Full wwPDB X-ray Structure Validation Report ⓘ

Nov 17, 2026 – 04:11 PM JST

PDB ID	:	26SS / pdb_000026ss
Title	:	Crystal structure of the Ca2+-bound Arabidopsis thaliana mitochondrial calcium uptake protein (AtMICU)
Authors	:	Yang, J.; Jin, M.; Park, J.; Mun, S.A.; Park, T.; Kim, H.; Eom, S.H.
Deposited on	:	2026-05-13
Resolution	:	2.10 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp
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:

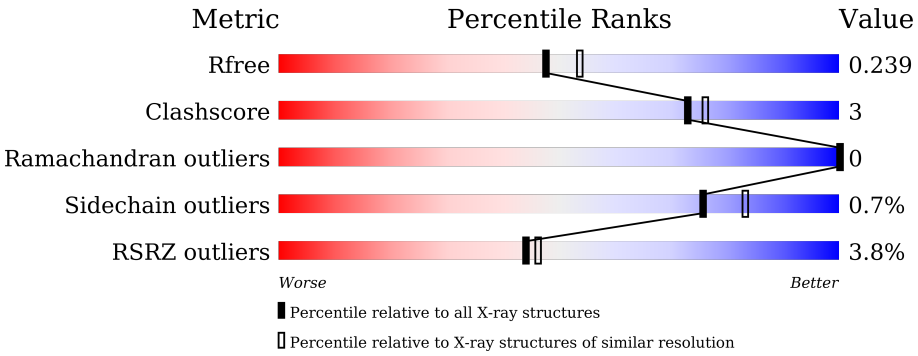
MolProbity	:	4-5-2 with Phenix2.2
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.2
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	6658 (2.10-2.10)
Clashscore	190562	7164 (2.10-2.10)
Ramachandran outliers	187476	7099 (2.10-2.10)
Sidechain outliers	187428	7100 (2.10-2.10)
RSRZ outliers	180081	6662 (2.10-2.10)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	AAA	349	2% 82% 7% 11%
1	BBB	349	2% 81% 7% 13%
1	CCC	349	4% 82% 6% 12%
1	DDD	349	5% 74% 10% 16%

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	EDO	DDD	504	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 9880 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 Calcium uptake protein, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	AAA	309	Total	C	N	O	S	0	0	0
			2454	1578	411	452	13			
1	BBB	305	Total	C	N	O	S	0	0	0
			2427	1562	406	444	15			
1	CCC	307	Total	C	N	O	S	0	0	0
			2402	1547	395	446	14			
1	DDD	294	Total	C	N	O	S	0	0	0
			2301	1489	377	422	13			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AAA	125	MET	-	initiating methionine	UNP Q9SZ45
AAA	126	ASN	-	expression tag	UNP Q9SZ45
AAA	127	HIS	-	expression tag	UNP Q9SZ45
AAA	128	LYS	-	expression tag	UNP Q9SZ45
AAA	129	VAL	-	expression tag	UNP Q9SZ45
AAA	130	HIS	-	expression tag	UNP Q9SZ45
AAA	131	HIS	-	expression tag	UNP Q9SZ45
AAA	132	HIS	-	expression tag	UNP Q9SZ45
AAA	133	HIS	-	expression tag	UNP Q9SZ45
AAA	134	HIS	-	expression tag	UNP Q9SZ45
AAA	135	HIS	-	expression tag	UNP Q9SZ45
AAA	136	MET	-	expression tag	UNP Q9SZ45
BBB	125	MET	-	initiating methionine	UNP Q9SZ45
BBB	126	ASN	-	expression tag	UNP Q9SZ45
BBB	127	HIS	-	expression tag	UNP Q9SZ45
BBB	128	LYS	-	expression tag	UNP Q9SZ45
BBB	129	VAL	-	expression tag	UNP Q9SZ45
BBB	130	HIS	-	expression tag	UNP Q9SZ45
BBB	131	HIS	-	expression tag	UNP Q9SZ45
BBB	132	HIS	-	expression tag	UNP Q9SZ45
BBB	133	HIS	-	expression tag	UNP Q9SZ45

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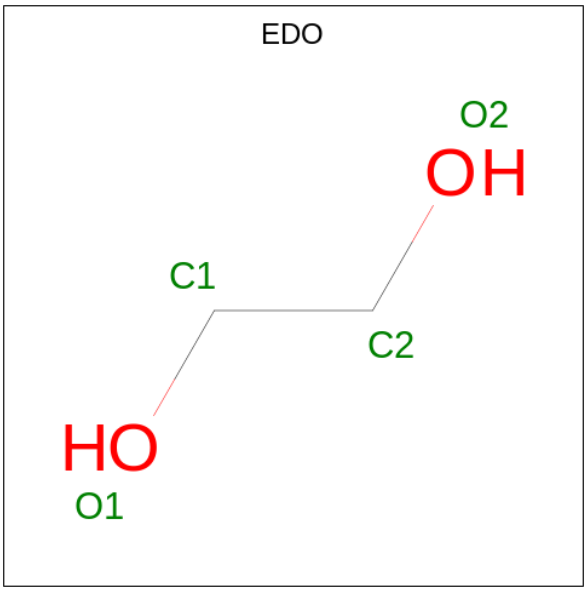
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Chain	Residue	Modelled	Actual	Comment	Reference
BBB	134	HIS	-	expression tag	UNP Q9SZ45
BBB	135	HIS	-	expression tag	UNP Q9SZ45
BBB	136	MET	-	expression tag	UNP Q9SZ45
CCC	125	MET	-	initiating methionine	UNP Q9SZ45
CCC	126	ASN	-	expression tag	UNP Q9SZ45
CCC	127	HIS	-	expression tag	UNP Q9SZ45
CCC	128	LYS	-	expression tag	UNP Q9SZ45
CCC	129	VAL	-	expression tag	UNP Q9SZ45
CCC	130	HIS	-	expression tag	UNP Q9SZ45
CCC	131	HIS	-	expression tag	UNP Q9SZ45
CCC	132	HIS	-	expression tag	UNP Q9SZ45
CCC	133	HIS	-	expression tag	UNP Q9SZ45
CCC	134	HIS	-	expression tag	UNP Q9SZ45
CCC	135	HIS	-	expression tag	UNP Q9SZ45
CCC	136	MET	-	expression tag	UNP Q9SZ45
DDD	125	MET	-	initiating methionine	UNP Q9SZ45
DDD	126	ASN	-	expression tag	UNP Q9SZ45
DDD	127	HIS	-	expression tag	UNP Q9SZ45
DDD	128	LYS	-	expression tag	UNP Q9SZ45
DDD	129	VAL	-	expression tag	UNP Q9SZ45
DDD	130	HIS	-	expression tag	UNP Q9SZ45
DDD	131	HIS	-	expression tag	UNP Q9SZ45
DDD	132	HIS	-	expression tag	UNP Q9SZ45
DDD	133	HIS	-	expression tag	UNP Q9SZ45
DDD	134	HIS	-	expression tag	UNP Q9SZ45
DDD	135	HIS	-	expression tag	UNP Q9SZ45
DDD	136	MET	-	expression tag	UNP Q9SZ45

- Molecule 2 is CALCIUM ION (CCD ID: CA) (formula: Ca) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	AAA	3	Total Ca 3 3	0	0
2	BBB	3	Total Ca 3 3	0	0
2	CCC	3	Total Ca 3 3	0	0
2	DDD	3	Total Ca 3 3	0	0

- Molecule 3 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	AAA	1	Total C O 4 2 2	0	0
3	DDD	1	Total C O 4 2 2	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	AAA	92	Total O 92 92	0	0
4	BBB	87	Total O 87 87	0	0
4	CCC	54	Total O 54 54	0	0
4	DDD	43	Total O 43 43	0	0

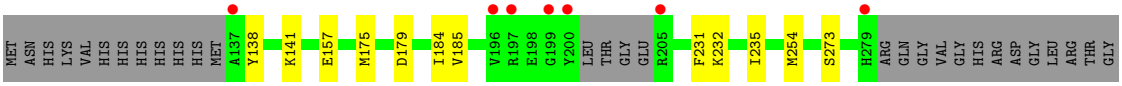
3 Residue-property plots (i)

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 electron 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 dot above a residue indicates a poor fit to the electron density (RSRZ > 2). 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: Calcium uptake protein, mitochondrial

Chain AAA:

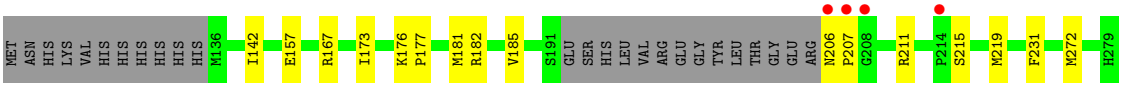




• Molecule 1: Calcium uptake protein, mitochondrial

Chain BBB:

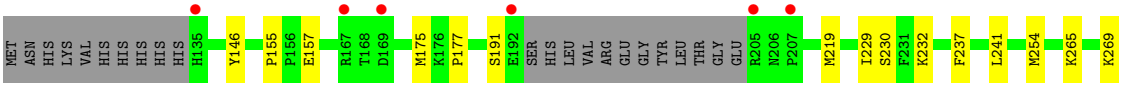




• Molecule 1: Calcium uptake protein, mitochondrial

Chain CCC:

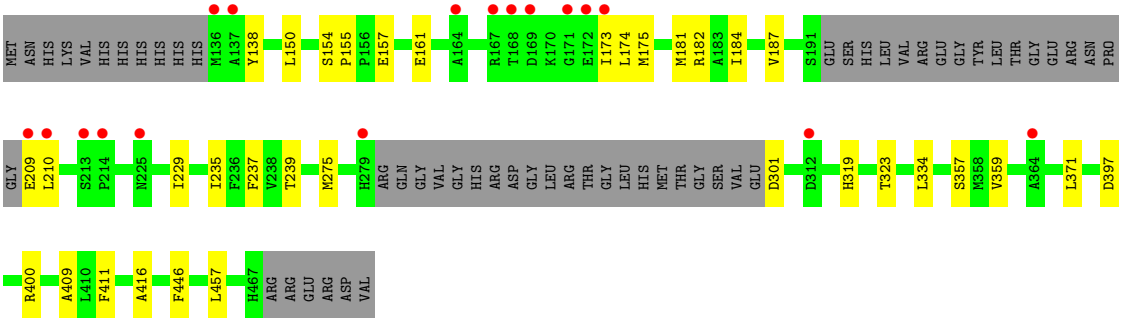




• Molecule 1: Calcium uptake protein, mitochondrial

Chain DDD:




MET ASN HIS LYS VAL HIS HIS HIS HIS HIS M136 A137 Y138 L150 S154 P155 P156 E157 E161 A164 R167 T168 D169 K170 G171 E172 I173 L174 M175 M181 R182 A183 I184 V187 S191 GLU SER HIS LEU VAL ARG GLU GLY TYR LEU THR GLY GLU ARG ASN PRO
GLY E209 L210 S213 P214 N225 I229 I235 F236 F237 V238 T239 M275 H279 ARG GLN GLY VAL GLY HIS ARG ASP GLY LEU ARG THR GLY LEU HIS MET THR GLY SER VAL GLU D301 D312 H319 T323 L334 S357 M358 V359 A364 L371 D397
R400 A409 L410 F411 A416 F446 L457 H467 ARG ARG GLU ARG ASP VAL

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	83.39Å 125.67Å 133.77Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.23 – 2.10 48.23 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.8 (48.23-2.10) 99.8 (48.23-2.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.74 (at 2.10Å)	Xtriage
Refinement program	PHENIX 1.19.2, REFMAC 7.1.018	Depositor
R, R_{free}	0.203 , 0.239 0.203 , 0.239	Depositor DCC
R_{free} test set	4091 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	25.9	Xtriage
Anisotropy	0.092	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 35.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	9880	wwPDB-VP
Average B, all atoms (Å^2)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.10% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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

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	AAA	0.47	0/2508	0.64	0/3372
1	BBB	0.47	0/2480	0.66	0/3330
1	CCC	0.44	1/2455 (0.0%)	0.59	0/3307
1	DDD	0.44	0/2352	0.61	0/3167
All	All	0.45	1/9795 (0.0%)	0.63	0/13176

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	CCC	155	PRO	C-O	-5.26	1.20	1.25

There are no bond angle outliers.

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	AAA	2454	0	2377	12	0
1	BBB	2427	0	2377	14	0
1	CCC	2402	0	2292	13	0
1	DDD	2301	0	2207	23	0
2	AAA	3	0	0	0	0
2	BBB	3	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	CCC	3	0	0	0	0
2	DDD	3	0	0	0	0
3	AAA	4	0	6	1	0
3	DDD	4	0	6	4	0
4	AAA	92	0	0	1	0
4	BBB	87	0	0	1	0
4	CCC	54	0	0	2	0
4	DDD	43	0	0	0	0
All	All	9880	0	9265	60	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 3.

All (60) 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:DDD:181:MET:HB3	1:DDD:210:LEU:HD12	1.47	0.95
1:AAA:138:TYR:HA	1:AAA:141:LYS:HD3	1.73	0.70
1:BBB:182:ARG:HD2	1:BBB:207:PRO:O	1.97	0.62
1:DDD:357:SER:OG	3:DDD:504:EDO:H21	2.00	0.61
1:BBB:272:MET:HE3	1:BBB:299:VAL:HG11	1.82	0.60
1:DDD:184:ILE:HG21	1:DDD:237:PHE:HE2	1.65	0.60
1:AAA:184:ILE:HG13	1:AAA:185:VAL:HG23	1.84	0.60
1:DDD:400:ARG:HH12	3:DDD:504:EDO:H22	1.67	0.59
1:DDD:161:GLU:HG2	1:DDD:173:ILE:HD13	1.85	0.59
1:BBB:167:ARG:HD3	1:BBB:173:ILE:HD11	1.85	0.57
1:AAA:465:VAL:HB	3:AAA:504:EDO:H22	1.86	0.57
1:BBB:142:ILE:HG13	1:CCC:146:TYR:OH	2.05	0.57
1:CCC:272:MET:SD	1:CCC:299:VAL:HG11	2.44	0.56
1:DDD:400:ARG:HH22	3:DDD:504:EDO:C2	2.19	0.55
1:AAA:324:LYS:HD3	1:AAA:328:ASP:OD2	2.07	0.55
1:DDD:155:PRO:HB2	1:DDD:157:GLU:OE1	2.07	0.55
1:BBB:215:SER:HB2	1:BBB:336:LEU:HD21	1.90	0.53
1:DDD:157:GLU:H	1:DDD:157:GLU:CD	2.17	0.53
1:DDD:319:HIS:O	1:DDD:323:THR:HG23	2.09	0.53
1:DDD:359:VAL:HG11	1:DDD:371:LEU:HD22	1.91	0.52
1:AAA:157:GLU:HG3	1:AAA:231:PHE:CZ	2.45	0.51
1:BBB:177:PRO:O	1:BBB:181:MET:HG2	2.11	0.50
1:DDD:446:PHE:CE2	1:DDD:457:LEU:HD23	2.47	0.50
1:CCC:157:GLU:H	1:CCC:157:GLU:CD	2.19	0.50
1:CCC:265:LYS:O	1:CCC:269:LYS:HG3	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:DDD:175:MET:HB2	1:DDD:229:ILE:HB	1.95	0.49
1:CCC:386:MET:HE2	1:CCC:440:ASN:OD1	2.12	0.48
1:CCC:175:MET:HB2	1:CCC:229:ILE:HB	1.95	0.48
1:BBB:177:PRO:HG3	1:BBB:219:MET:HE2	1.95	0.48
1:DDD:182:ARG:HD3	1:DDD:209:GLU:HA	1.95	0.48
1:BBB:211:ARG:HG3	1:BBB:340:HIS:CE1	2.49	0.48
1:CCC:254:MET:SD	1:DDD:409:ALA:HA	2.55	0.47
1:BBB:399:LEU:HD22	1:BBB:437:LEU:HD11	1.96	0.47
1:AAA:334:LEU:HD11	1:AAA:397:ASP:OD2	2.16	0.46
1:BBB:468:ARG:HH11	1:BBB:468:ARG:HG2	1.81	0.45
1:AAA:175:MET:HB3	1:AAA:179:ASP:HB2	1.99	0.45
1:CCC:191:SER:HB2	1:CCC:352:LYS:NZ	2.32	0.45
1:AAA:343:TYR:CE2	1:AAA:344:LYS:HG2	2.52	0.44
1:CCC:232:LYS:NZ	4:CCC:603:HOH:O	2.47	0.44
1:DDD:239:THR:HG21	1:DDD:275:MET:HG2	2.00	0.44
1:CCC:230:SER:HB2	4:CCC:603:HOH:O	2.17	0.44
1:BBB:320:ASP:HB2	4:BBB:670:HOH:O	2.18	0.44
1:DDD:400:ARG:HH22	3:DDD:504:EDO:H22	1.83	0.43
1:DDD:173:ILE:O	1:DDD:174:LEU:HD23	2.19	0.43
1:DDD:187:VAL:HG21	1:DDD:210:LEU:HD23	2.00	0.43
1:AAA:232:LYS:HA	1:AAA:235:ILE:HG22	2.01	0.43
1:DDD:446:PHE:CD2	1:DDD:457:LEU:HD23	2.55	0.42
1:CCC:309:PHE:HA	1:CCC:315:GLN:HB2	2.00	0.42
1:BBB:157:GLU:HA	1:BBB:231:PHE:CE1	2.55	0.42
1:BBB:167:ARG:HD3	1:BBB:173:ILE:CD1	2.48	0.42
1:DDD:150:LEU:HD12	1:DDD:154:SER:HB2	2.01	0.41
1:AAA:254:MET:HE2	1:AAA:254:MET:HB3	1.84	0.41
1:DDD:411:PHE:O	1:DDD:416:ALA:HA	2.21	0.41
1:AAA:399:LEU:HD22	1:AAA:437:LEU:HD11	2.03	0.41
1:CCC:237:PHE:CZ	1:CCC:241:LEU:HD13	2.56	0.41
1:DDD:334:LEU:HD11	1:DDD:397:ASP:OD2	2.21	0.40
1:BBB:176:LYS:HE2	1:BBB:206:ASN:HD21	1.86	0.40
1:DDD:371:LEU:HD13	1:DDD:371:LEU:HA	1.89	0.40
1:AAA:345:ARG:NH1	4:AAA:608:HOH:O	2.53	0.40
1:CCC:177:PRO:HG3	1:CCC:219:MET:HE2	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	AAA	303/349 (87%)	301 (99%)	2 (1%)	0	100	100
1	BBB	299/349 (86%)	294 (98%)	5 (2%)	0	100	100
1	CCC	301/349 (86%)	296 (98%)	5 (2%)	0	100	100
1	DDD	288/349 (82%)	282 (98%)	6 (2%)	0	100	100
All	All	1191/1396 (85%)	1173 (98%)	18 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	AAA	261/309 (84%)	259 (99%)	2 (1%)	73	81
1	BBB	261/309 (84%)	259 (99%)	2 (1%)	73	81
1	CCC	252/309 (82%)	252 (100%)	0	100	100
1	DDD	240/309 (78%)	237 (99%)	3 (1%)	61	69
All	All	1014/1236 (82%)	1007 (99%)	7 (1%)	76	83

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	AAA	273	SER
1	AAA	407	SER

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Mol	Chain	Res	Type
1	BBB	185	VAL
1	BBB	352	LYS
1	DDD	138	TYR
1	DDD	235	ILE
1	DDD	301	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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 14 ligands modelled in this entry, 12 are monoatomic - leaving 2 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	EDO	AAA	504	-	3,3,3	0.35	0	2,2,2	1.16	0
3	EDO	DDD	504	-	3,3,3	0.51	0	2,2,2	0.62	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	EDO	AAA	504	-	-	0/1/1/1	-
3	EDO	DDD	504	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	DDD	504	EDO	O1-C1-C2-O2

There are no ring outliers.

2 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	AAA	504	EDO	1	0
3	DDD	504	EDO	4	0

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 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	AAA	309/349 (88%)	-0.09	8 (2%)	57	60	18, 27, 48, 61	0
1	BBB	305/349 (87%)	-0.08	6 (1%)	65	67	18, 28, 43, 56	0
1	CCC	307/349 (87%)	0.26	15 (4%)	35	37	23, 35, 54, 65	0
1	DDD	294/349 (84%)	0.41	17 (5%)	29	30	18, 36, 62, 73	0
All	All	1215/1396 (87%)	0.12	46 (3%)	44	46	18, 31, 53, 73	0

All (46) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	DDD	279	HIS	4.6
1	DDD	210	LEU	4.3
1	DDD	171	GLY	4.3
1	AAA	279	HIS	4.1
1	DDD	214	PRO	4.1
1	BBB	207	PRO	3.9
1	DDD	137	ALA	3.8
1	DDD	312	ASP	3.6
1	DDD	213	SER	3.5
1	DDD	167	ARG	3.5
1	CCC	343	TYR	3.3
1	DDD	136	MET	3.3
1	DDD	168	THR	3.1
1	CCC	167	ARG	3.1
1	AAA	199	GLY	3.0
1	AAA	200	TYR	2.9
1	DDD	173	ILE	2.9
1	DDD	209	GLU	2.7
1	CCC	298	SER	2.7
1	CCC	135	HIS	2.7
1	DDD	169	ASP	2.7

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Mol	Chain	Res	Type	RSRZ
1	AAA	469	ARG	2.6
1	AAA	205	ARG	2.6
1	DDD	225	ASN	2.6
1	AAA	196	VAL	2.5
1	CCC	382	HIS	2.5
1	CCC	192	GLU	2.5
1	DDD	164	ALA	2.5
1	BBB	214	PRO	2.5
1	AAA	197	ARG	2.5
1	BBB	208	GLY	2.5
1	BBB	469	ARG	2.4
1	CCC	470	GLU	2.4
1	DDD	172	GLU	2.4
1	CCC	380	HIS	2.4
1	DDD	364	ALA	2.3
1	CCC	205	ARG	2.3
1	AAA	137	ALA	2.2
1	BBB	378	SER	2.2
1	CCC	169	ASP	2.2
1	CCC	207	PRO	2.2
1	BBB	206	ASN	2.1
1	CCC	279	HIS	2.1
1	CCC	381	PRO	2.1
1	CCC	344	LYS	2.1
1	CCC	319	HIS	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (i)

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

6.3 Carbohydrates (i)

There are no oligosaccharides in this entry.

6.4 Ligands (i)

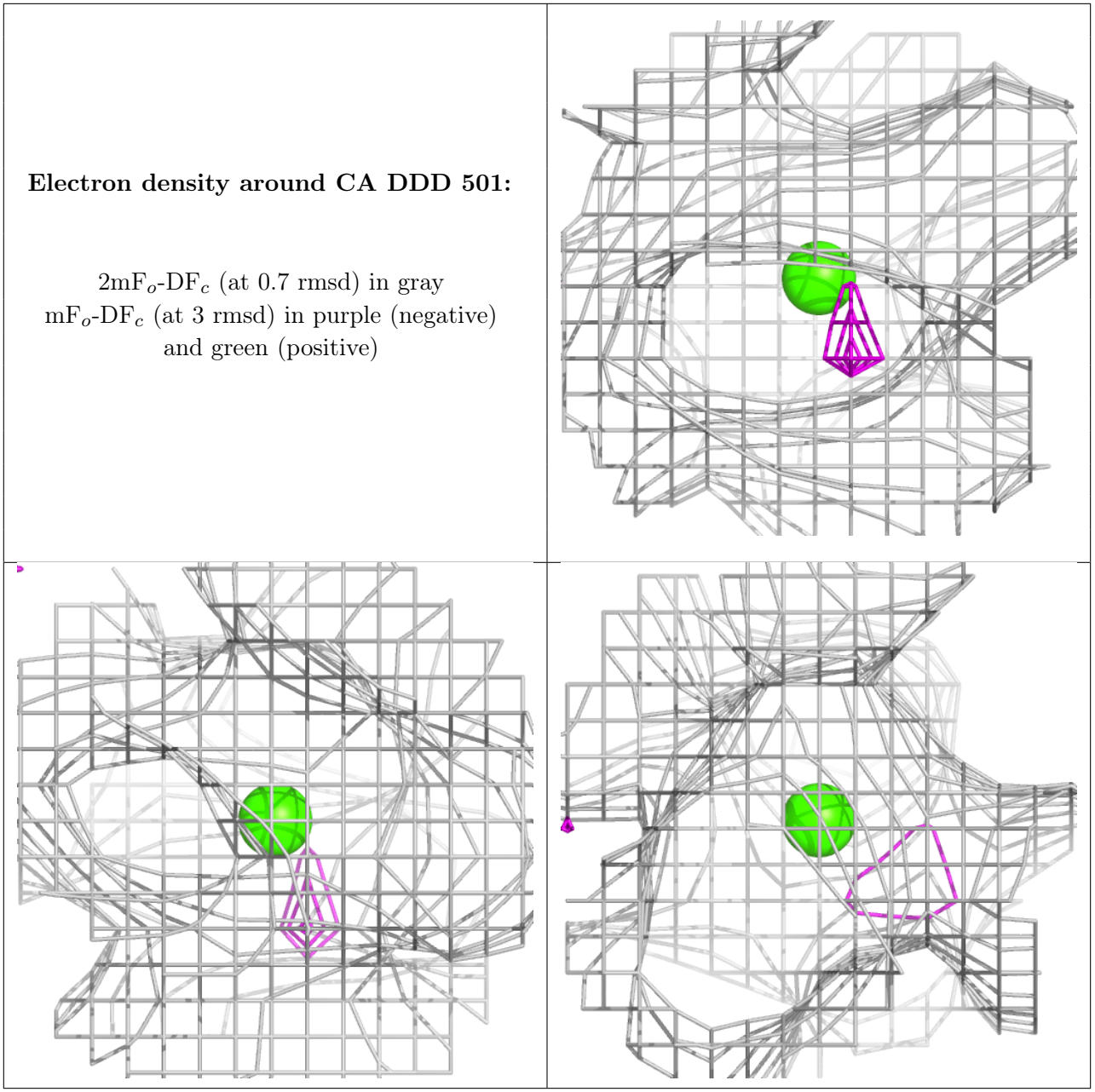
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	EDO	DDD	504	4/4	0.83	0.16	33,38,39,41	0
3	EDO	AAA	504	4/4	0.84	0.18	32,34,34,36	0
2	CA	DDD	501	1/1	0.97	0.11	49,49,49,49	0
2	CA	DDD	502	1/1	0.98	0.06	36,36,36,36	0
2	CA	CCC	502	1/1	0.99	0.07	40,40,40,40	0
2	CA	CCC	503	1/1	0.99	0.03	42,42,42,42	0
2	CA	AAA	501	1/1	0.99	0.03	26,26,26,26	0
2	CA	AAA	502	1/1	0.99	0.03	31,31,31,31	0
2	CA	DDD	503	1/1	0.99	0.02	27,27,27,27	0
2	CA	AAA	503	1/1	0.99	0.02	27,27,27,27	0
2	CA	BBB	502	1/1	0.99	0.06	23,23,23,23	0
2	CA	BBB	503	1/1	1.00	0.02	35,35,35,35	0
2	CA	CCC	501	1/1	1.00	0.04	26,26,26,26	0
2	CA	BBB	501	1/1	1.00	0.05	19,19,19,19	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

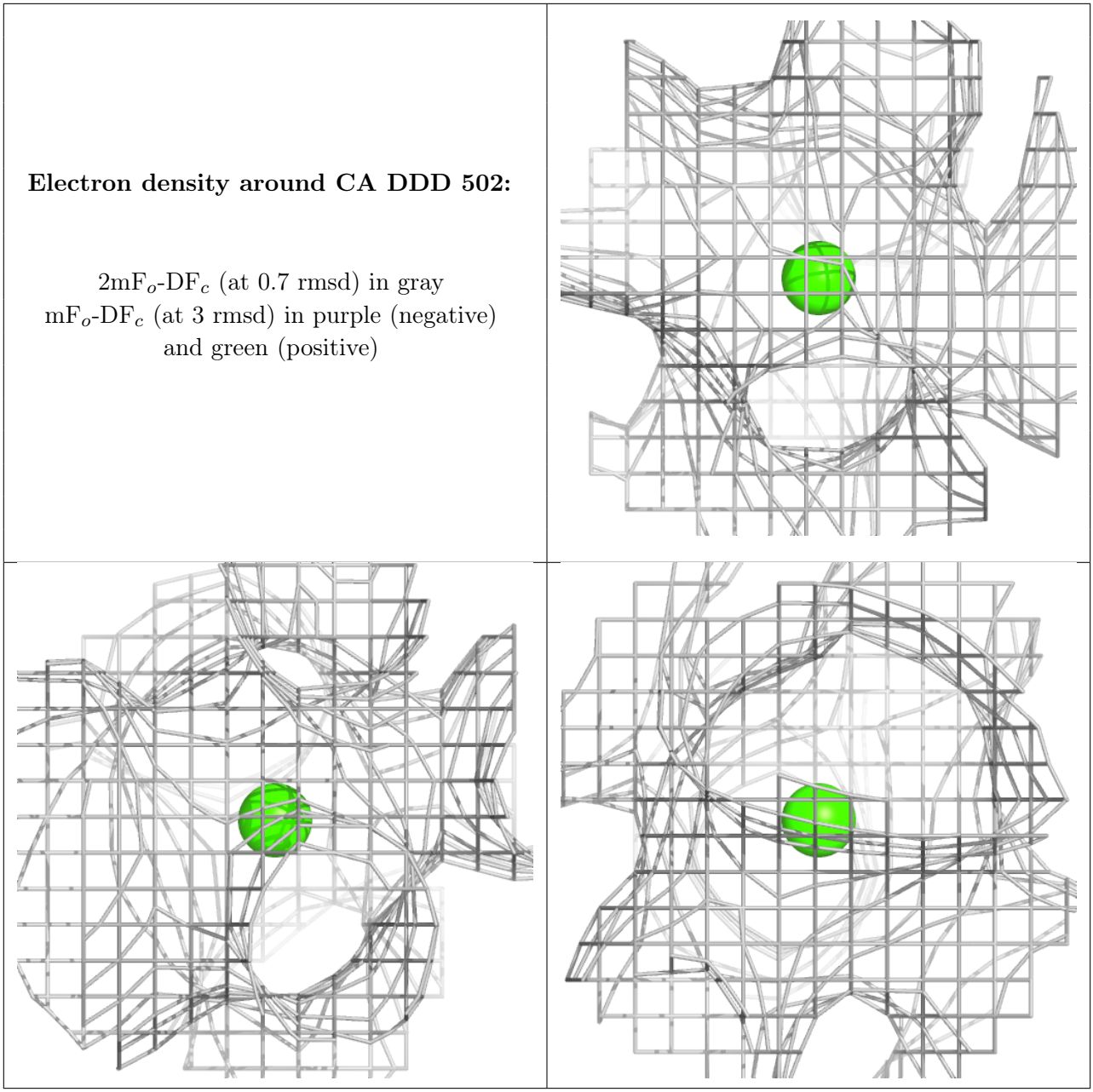
Electron density around CA DDD 501:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



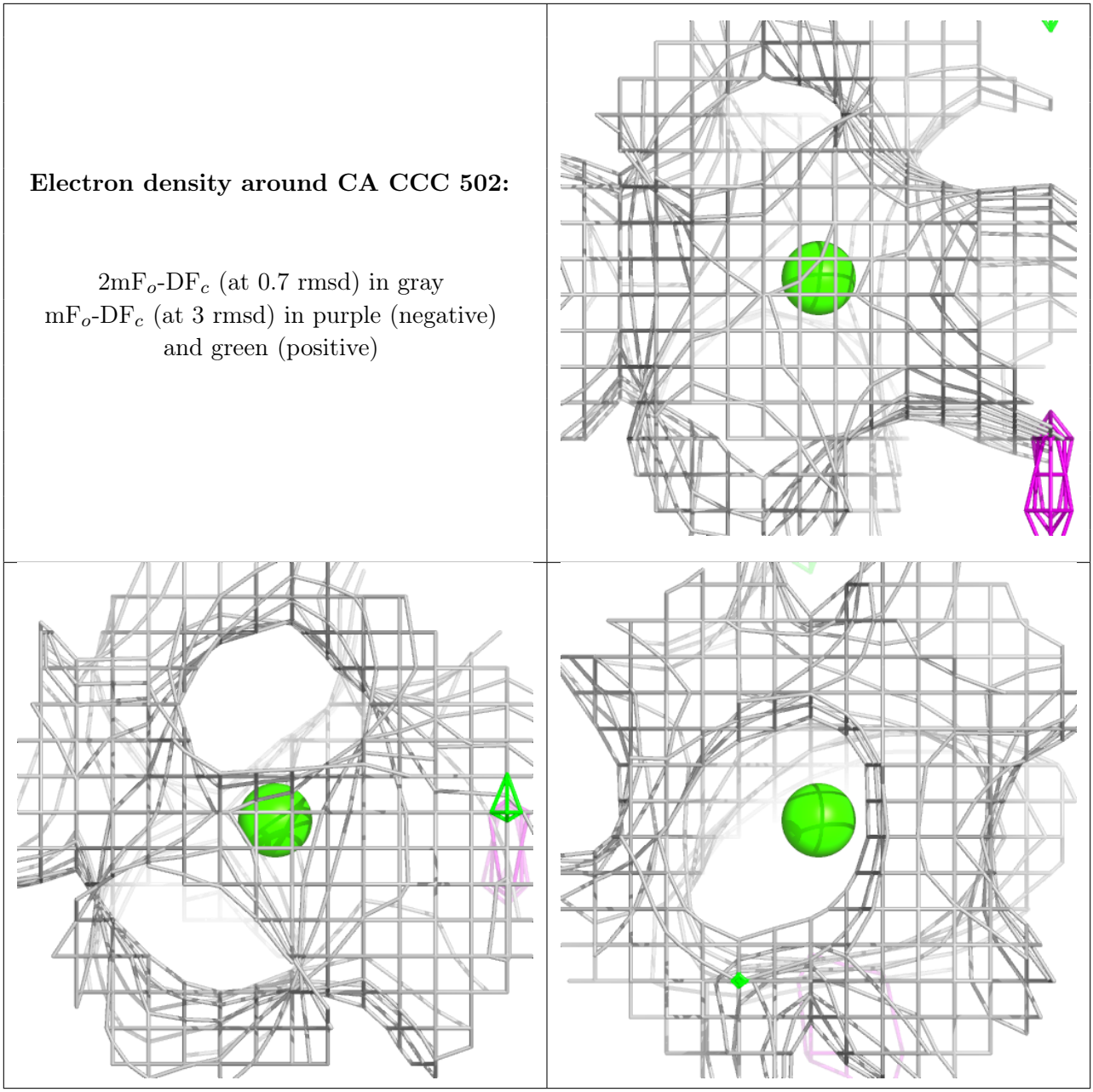
Electron density around CA DDD 502:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



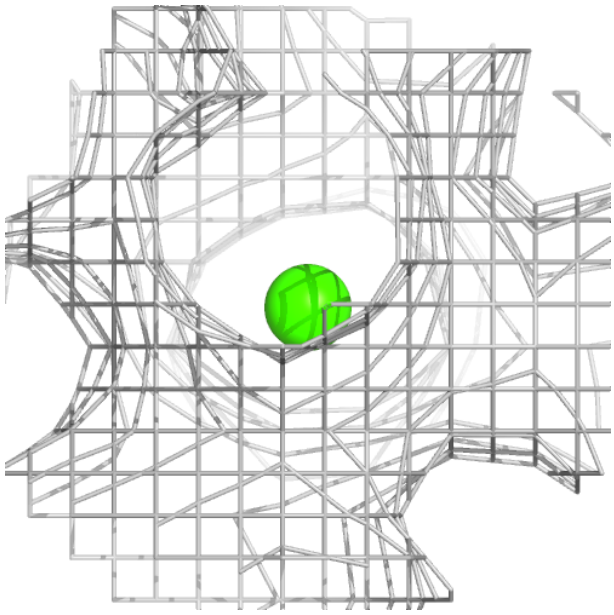
Electron density around CA CCC 502:

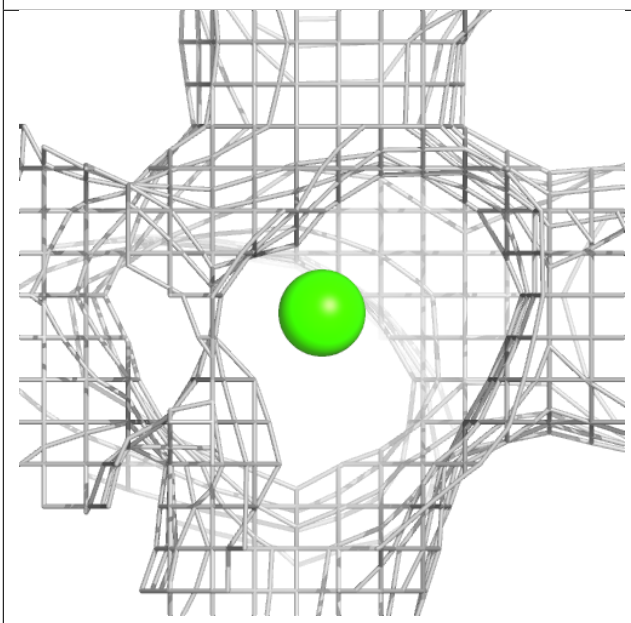
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

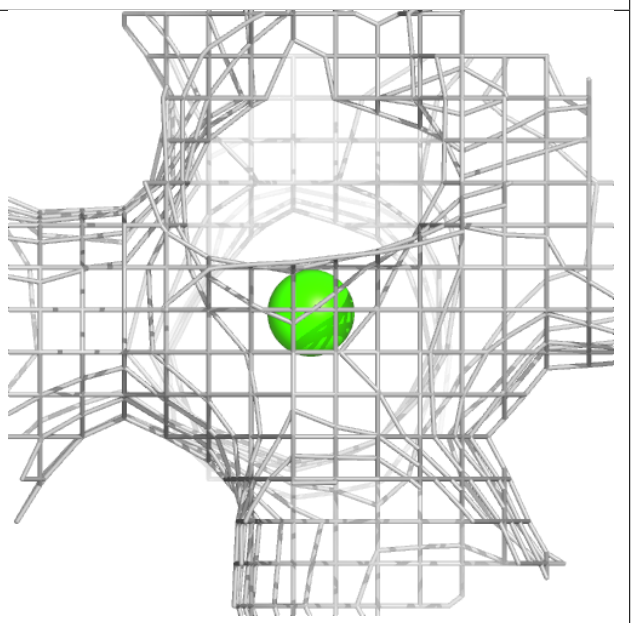


Electron density around CA CCC 503:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

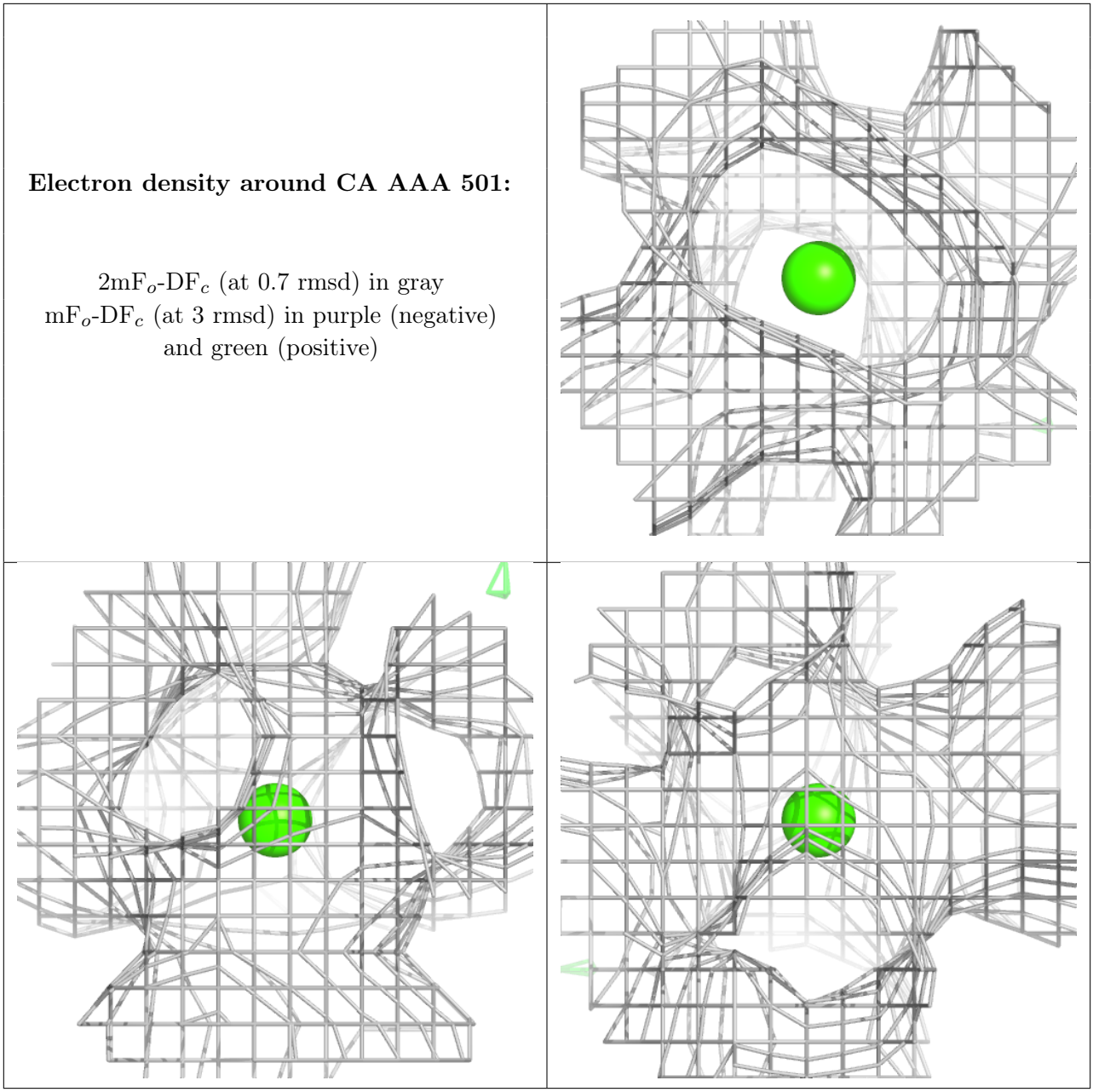






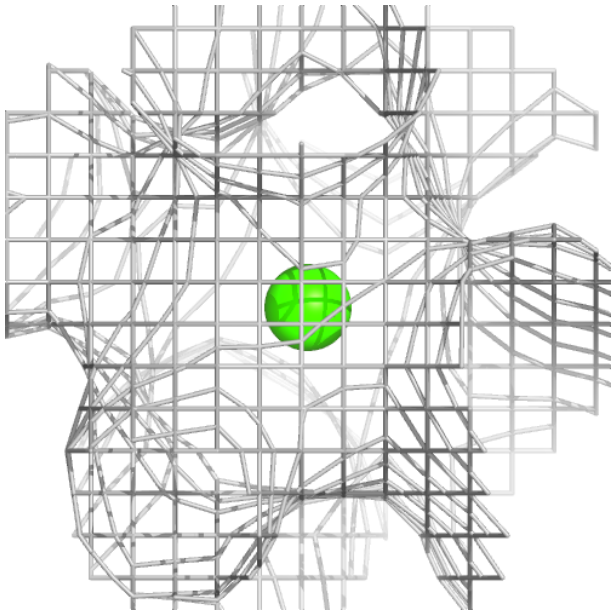
Electron density around CA AAA 501:

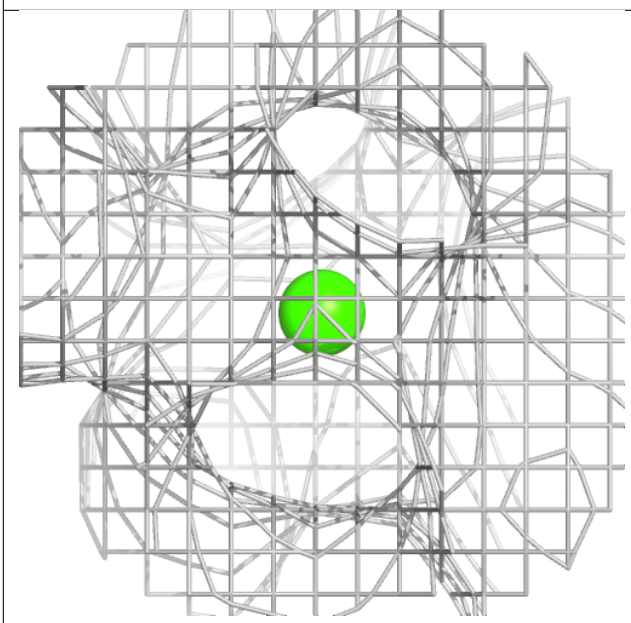
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

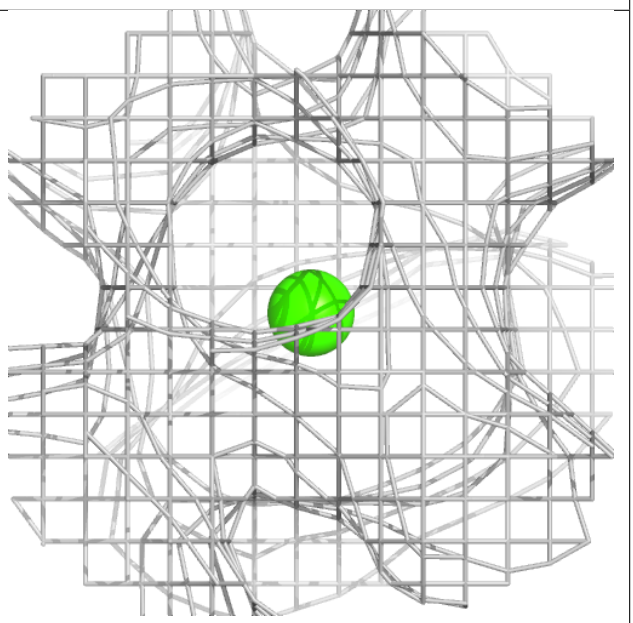


Electron density around CA AAA 502:

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mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

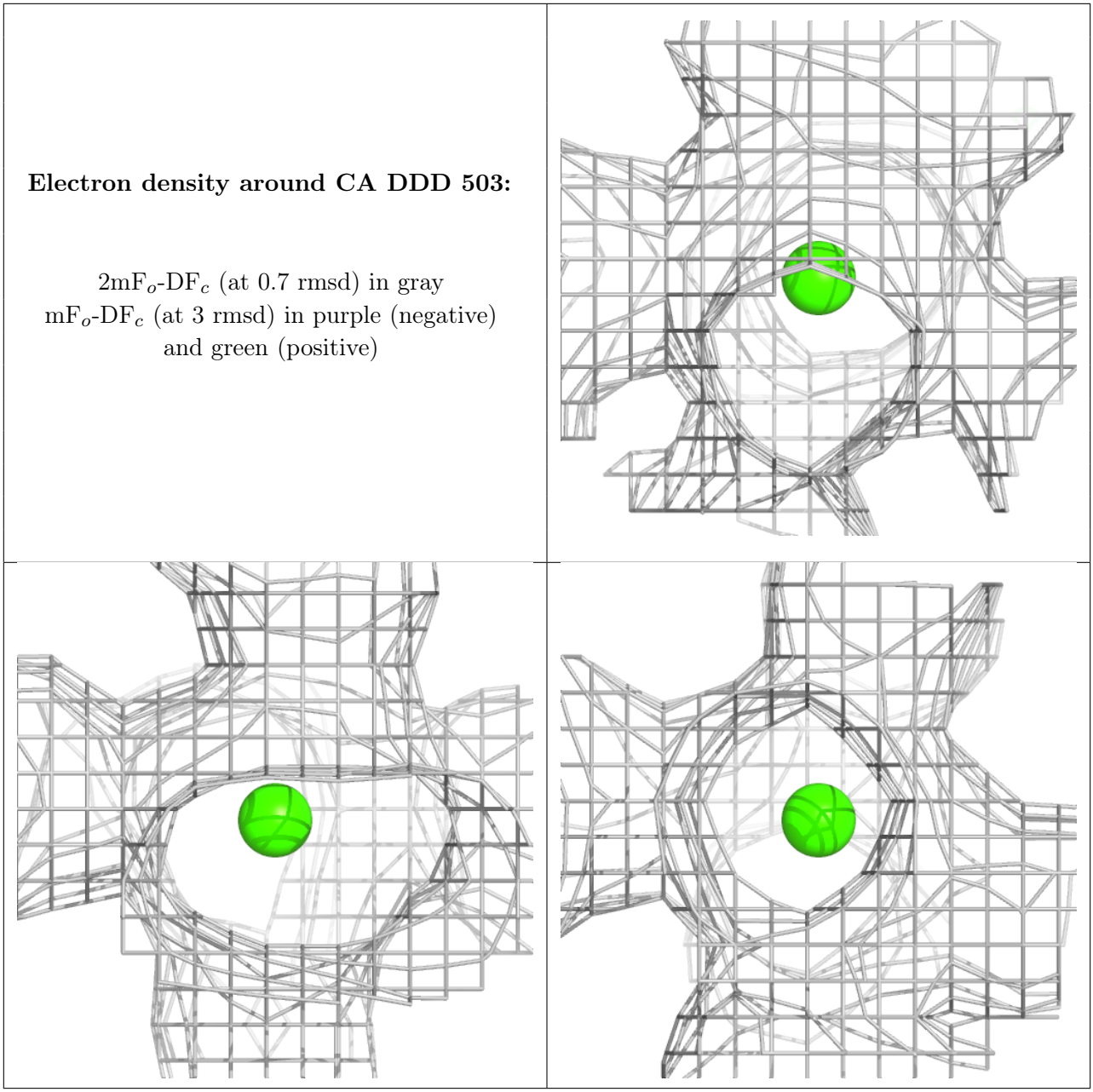






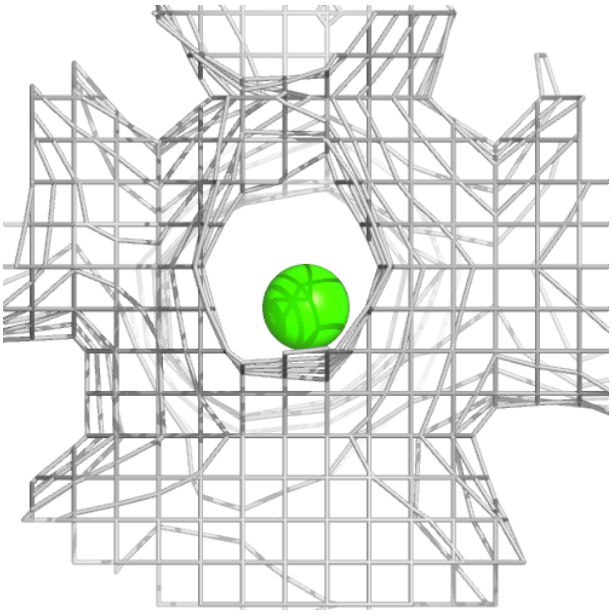
Electron density around CA DDD 503:

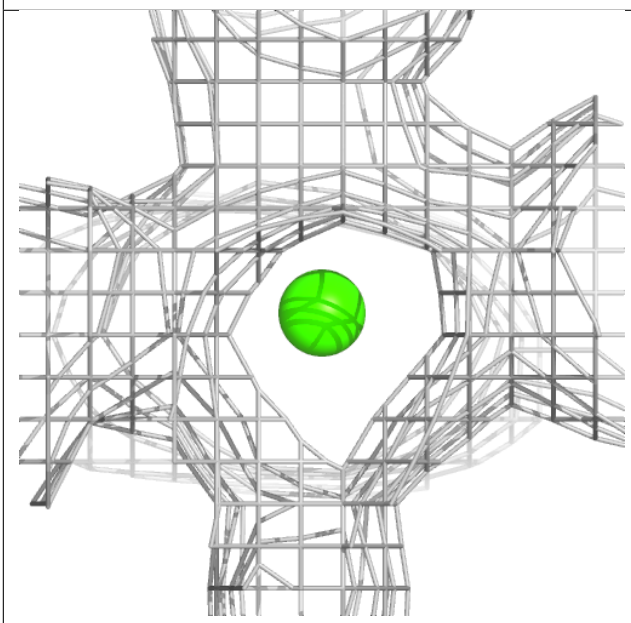
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

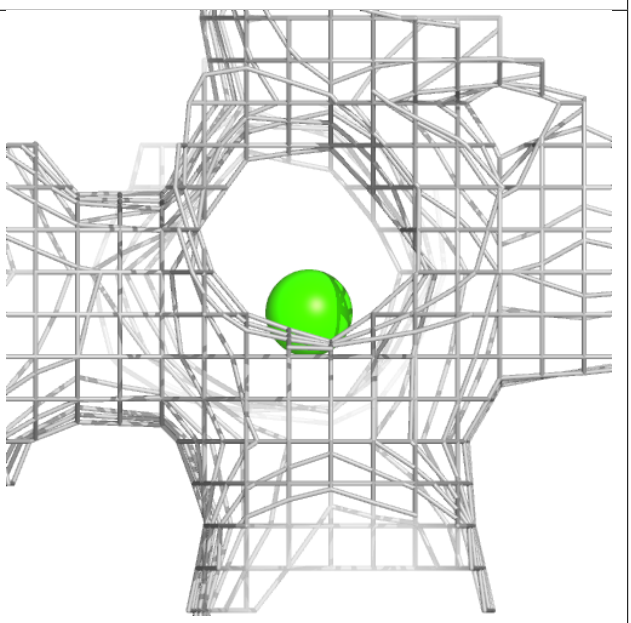


Electron density around CA AAA 503:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

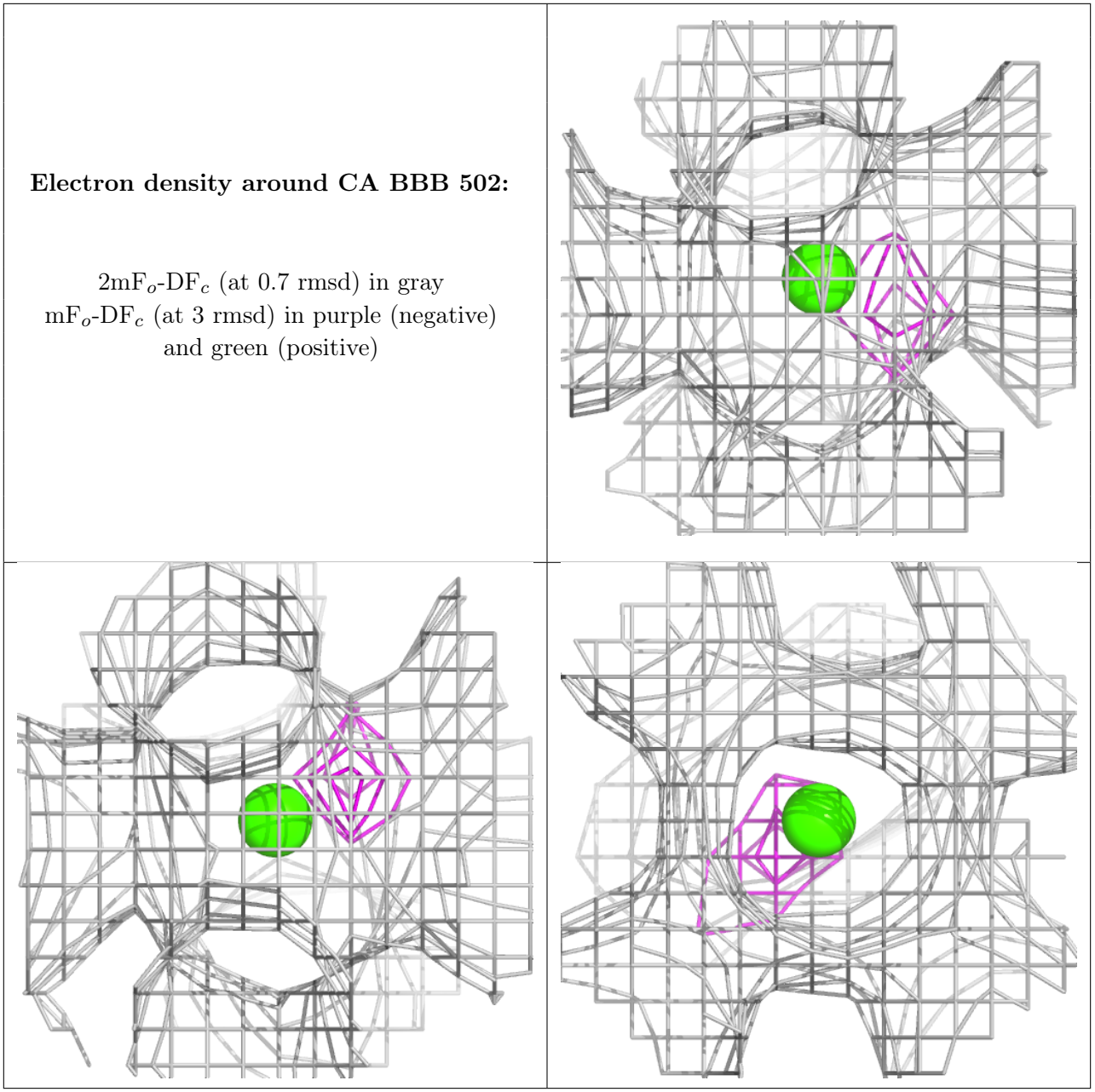






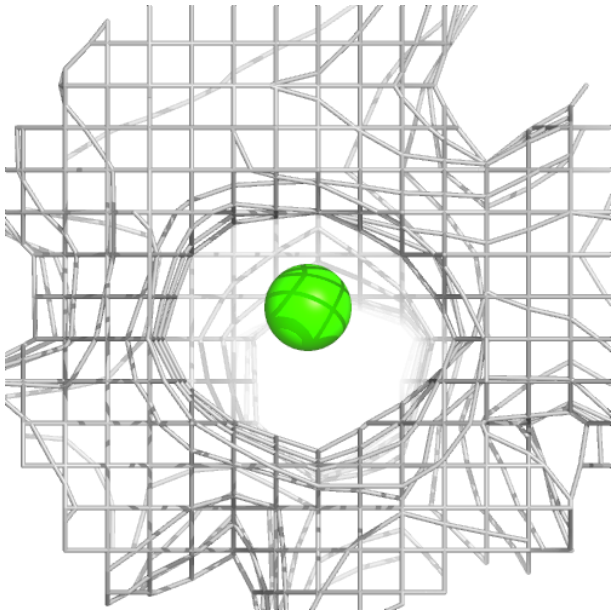
Electron density around CA BBB 502:

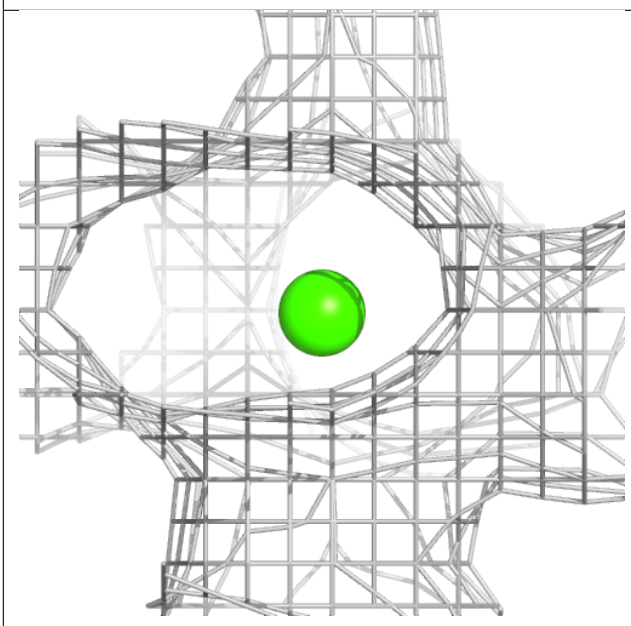
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

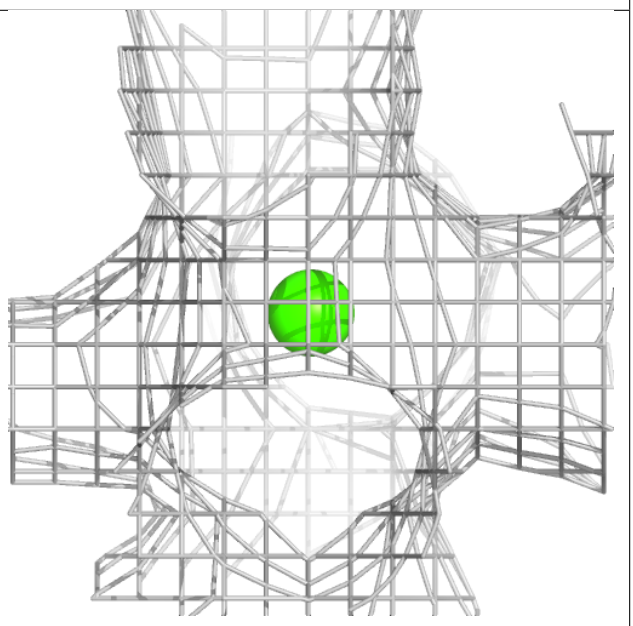


Electron density around CA BBB 503:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

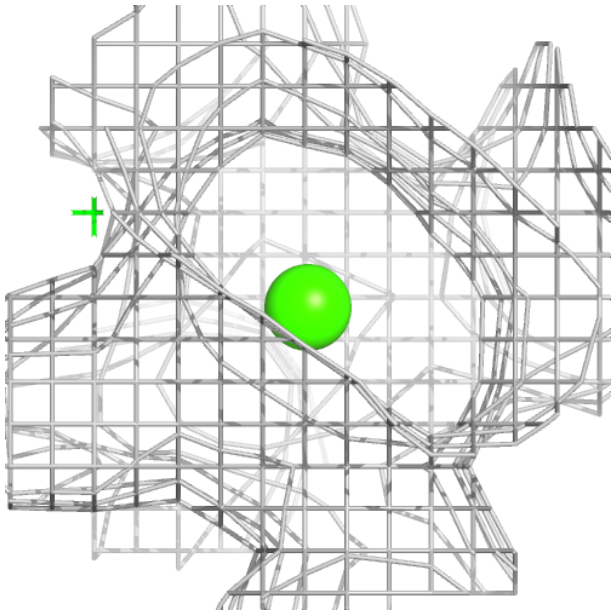


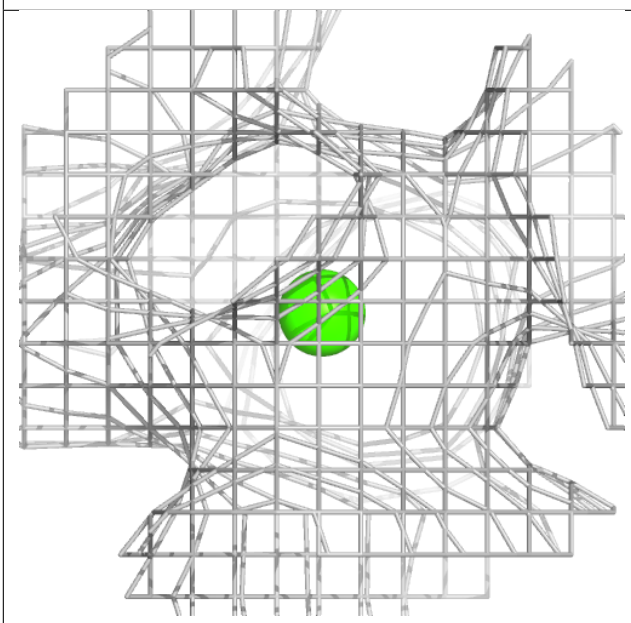


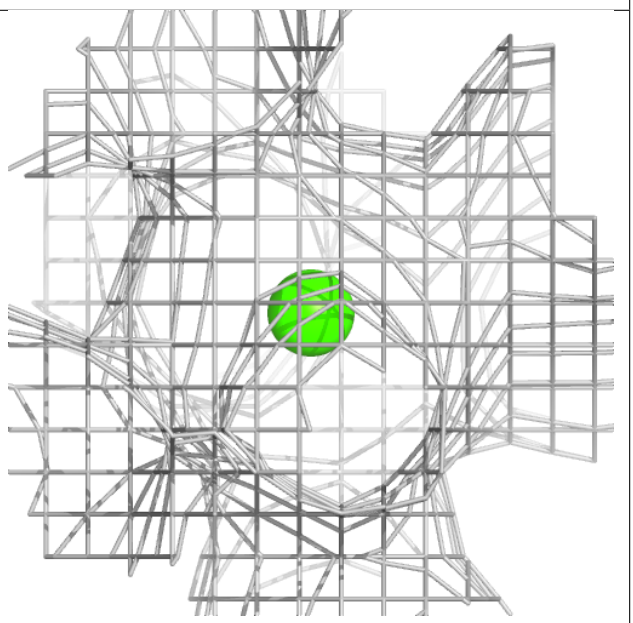


Electron density around CA CCC 501:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

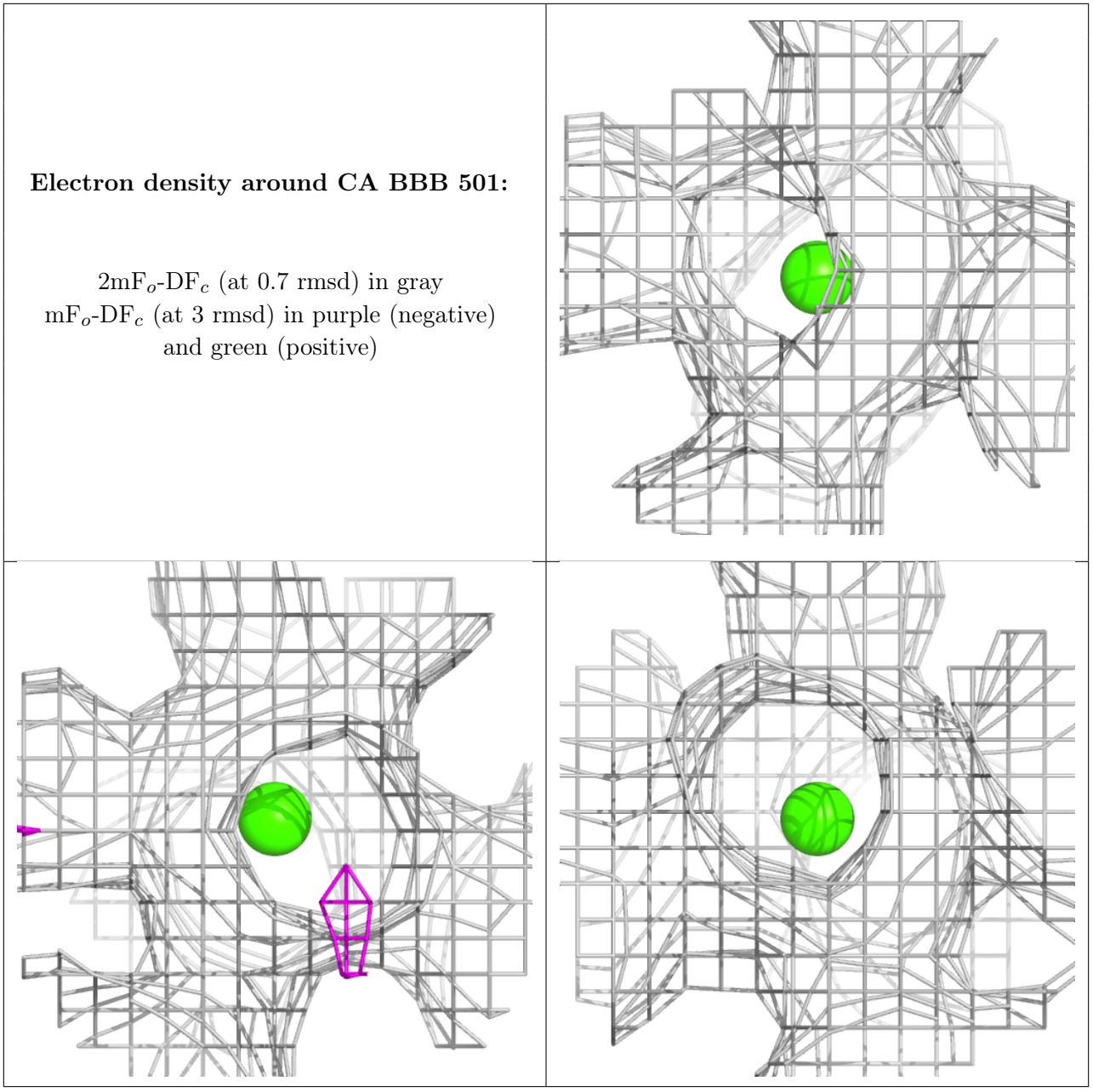






Electron density around CA BBB 501:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



6.5 Other polymers

There are no such residues in this entry.