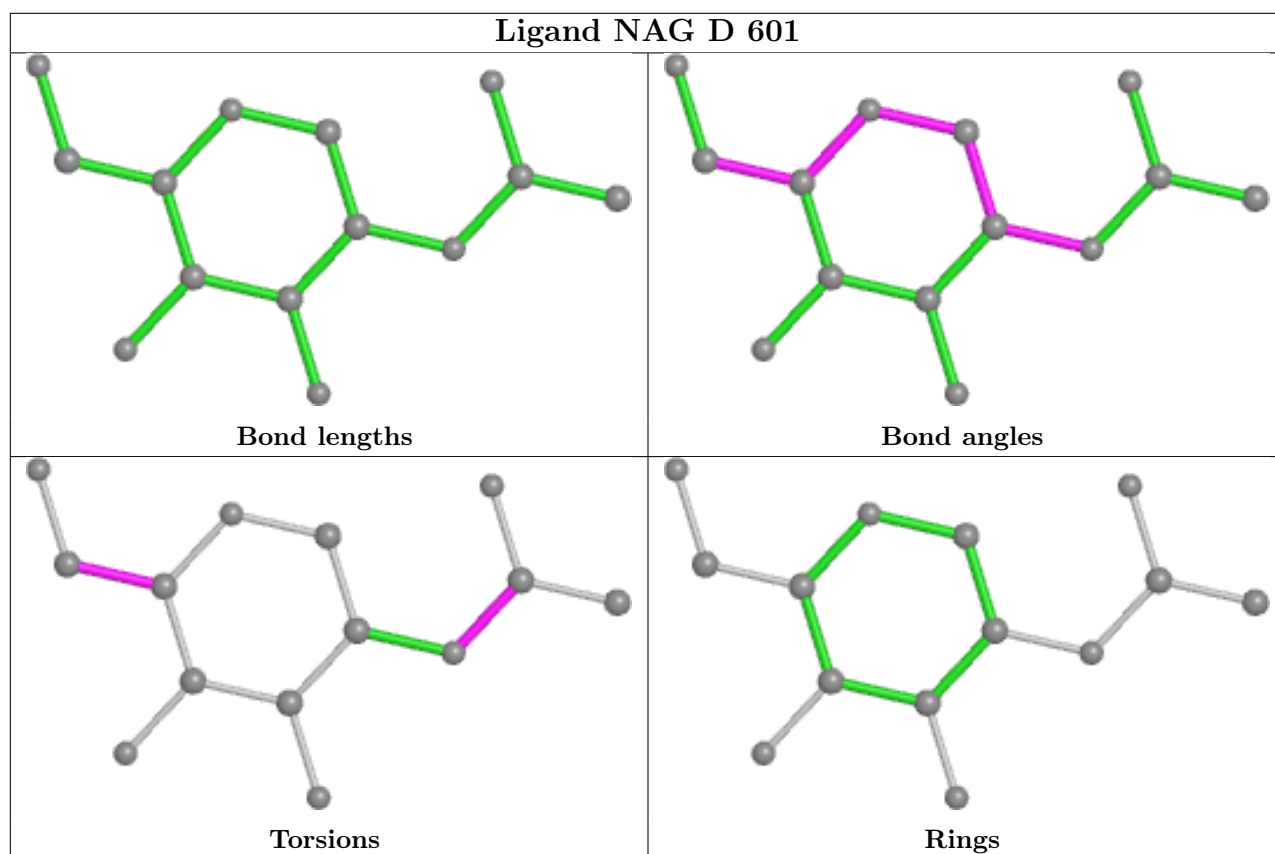
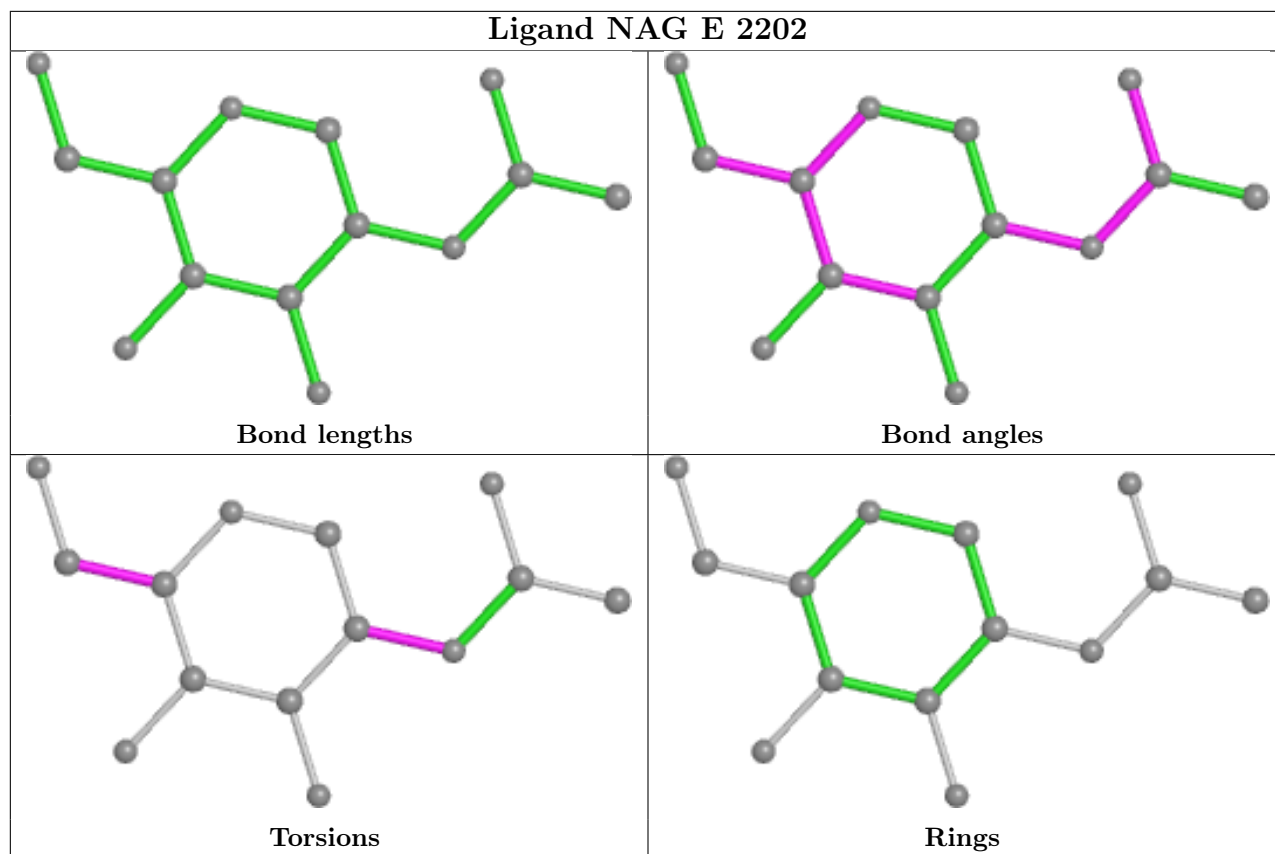
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	E	2201	NAG	2	0
6	A	2202	NAG	1	0
6	A	2201	NAG	1	0
6	E	2202	NAG	4	0

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

equivalents in the CSD to analyse the geometry.







5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

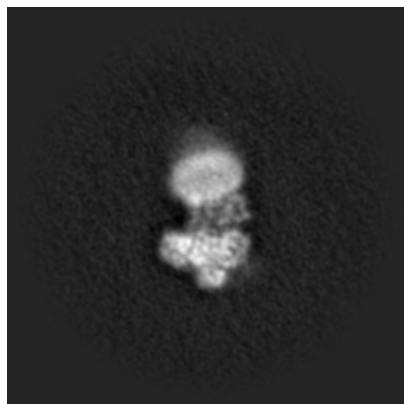
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-42405. These allow visual inspection of the internal detail of the map and identification of artifacts.

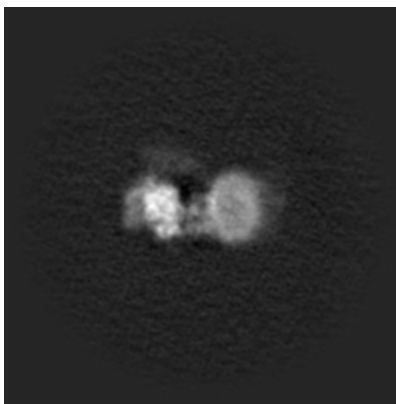
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

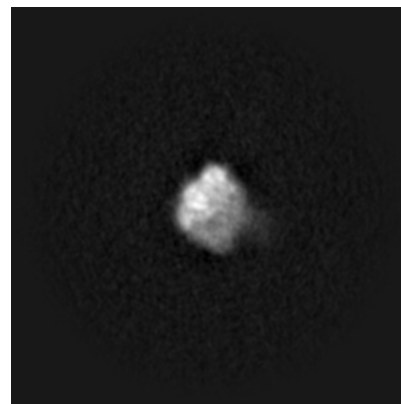
6.1.1 Primary map



X

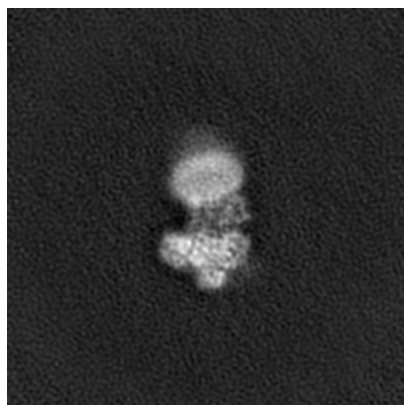


Y

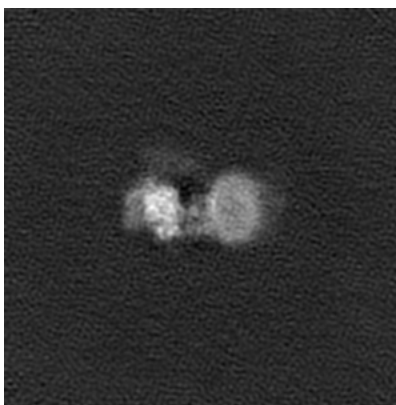


Z

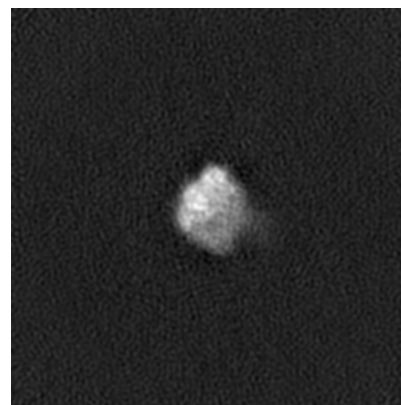
6.1.2 Raw map



X



Y

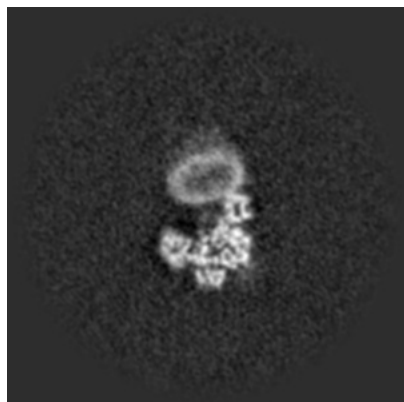


Z

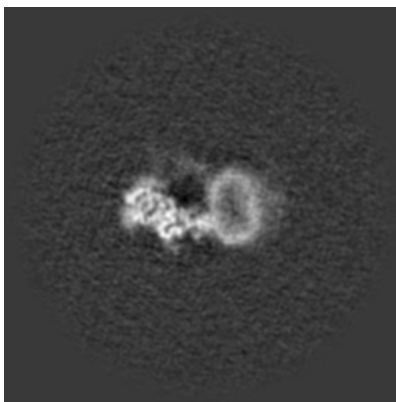
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

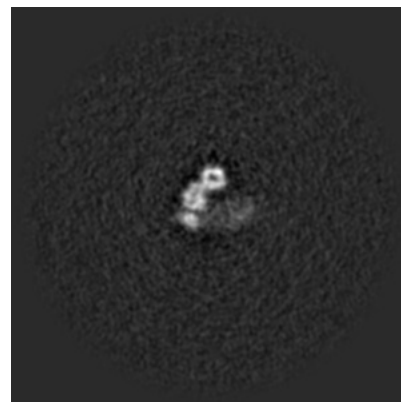
6.2.1 Primary map



X Index: 256



Y Index: 256

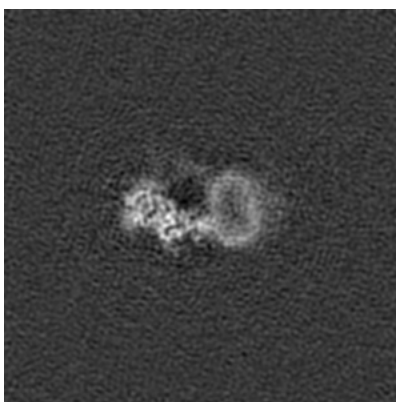


Z Index: 256

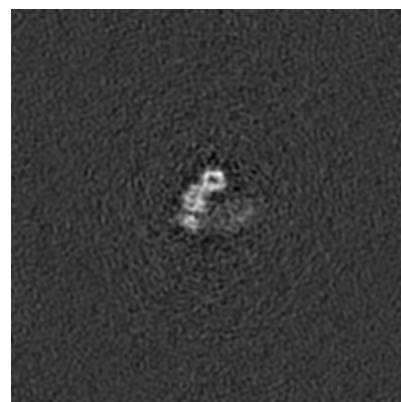
6.2.2 Raw map



X Index: 256



Y Index: 256

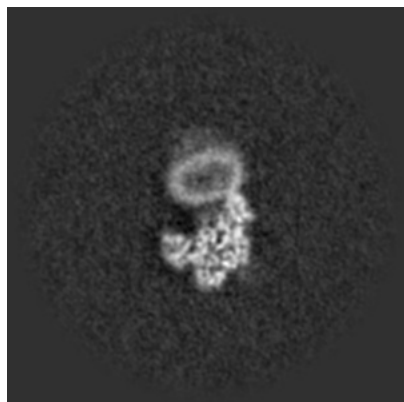


Z Index: 256

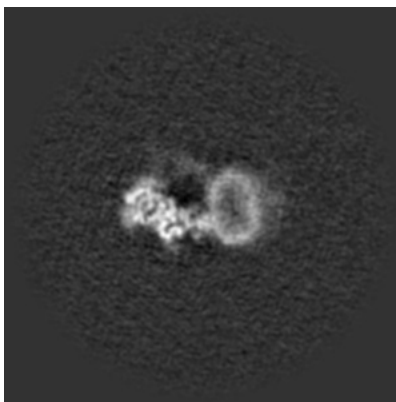
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

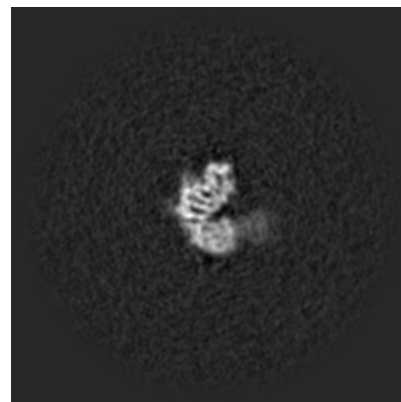
6.3.1 Primary map



X Index: 252

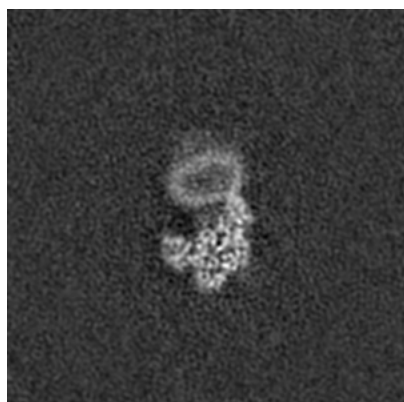


Y Index: 255

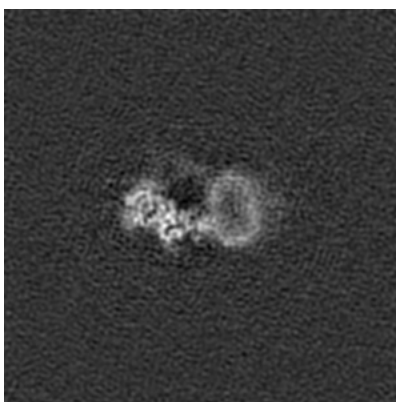


Z Index: 212

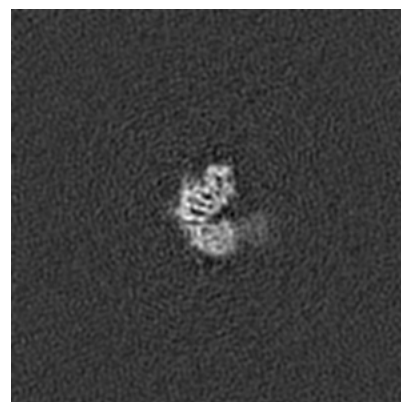
6.3.2 Raw map



X Index: 252



Y Index: 255

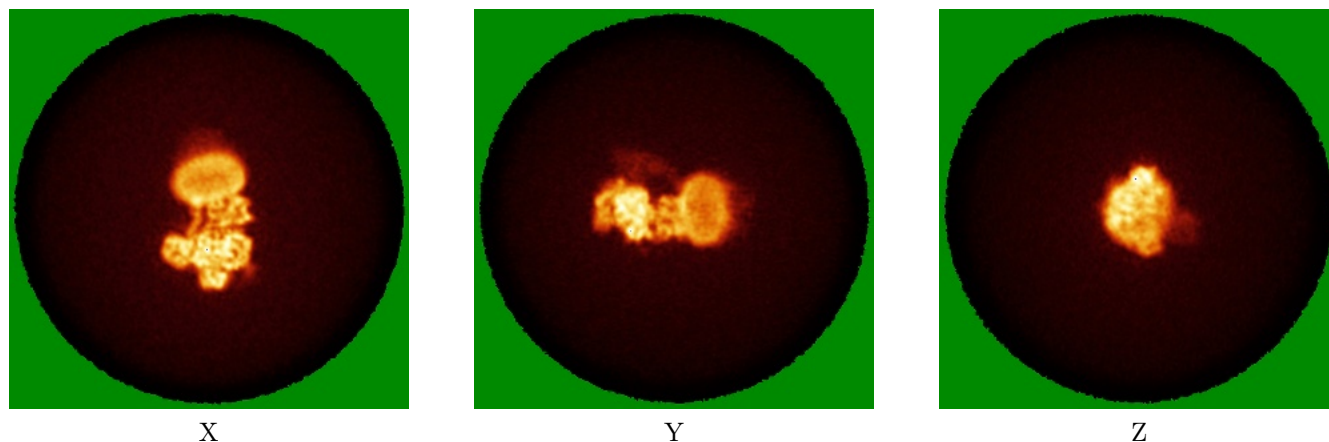


Z Index: 212

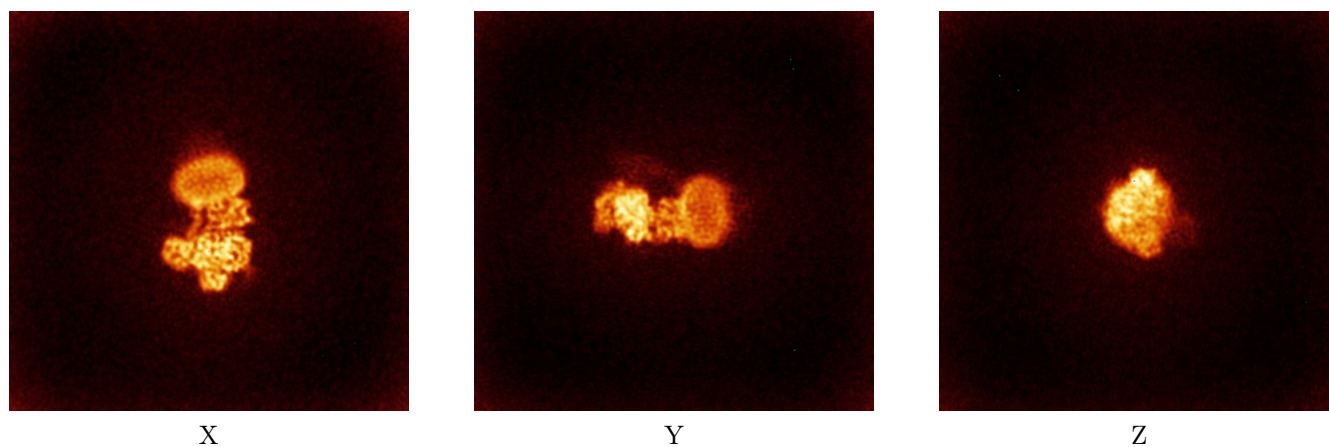
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



6.4.2 Raw map



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.

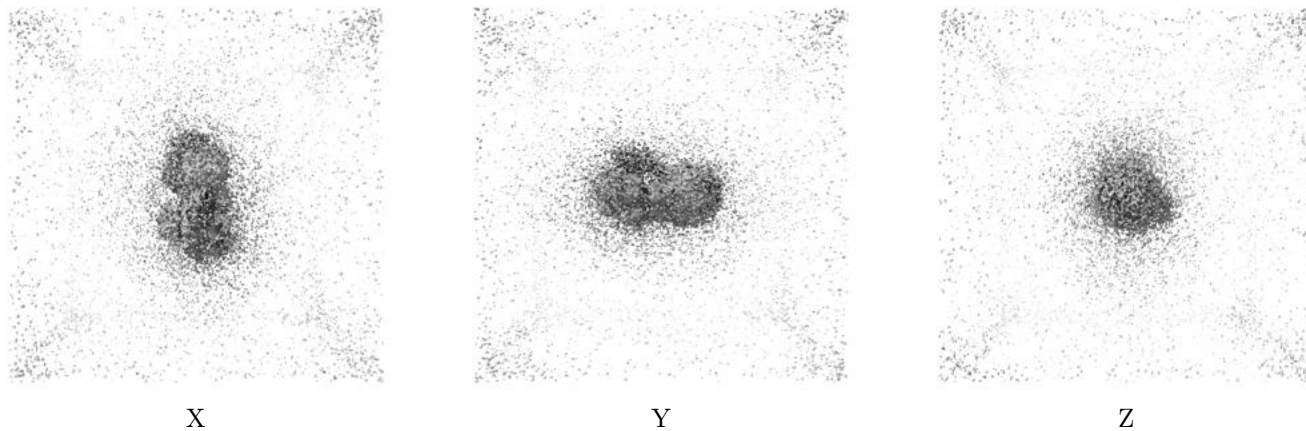
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0839. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

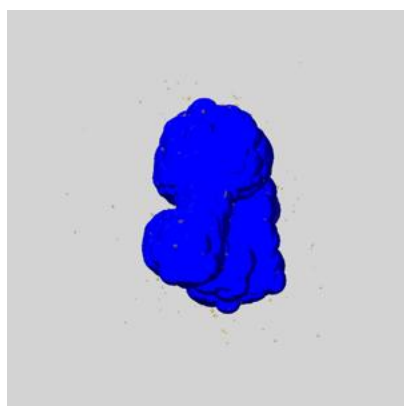
6.6 Mask visualisation [i](#)

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

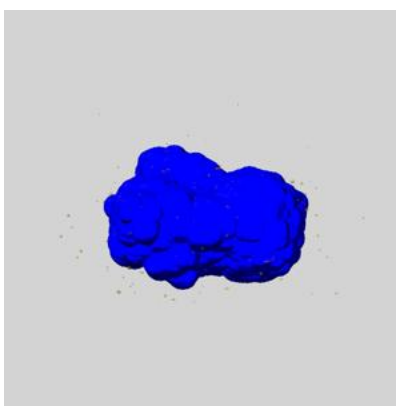
A mask typically either:

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

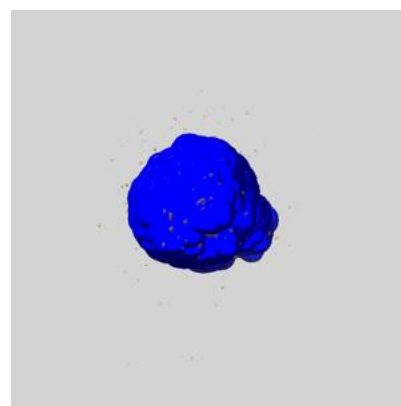
6.6.1 emd_42405_msk_1.map [i](#)



X



Y

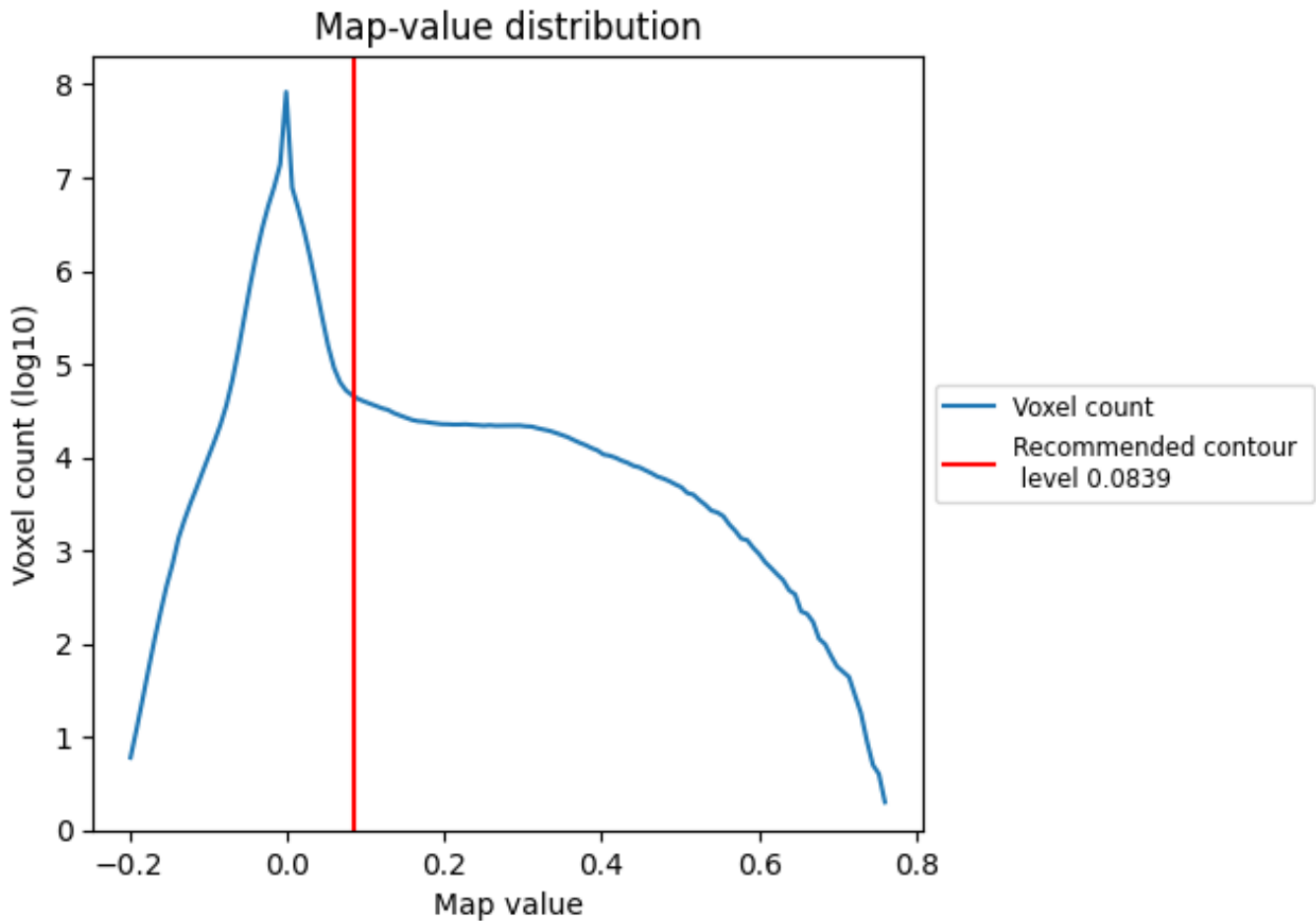


Z

7 Map analysis [i](#)

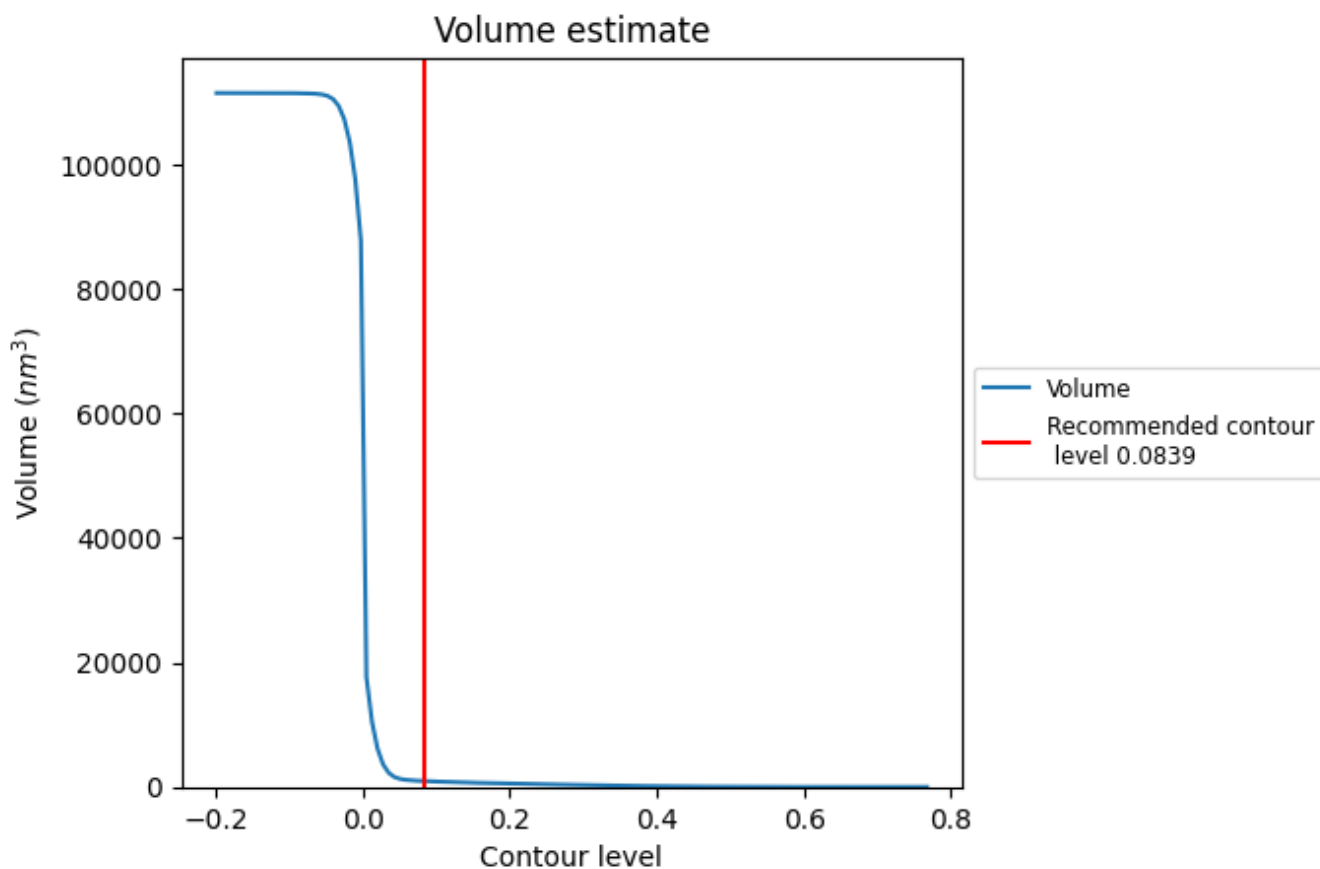
This section contains the results of statistical analysis of the map.

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.

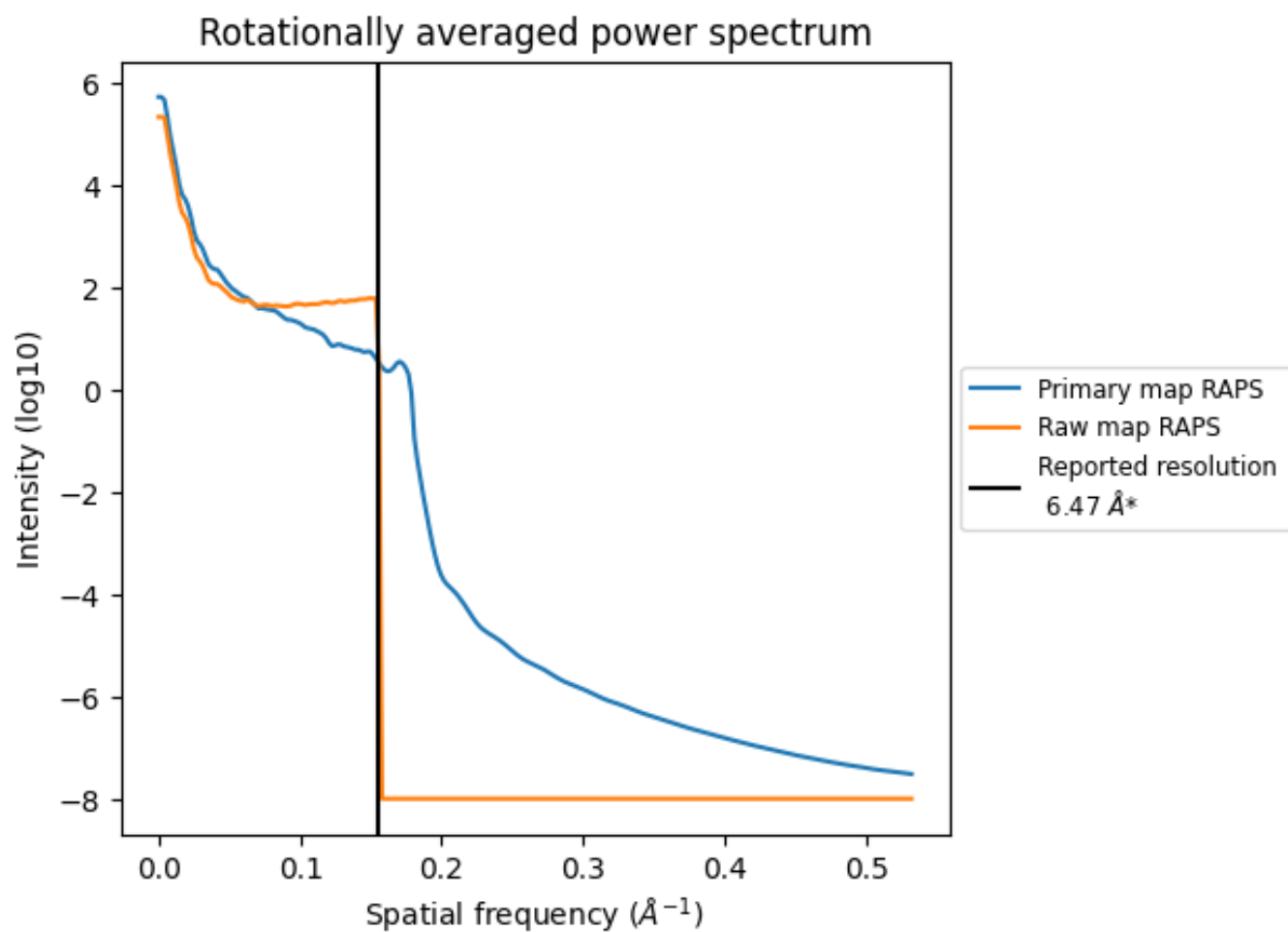
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 945 nm^3 ; this corresponds to an approximate mass of 854 kDa.

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

7.3 Rotationally averaged power spectrum i

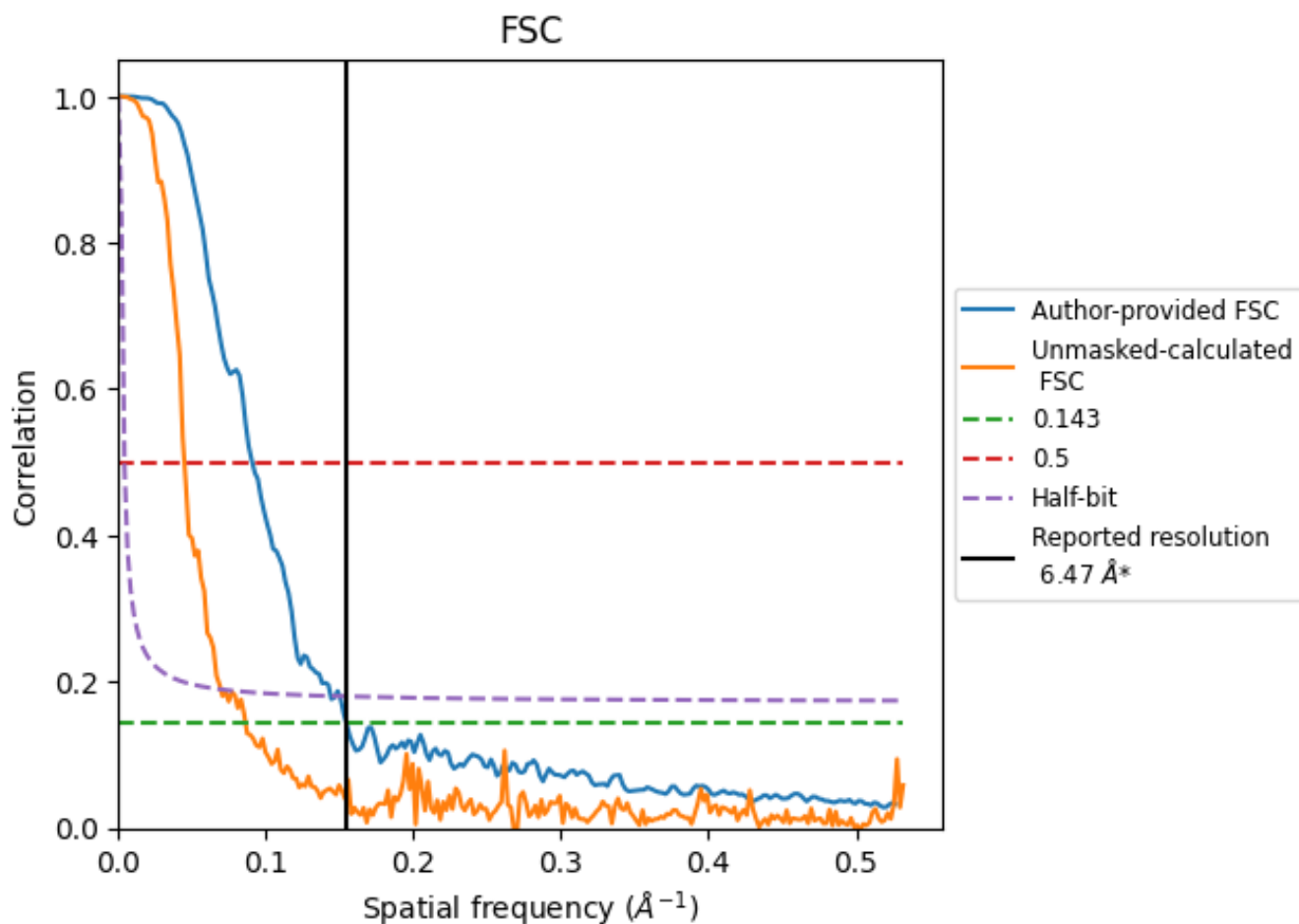


*Reported resolution corresponds to spatial frequency of 0.155 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.155\AA^{-1}

8.2 Resolution estimates [i](#)

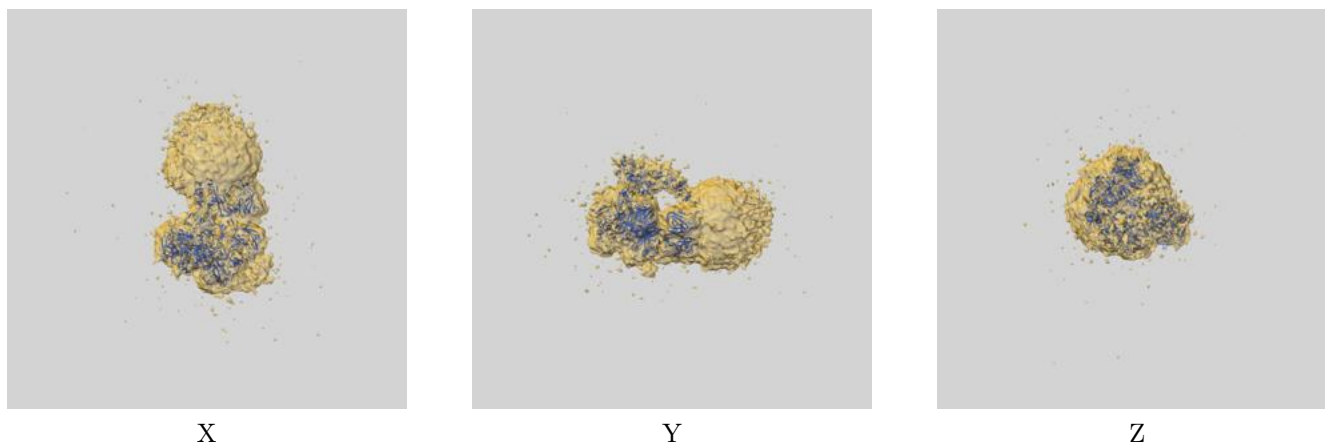
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	6.47	-	-
Author-provided FSC curve	6.47	11.03	6.94
Unmasked-calculated*	11.60	22.32	14.41

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 11.60 differs from the reported value 6.47 by more than 10 %

9 Map-model fit [i](#)

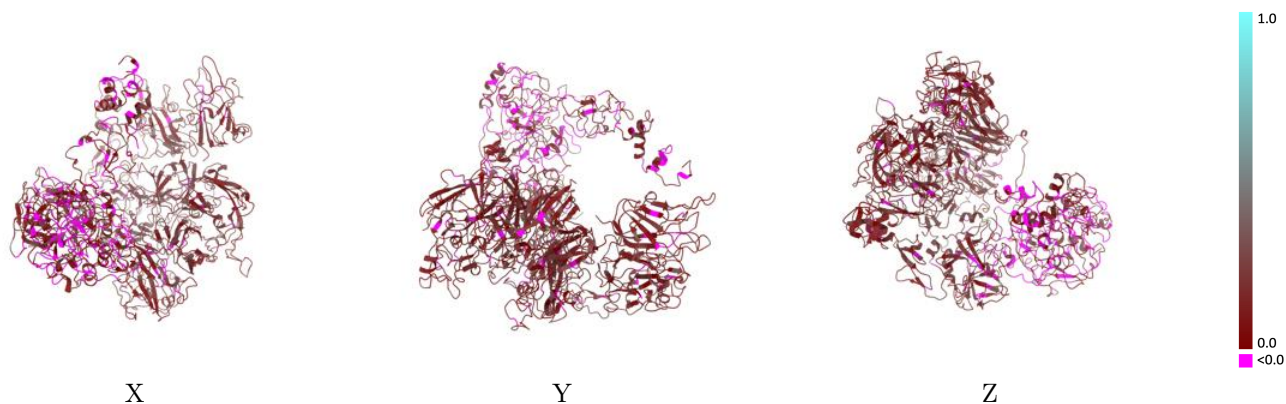
This section contains information regarding the fit between EMDB map EMD-42405 and PDB model 9CTH. Per-residue inclusion information can be found in section 3 on page 5.

9.1 Map-model overlay [i](#)



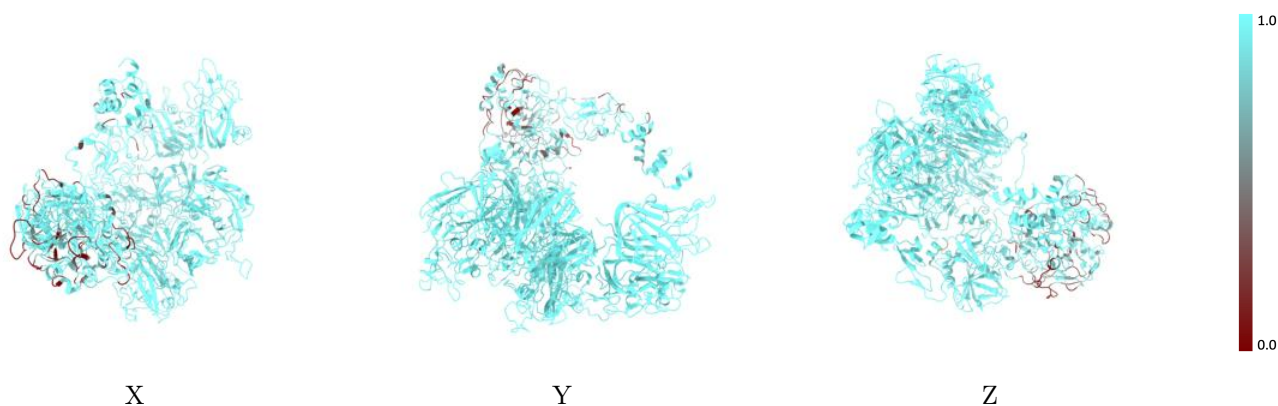
The images above show the 3D surface view of the map at the recommended contour level 0.0839 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



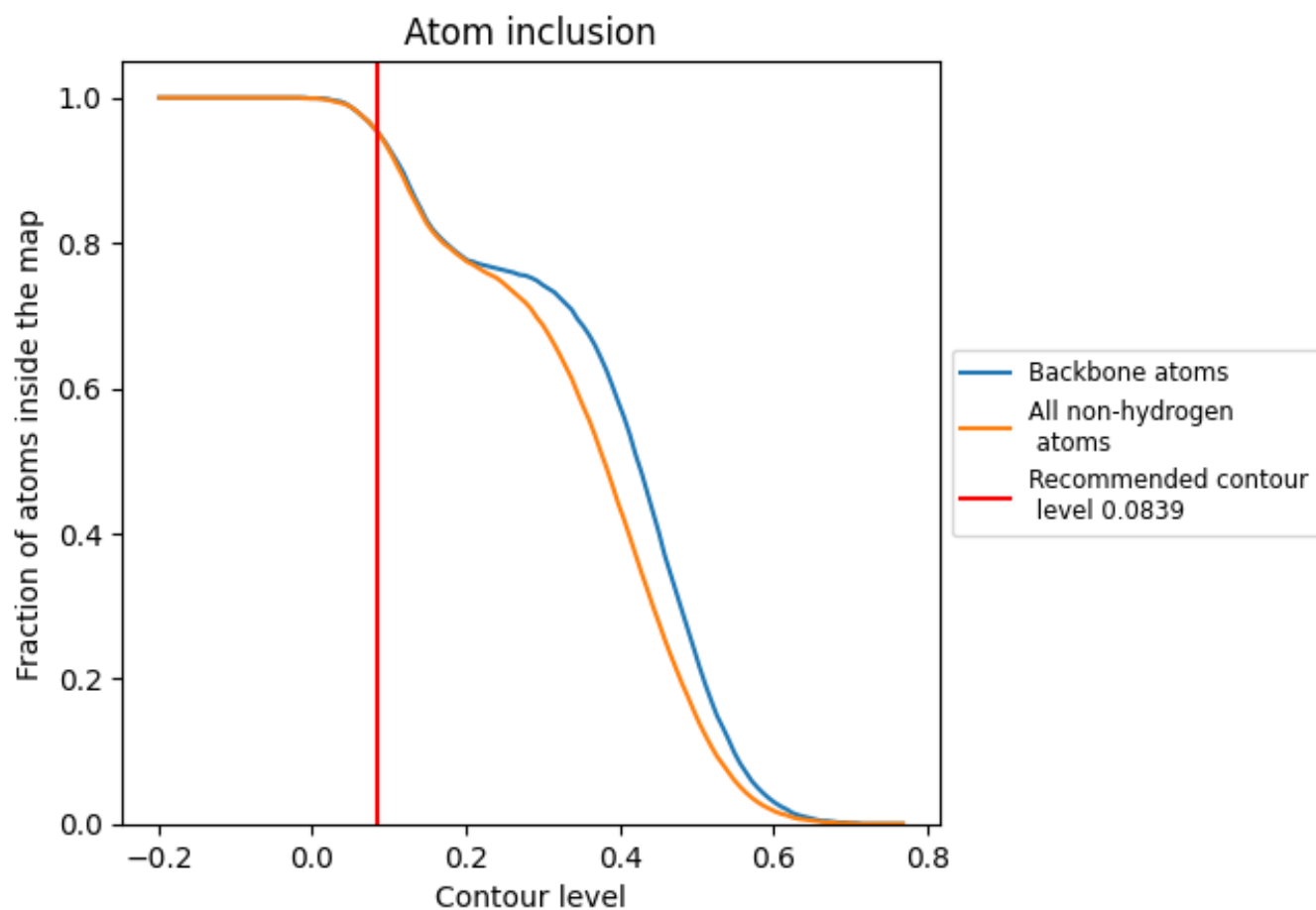
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0839).













9.4 Atom inclusion [i](#)



At the recommended contour level, 95% of all backbone atoms, 95% 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 (0.0839) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9540	 0.1430
A	 1.0000	 0.1700
B	 1.0000	 0.1690
C	 1.0000	 0.1460
D	 0.8120	 0.0710
E	 1.0000	 0.1720

