Full wwPDB X-ray Structure Validation Report ⓘ

Dec 24, 2024 – 06:17 PM JST

PDB ID	:	8Z2S
Title	:	Crystal structure of trehalose synthase mutant R148A from Deinococcus radiodurans
Authors	:	Ye, L.C.; Chen, S.C.
Deposited on	:	2024-04-13
Resolution	:	2.32 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:

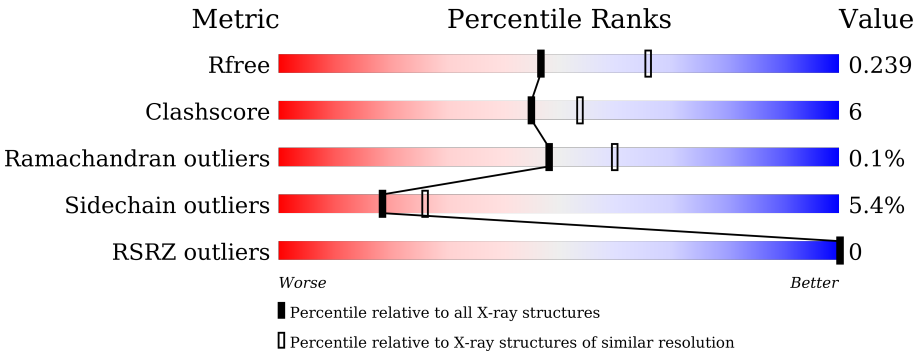
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.004 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

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 2.32 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}	164625	7250 (2.34-2.30)
Clashscore	180529	8063 (2.34-2.30)
Ramachandran outliers	177936	7993 (2.34-2.30)
Sidechain outliers	177891	7993 (2.34-2.30)
RSRZ outliers	164620	7250 (2.34-2.30)

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	A	571	79% 16%
1	B	571	81% 14%
1	C	571	80% 14%
1	D	571	78% 16%
1	E	571	79% 15%
1	F	571	84% 10%

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Mol	Chain	Length	Quality of chain
1	G	571	81% 14%
1	H	571	77% 18%

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
4	TRS	C	603	-	X	-	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 36596 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 maltose alpha-D-glucosyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	548	Total	C	N	O	S	0	0	0
			4398	2815	748	819	16			
1	B	548	Total	C	N	O	S	0	0	0
			4398	2815	748	819	16			
1	C	548	Total	C	N	O	S	0	0	0
			4398	2815	748	819	16			
1	D	548	Total	C	N	O	S	0	0	0
			4398	2815	748	819	16			
1	E	548	Total	C	N	O	S	0	0	0
			4398	2815	748	819	16			
1	F	548	Total	C	N	O	S	0	0	0
			4398	2815	748	819	16			
1	G	548	Total	C	N	O	S	0	0	0
			4398	2815	748	819	16			
1	H	548	Total	C	N	O	S	0	0	0
			4398	2815	748	819	16			

There are 192 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	MET	-	initiating methionine	UNP I3NX86
A	0	VAL	-	expression tag	UNP I3NX86
A	1	PRO	-	expression tag	UNP I3NX86
A	97	TRP	ARG	engineered mutation	UNP I3NX86
A	148	ALA	ARG	engineered mutation	UNP I3NX86
A	313	ILE	THR	engineered mutation	UNP I3NX86
A	380	VAL	ILE	engineered mutation	UNP I3NX86
A	553	SER	-	expression tag	UNP I3NX86
A	554	ARG	-	expression tag	UNP I3NX86
A	555	VAL	-	expression tag	UNP I3NX86
A	556	ASP	-	expression tag	UNP I3NX86
A	557	LYS	-	expression tag	UNP I3NX86
A	558	LEU	-	expression tag	UNP I3NX86

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Chain	Residue	Modelled	Actual	Comment	Reference
A	559	ALA	-	expression tag	UNP I3NX86
A	560	ALA	-	expression tag	UNP I3NX86
A	561	ALA	-	expression tag	UNP I3NX86
A	562	LEU	-	expression tag	UNP I3NX86
A	563	GLU	-	expression tag	UNP I3NX86
A	564	HIS	-	expression tag	UNP I3NX86
A	565	HIS	-	expression tag	UNP I3NX86
A	566	HIS	-	expression tag	UNP I3NX86
A	567	HIS	-	expression tag	UNP I3NX86
A	568	HIS	-	expression tag	UNP I3NX86
A	569	HIS	-	expression tag	UNP I3NX86
B	-1	MET	-	initiating methionine	UNP I3NX86
B	0	VAL	-	expression tag	UNP I3NX86
B	1	PRO	-	expression tag	UNP I3NX86
B	97	TRP	ARG	engineered mutation	UNP I3NX86
B	148	ALA	ARG	engineered mutation	UNP I3NX86
B	313	ILE	THR	engineered mutation	UNP I3NX86
B	380	VAL	ILE	engineered mutation	UNP I3NX86
B	553	SER	-	expression tag	UNP I3NX86
B	554	ARG	-	expression tag	UNP I3NX86
B	555	VAL	-	expression tag	UNP I3NX86
B	556	ASP	-	expression tag	UNP I3NX86
B	557	LYS	-	expression tag	UNP I3NX86
B	558	LEU	-	expression tag	UNP I3NX86
B	559	ALA	-	expression tag	UNP I3NX86
B	560	ALA	-	expression tag	UNP I3NX86
B	561	ALA	-	expression tag	UNP I3NX86
B	562	LEU	-	expression tag	UNP I3NX86
B	563	GLU	-	expression tag	UNP I3NX86
B	564	HIS	-	expression tag	UNP I3NX86
B	565	HIS	-	expression tag	UNP I3NX86
B	566	HIS	-	expression tag	UNP I3NX86
B	567	HIS	-	expression tag	UNP I3NX86
B	568	HIS	-	expression tag	UNP I3NX86
B	569	HIS	-	expression tag	UNP I3NX86
C	-1	MET	-	initiating methionine	UNP I3NX86
C	0	VAL	-	expression tag	UNP I3NX86
C	1	PRO	-	expression tag	UNP I3NX86
C	97	TRP	ARG	engineered mutation	UNP I3NX86
C	148	ALA	ARG	engineered mutation	UNP I3NX86
C	313	ILE	THR	engineered mutation	UNP I3NX86
C	380	VAL	ILE	engineered mutation	UNP I3NX86

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Chain	Residue	Modelled	Actual	Comment	Reference
C	553	SER	-	expression tag	UNP I3NX86
C	554	ARG	-	expression tag	UNP I3NX86
C	555	VAL	-	expression tag	UNP I3NX86
C	556	ASP	-	expression tag	UNP I3NX86
C	557	LYS	-	expression tag	UNP I3NX86
C	558	LEU	-	expression tag	UNP I3NX86
C	559	ALA	-	expression tag	UNP I3NX86
C	560	ALA	-	expression tag	UNP I3NX86
C	561	ALA	-	expression tag	UNP I3NX86
C	562	LEU	-	expression tag	UNP I3NX86
C	563	GLU	-	expression tag	UNP I3NX86
C	564	HIS	-	expression tag	UNP I3NX86
C	565	HIS	-	expression tag	UNP I3NX86
C	566	HIS	-	expression tag	UNP I3NX86
C	567	HIS	-	expression tag	UNP I3NX86
C	568	HIS	-	expression tag	UNP I3NX86
C	569	HIS	-	expression tag	UNP I3NX86
D	-1	MET	-	initiating methionine	UNP I3NX86
D	0	VAL	-	expression tag	UNP I3NX86
D	1	PRO	-	expression tag	UNP I3NX86
D	97	TRP	ARG	engineered mutation	UNP I3NX86
D	148	ALA	ARG	engineered mutation	UNP I3NX86
D	313	ILE	THR	engineered mutation	UNP I3NX86
D	380	VAL	ILE	engineered mutation	UNP I3NX86
D	553	SER	-	expression tag	UNP I3NX86
D	554	ARG	-	expression tag	UNP I3NX86
D	555	VAL	-	expression tag	UNP I3NX86
D	556	ASP	-	expression tag	UNP I3NX86
D	557	LYS	-	expression tag	UNP I3NX86
D	558	LEU	-	expression tag	UNP I3NX86
D	559	ALA	-	expression tag	UNP I3NX86
D	560	ALA	-	expression tag	UNP I3NX86
D	561	ALA	-	expression tag	UNP I3NX86
D	562	LEU	-	expression tag	UNP I3NX86
D	563	GLU	-	expression tag	UNP I3NX86
D	564	HIS	-	expression tag	UNP I3NX86
D	565	HIS	-	expression tag	UNP I3NX86
D	566	HIS	-	expression tag	UNP I3NX86
D	567	HIS	-	expression tag	UNP I3NX86
D	568	HIS	-	expression tag	UNP I3NX86
D	569	HIS	-	expression tag	UNP I3NX86
E	-1	MET	-	initiating methionine	UNP I3NX86

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Chain	Residue	Modelled	Actual	Comment	Reference
E	0	VAL	-	expression tag	UNP I3NX86
E	1	PRO	-	expression tag	UNP I3NX86
E	97	TRP	ARG	engineered mutation	UNP I3NX86
E	148	ALA	ARG	engineered mutation	UNP I3NX86
E	313	ILE	THR	engineered mutation	UNP I3NX86
E	380	VAL	ILE	engineered mutation	UNP I3NX86
E	553	SER	-	expression tag	UNP I3NX86
E	554	ARG	-	expression tag	UNP I3NX86
E	555	VAL	-	expression tag	UNP I3NX86
E	556	ASP	-	expression tag	UNP I3NX86
E	557	LYS	-	expression tag	UNP I3NX86
E	558	LEU	-	expression tag	UNP I3NX86
E	559	ALA	-	expression tag	UNP I3NX86
E	560	ALA	-	expression tag	UNP I3NX86
E	561	ALA	-	expression tag	UNP I3NX86
E	562	LEU	-	expression tag	UNP I3NX86
E	563	GLU	-	expression tag	UNP I3NX86
E	564	HIS	-	expression tag	UNP I3NX86
E	565	HIS	-	expression tag	UNP I3NX86
E	566	HIS	-	expression tag	UNP I3NX86
E	567	HIS	-	expression tag	UNP I3NX86
E	568	HIS	-	expression tag	UNP I3NX86
E	569	HIS	-	expression tag	UNP I3NX86
F	-1	MET	-	initiating methionine	UNP I3NX86
F	0	VAL	-	expression tag	UNP I3NX86
F	1	PRO	-	expression tag	UNP I3NX86
F	97	TRP	ARG	engineered mutation	UNP I3NX86
F	148	ALA	ARG	engineered mutation	UNP I3NX86
F	313	ILE	THR	engineered mutation	UNP I3NX86
F	380	VAL	ILE	engineered mutation	UNP I3NX86
F	553	SER	-	expression tag	UNP I3NX86
F	554	ARG	-	expression tag	UNP I3NX86
F	555	VAL	-	expression tag	UNP I3NX86
F	556	ASP	-	expression tag	UNP I3NX86
F	557	LYS	-	expression tag	UNP I3NX86
F	558	LEU	-	expression tag	UNP I3NX86
F	559	ALA	-	expression tag	UNP I3NX86
F	560	ALA	-	expression tag	UNP I3NX86
F	561	ALA	-	expression tag	UNP I3NX86
F	562	LEU	-	expression tag	UNP I3NX86
F	563	GLU	-	expression tag	UNP I3NX86
F	564	HIS	-	expression tag	UNP I3NX86

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Chain	Residue	Modelled	Actual	Comment	Reference
F	565	HIS	-	expression tag	UNP I3NX86
F	566	HIS	-	expression tag	UNP I3NX86
F	567	HIS	-	expression tag	UNP I3NX86
F	568	HIS	-	expression tag	UNP I3NX86
F	569	HIS	-	expression tag	UNP I3NX86
G	-1	MET	-	initiating methionine	UNP I3NX86
G	0	VAL	-	expression tag	UNP I3NX86
G	1	PRO	-	expression tag	UNP I3NX86
G	97	TRP	ARG	engineered mutation	UNP I3NX86
G	148	ALA	ARG	engineered mutation	UNP I3NX86
G	313	ILE	THR	engineered mutation	UNP I3NX86
G	380	VAL	ILE	engineered mutation	UNP I3NX86
G	553	SER	-	expression tag	UNP I3NX86
G	554	ARG	-	expression tag	UNP I3NX86
G	555	VAL	-	expression tag	UNP I3NX86
G	556	ASP	-	expression tag	UNP I3NX86
G	557	LYS	-	expression tag	UNP I3NX86
G	558	LEU	-	expression tag	UNP I3NX86
G	559	ALA	-	expression tag	UNP I3NX86
G	560	ALA	-	expression tag	UNP I3NX86
G	561	ALA	-	expression tag	UNP I3NX86
G	562	LEU	-	expression tag	UNP I3NX86
G	563	GLU	-	expression tag	UNP I3NX86
G	564	HIS	-	expression tag	UNP I3NX86
G	565	HIS	-	expression tag	UNP I3NX86
G	566	HIS	-	expression tag	UNP I3NX86
G	567	HIS	-	expression tag	UNP I3NX86
G	568	HIS	-	expression tag	UNP I3NX86
G	569	HIS	-	expression tag	UNP I3NX86
H	-1	MET	-	initiating methionine	UNP I3NX86
H	0	VAL	-	expression tag	UNP I3NX86
H	1	PRO	-	expression tag	UNP I3NX86
H	97	TRP	ARG	engineered mutation	UNP I3NX86
H	148	ALA	ARG	engineered mutation	UNP I3NX86
H	313	ILE	THR	engineered mutation	UNP I3NX86
H	380	VAL	ILE	engineered mutation	UNP I3NX86
H	553	SER	-	expression tag	UNP I3NX86
H	554	ARG	-	expression tag	UNP I3NX86
H	555	VAL	-	expression tag	UNP I3NX86
H	556	ASP	-	expression tag	UNP I3NX86
H	557	LYS	-	expression tag	UNP I3NX86
H	558	LEU	-	expression tag	UNP I3NX86

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Chain	Residue	Modelled	Actual	Comment	Reference
H	559	ALA	-	expression tag	UNP I3NX86
H	560	ALA	-	expression tag	UNP I3NX86
H	561	ALA	-	expression tag	UNP I3NX86
H	562	LEU	-	expression tag	UNP I3NX86
H	563	GLU	-	expression tag	UNP I3NX86
H	564	HIS	-	expression tag	UNP I3NX86
H	565	HIS	-	expression tag	UNP I3NX86
H	566	HIS	-	expression tag	UNP I3NX86
H	567	HIS	-	expression tag	UNP I3NX86
H	568	HIS	-	expression tag	UNP I3NX86
H	569	HIS	-	expression tag	UNP I3NX86

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Ca 1 1	0	0
2	B	1	Total Ca 1 1	0	0
2	C	1	Total Ca 1 1	0	0
2	D	1	Total Ca 1 1	0	0
2	E	1	Total Ca 1 1	0	0
2	F	1	Total Ca 1 1	0	0
2	G	1	Total Ca 1 1	0	0
2	H	1	Total Ca 1 1	0	0

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Mg 1 1	0	0
3	B	1	Total Mg 1 1	0	0

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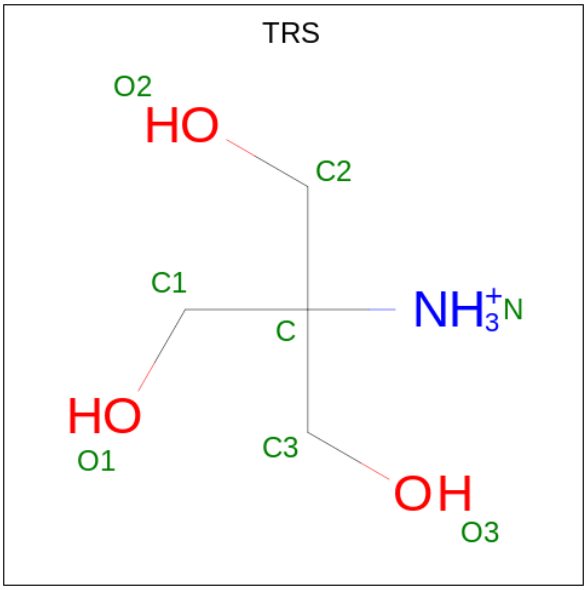
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	C	1	Total Mg 1 1	0	0
3	D	1	Total Mg 1 1	0	0
3	E	1	Total Mg 1 1	0	0
3	F	1	Total Mg 1 1	0	0
3	G	1	Total Mg 1 1	0	0
3	H	1	Total Mg 1 1	0	0

- Molecule 4 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula: $C_4H_{12}NO_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C N O 8 4 1 3	0	0
4	B	1	Total C N O 8 4 1 3	0	0
4	C	1	Total C N O 8 4 1 3	0	0
4	D	1	Total C N O 8 4 1 3	0	0
4	E	1	Total C N O 8 4 1 3	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	F	1	Total C N O 8 4 1 3	0	0
4	G	1	Total C N O 8 4 1 3	0	0
4	H	1	Total C N O 8 4 1 3	0	0

- Molecule 5 is water.

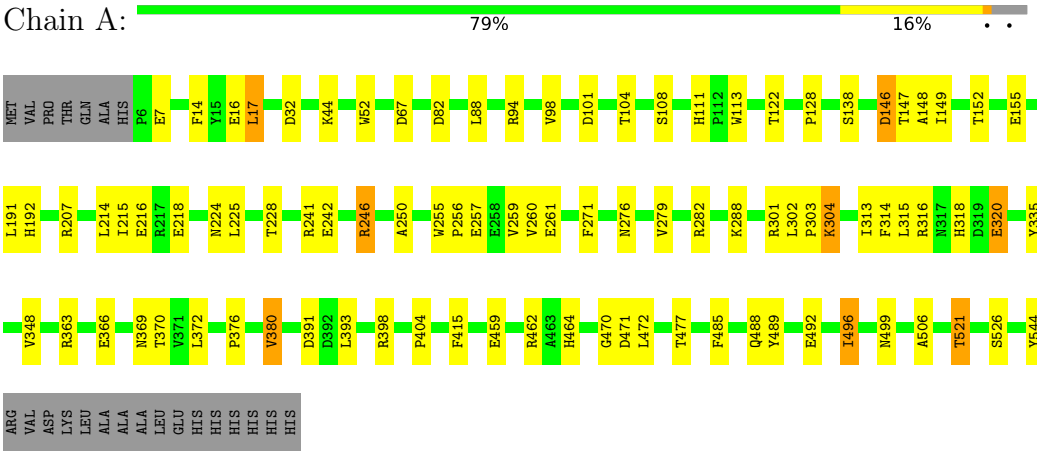
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	190	Total O 190 190	0	0
5	B	172	Total O 172 172	0	0
5	C	186	Total O 186 186	0	0
5	D	103	Total O 103 103	0	0
5	E	197	Total O 197 197	0	0
5	F	194	Total O 194 194	0	0
5	G	150	Total O 150 150	0	0
5	H	140	Total O 140 140	0	0

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.

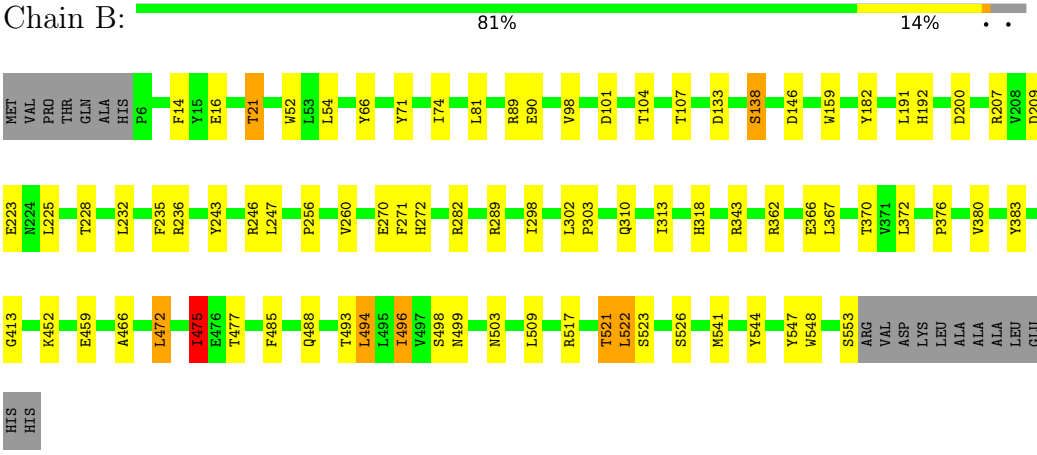
• Molecule 1: maltose alpha-D-glucosyltransferase

Chain A:



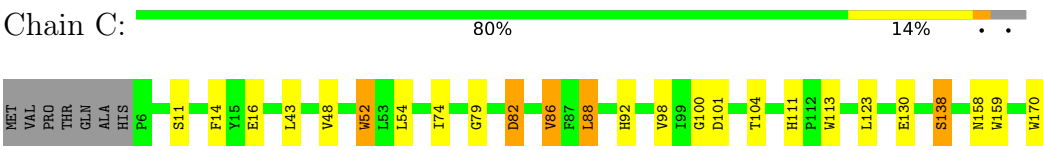
• Molecule 1: maltose alpha-D-glucosyltransferase

Chain B:



• Molecule 1: maltose alpha-D-glucosyltransferase

Chain C:

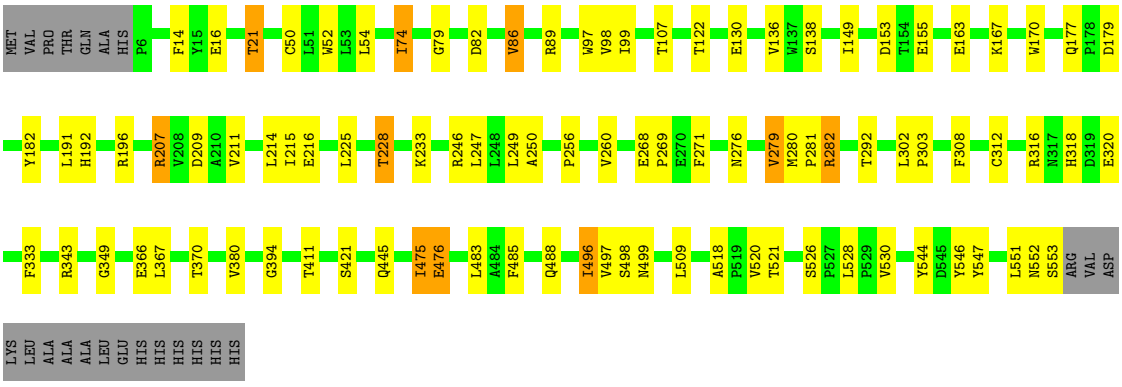


• Molecule 1: maltose alpha-D-glucosyltransferase

Chain D:

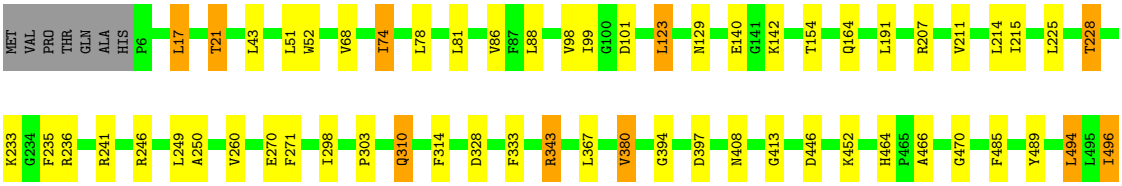
• Molecule 1: maltose alpha-D-glucosyltransferase

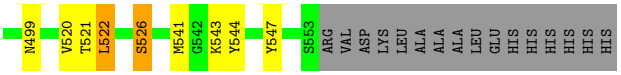
Chain E:



• Molecule 1: maltose alpha-D-glucosyltransferase

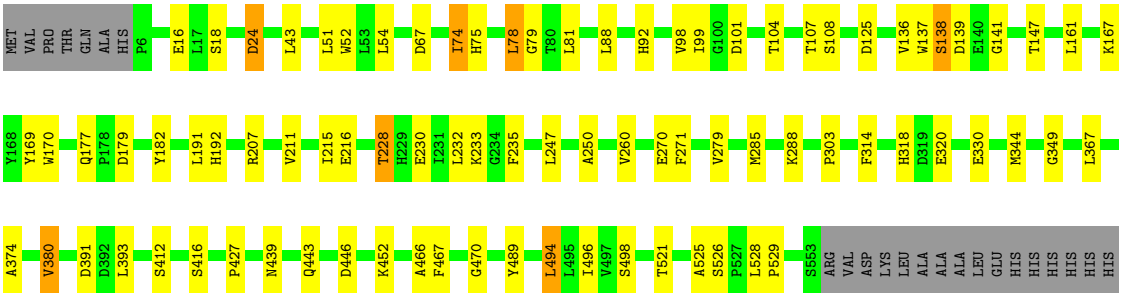
Chain F:





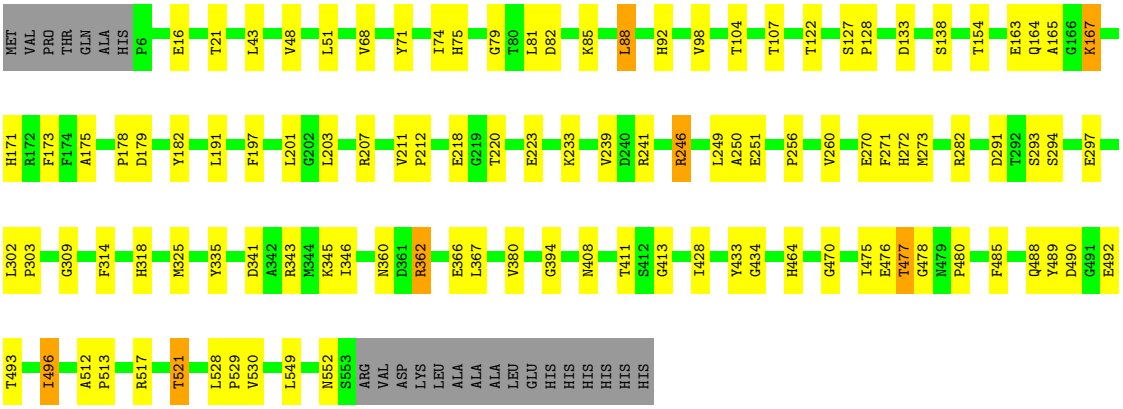
• Molecule 1: maltose alpha-D-glucosyltransferase

Chain G:



• Molecule 1: maltose alpha-D-glucosyltransferase

Chain H:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	96.12Å 197.47Å 134.25Å 90.00° 91.19° 90.00°	Depositor
Resolution (Å)	19.88 – 2.32 19.88 – 2.32	Depositor EDS
% Data completeness (in resolution range)	88.1 (19.88-2.32) 83.1 (19.88-2.32)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.63 (at 2.33Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.176 , 0.239 0.176 , 0.239	Depositor DCC
R_{free} test set	9550 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	30.5	Xtriage
Anisotropy	0.076	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 12.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.47$, $< L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.207 for h,-k,-l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	36596	wwPDB-VP
Average B, all atoms (Å^2)	32.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.77% 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: TRS, CA, MG

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	0.48	0/4531	0.69	1/6175 (0.0%)
1	B	0.49	0/4531	0.69	0/6175
1	C	0.48	0/4531	0.67	1/6175 (0.0%)
1	D	0.46	0/4531	0.68	3/6175 (0.0%)
1	E	0.49	0/4531	0.69	0/6175
1	F	0.47	0/4531	0.69	1/6175 (0.0%)
1	G	0.49	0/4531	0.66	1/6175 (0.0%)
1	H	0.49	1/4531 (0.0%)	0.68	1/6175 (0.0%)
All	All	0.48	1/36248 (0.0%)	0.68	8/49400 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	1
1	D	0	1
1	H	0	1
All	All	0	3

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	H	128	PRO	CG-CD	-10.06	1.17	1.50

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	17	LEU	CA-CB-CG	8.64	135.18	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	H	128	PRO	CA-N-CD	-7.29	101.29	111.50
1	A	17	LEU	CA-CB-CG	6.83	131.01	115.30
1	D	17	LEU	CA-CB-CG	6.29	129.75	115.30
1	G	24	ASP	CB-CG-OD1	6.25	123.93	118.30
1	D	471	ASP	CB-CG-OD1	5.97	123.68	118.30
1	C	446	ASP	CB-CG-OD1	5.81	123.53	118.30
1	D	17	LEU	CB-CG-CD2	5.21	119.86	111.00

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	475	ILE	Peptide
1	D	475	ILE	Peptide
1	H	475	ILE	Peptide

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	4398	0	4193	61	0
1	B	4398	0	4193	51	0
1	C	4398	0	4193	52	0
1	D	4398	0	4193	51	0
1	E	4398	0	4193	55	0
1	F	4398	0	4193	40	0
1	G	4398	0	4193	41	0
1	H	4398	0	4193	61	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
2	G	1	0	0	0	0
2	H	1	0	0	0	0
3	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
4	A	8	0	12	0	0
4	B	8	0	12	1	0
4	C	8	0	12	2	0
4	D	8	0	12	1	0
4	E	8	0	12	1	0
4	F	8	0	12	0	0
4	G	8	0	12	0	0
4	H	8	0	12	2	0
5	A	190	0	0	8	0
5	B	172	0	0	4	0
5	C	186	0	0	4	0
5	D	103	0	0	0	0
5	E	197	0	0	11	0
5	F	194	0	0	3	0
5	G	150	0	0	2	0
5	H	140	0	0	3	0
All	All	36596	0	33640	399	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 6.

All (399) 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:E:497:VAL:O	5:E:701:HOH:O	1.85	0.94
1:B:260:VAL:HG21	1:B:303:PRO:HD2	1.48	0.94
1:B:521:THR:HG22	1:B:526:SER:H	1.38	0.86
1:E:14:PHE:HB2	1:E:380:VAL:HG12	1.59	0.85
1:G:215:ILE:HB	1:G:228:THR:HG22	1.61	0.83
1:E:167:LYS:NZ	5:E:702:HOH:O	2.05	0.81
1:E:547:TYR:N	5:E:701:HOH:O	2.07	0.78
1:C:104:THR:HG22	1:C:191:LEU:HD12	1.66	0.77
1:B:499:ASN:HB2	1:B:541:MET:HE3	1.66	0.77
1:E:256:PRO:HB3	1:E:302:LEU:HD23	1.67	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:16:GLU:OE2	1:A:318:HIS:ND1	2.20	0.74
1:F:521:THR:HG22	1:F:526:SER:H	1.52	0.74
1:C:214:LEU:HB2	1:C:228:THR:HB	1.70	0.74
1:C:260:VAL:HG21	1:C:303:PRO:HD2	1.69	0.73
1:A:261:GLU:OE1	5:A:701:HOH:O	2.06	0.72
1:B:517:ARG:HD3	1:B:553:SER:HA	1.71	0.71
1:B:104:THR:HG22	1:B:191:LEU:HD12	1.73	0.71
1:D:260:VAL:HG21	1:D:303:PRO:HD2	1.73	0.70
1:E:488:GLN:OE1	5:E:703:HOH:O	2.09	0.70
1:G:104:THR:HG22	1:G:191:LEU:HD23	1.74	0.70
1:G:260:VAL:HG21	1:G:303:PRO:HD2	1.75	0.69
1:H:488:GLN:HG2	1:H:493:THR:HG23	1.72	0.69
1:B:215:ILE:H	1:B:228:THR:HG22	1.59	0.68
1:F:43:LEU:HD13	1:F:51:LEU:HD11	1.75	0.68
1:E:215:ILE:HB	1:E:228:THR:HG22	1.74	0.68
1:A:215:ILE:H	1:A:228:THR:HG22	1.58	0.67
1:D:63:ASP:OD2	4:D:603:TRS:O3	2.12	0.67
1:B:459:GLU:OE2	5:B:701:HOH:O	2.13	0.67
1:E:130:GLU:CD	1:E:130:GLU:H	1.99	0.66
1:H:256:PRO:HB3	1:H:302:LEU:HD23	1.77	0.66
1:C:215:ILE:HB	1:C:228:THR:HG22	1.77	0.66
1:C:343:ARG:NH2	5:C:703:HOH:O	2.23	0.66
1:F:521:THR:HG22	1:F:526:SER:N	2.11	0.66
1:H:74:ILE:HD11	1:H:79:GLY:O	1.96	0.65
1:F:215:ILE:HB	1:F:228:THR:HG22	1.77	0.65
1:A:391:ASP:OD1	5:A:702:HOH:O	2.14	0.65
1:H:74:ILE:HD11	1:H:79:GLY:C	2.18	0.65
1:B:521:THR:HG22	1:B:526:SER:N	2.12	0.65
1:E:228:THR:HG21	5:E:735:HOH:O	1.97	0.64
1:D:215:ILE:HB	1:D:228:THR:HG22	1.81	0.62
1:E:233:LYS:NZ	5:E:705:HOH:O	2.32	0.62
1:H:182:TYR:OH	1:H:191:LEU:HD22	2.00	0.62
1:A:464:HIS:HD2	1:A:492:GLU:OE2	1.82	0.62
1:B:200:ASP:OD1	1:B:243:TYR:OH	2.17	0.62
1:G:52:TRP:CZ2	1:G:207:ARG:HD3	2.34	0.62
1:B:256:PRO:HB3	1:B:302:LEU:HD23	1.81	0.61
1:D:521:THR:HG22	1:D:526:SER:H	1.65	0.61
1:B:52:TRP:CZ2	1:B:207:ARG:HD3	2.36	0.61
1:H:496:ILE:HG13	1:H:496:ILE:O	2.01	0.60
1:A:215:ILE:HB	1:A:228:THR:HG22	1.84	0.60
1:D:214:LEU:HB2	1:D:228:THR:HB	1.82	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:52:TRP:CZ2	1:D:207:ARG:HD3	2.36	0.59
1:H:260:VAL:HG21	1:H:303:PRO:HD2	1.84	0.59
1:A:52:TRP:CZ2	1:A:207:ARG:HD3	2.36	0.59
1:A:521:THR:HG22	1:A:526:SER:H	1.67	0.59
1:D:466:ALA:HB3	1:D:494:LEU:HD22	1.83	0.59
1:E:445:GLN:NE2	5:E:706:HOH:O	2.36	0.59
1:E:233:LYS:HD3	1:E:268:GLU:HB3	1.83	0.58
1:B:541:MET:HG2	1:B:547:TYR:CE2	2.39	0.58
1:C:366:GLU:O	1:C:370:THR:HG23	2.03	0.58
1:D:109:SER:O	1:D:115:GLN:NE2	2.35	0.58
1:F:52:TRP:CZ2	1:F:207:ARG:HD3	2.38	0.58
1:C:288:LYS:HG2	1:C:337:ALA:HB1	1.85	0.58
1:F:521:THR:CG2	1:F:526:SER:H	2.16	0.58
1:A:256:PRO:HB3	1:A:302:LEU:HD23	1.84	0.58
1:H:470:GLY:HA2	1:H:489:TYR:HB2	1.85	0.58
1:E:52:TRP:CZ2	1:E:207:ARG:HD3	2.38	0.58
1:F:228:THR:HG21	5:F:745:HOH:O	2.03	0.58
1:B:313:ILE:HG22	1:B:372:LEU:HD12	1.85	0.57
1:C:52:TRP:CZ2	1:C:207:ARG:HD3	2.40	0.57
1:H:88:LEU:HD22	1:H:92:HIS:CE1	2.39	0.57
1:E:485:PHE:CZ	1:E:496:ILE:HG12	2.39	0.57
1:C:376:PRO:HD3	1:C:472:LEU:HD12	1.86	0.57
1:E:518:ALA:HB2	1:E:530:VAL:HG22	1.86	0.57
1:G:466:ALA:HB3	1:G:494:LEU:HD22	1.86	0.57
1:D:24:ASP:HB3	1:D:416:SER:HB2	1.86	0.56
1:H:165:ALA:HB1	1:H:167:LYS:HD2	1.87	0.56
1:D:207:ARG:HG3	1:D:249:LEU:HD22	1.88	0.56
1:D:362:ARG:NE	1:D:366:GLU:OE2	2.36	0.56
1:D:376:PRO:HD3	1:D:472:LEU:HD13	1.86	0.56
1:A:318:HIS:HD1	1:A:318:HIS:H	1.54	0.56
1:G:374:ALA:HB1	1:G:496:ILE:HD13	1.86	0.56
1:H:138:SER:O	1:H:167:LYS:HB3	2.06	0.56
1:C:464:HIS:HD2	1:C:492:GLU:OE2	1.89	0.56
1:E:89:ARG:HG2	5:E:790:HOH:O	2.06	0.56
1:F:464:HIS:CE1	1:F:522:LEU:HG	2.41	0.56
1:H:163:GLU:HG3	1:H:164:GLN:N	2.21	0.56
1:D:68:VAL:HG23	1:D:70:ASP:H	1.71	0.56
1:E:214:LEU:HB2	1:E:228:THR:HB	1.88	0.56
1:B:466:ALA:HB3	1:B:494:LEU:HD22	1.88	0.55
1:B:503:ASN:HD22	1:H:521:THR:HG21	1.70	0.55
1:F:140:GLU:HB2	1:F:142:LYS:HD2	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:209:ASP:OD1	4:C:603:TRS:H22	2.06	0.55
1:B:223:GLU:OE2	5:B:702:HOH:O	2.18	0.55
1:E:260:VAL:HG21	1:E:303:PRO:HD2	1.88	0.55
1:E:485:PHE:CE1	1:E:496:ILE:HG12	2.42	0.55
1:A:260:VAL:HG21	1:A:303:PRO:HD2	1.88	0.55
1:F:314:PHE:HB3	1:F:380:VAL:HG13	1.87	0.55
1:H:133:ASP:OD2	5:H:701:HOH:O	2.18	0.55
1:F:260:VAL:HG21	1:F:303:PRO:HD2	1.89	0.54
1:G:182:TYR:OH	1:G:191:LEU:HD22	2.07	0.54
1:D:470:GLY:HA2	1:D:489:TYR:HB2	1.90	0.54
1:H:104:THR:HG22	1:H:191:LEU:HD23	1.90	0.54
1:A:246:ARG:HD3	1:A:246:ARG:N	2.22	0.54
1:B:475:ILE:HD11	1:B:509:LEU:HG	1.89	0.54
1:E:269:PRO:HB3	1:E:308:PHE:CZ	2.43	0.53
1:F:541:MET:HG2	1:F:547:TYR:CE2	2.43	0.53
1:B:14:PHE:HB2	1:B:380:VAL:HB	1.89	0.53
1:B:376:PRO:HD3	1:B:472:LEU:HD13	1.89	0.53
1:C:74:ILE:HD11	1:C:79:GLY:C	2.29	0.53
1:B:191:LEU:HB3	1:B:235:PHE:HZ	1.74	0.53
1:D:276:ASN:OD1	1:D:279:VAL:HG23	2.09	0.53
1:B:21:THR:HG22	5:B:789:HOH:O	2.09	0.53
1:F:470:GLY:HA2	1:F:489:TYR:HB2	1.89	0.53
1:H:282:ARG:NH2	1:H:325:MET:O	2.42	0.52
1:E:499:ASN:O	1:E:544:TYR:HA	2.10	0.52
1:A:301:ARG:O	1:A:303:PRO:HD3	2.09	0.52
1:G:16:GLU:OE1	1:G:318:HIS:ND1	2.41	0.52
1:H:82:ASP:OD1	5:H:702:HOH:O	2.19	0.52
1:A:215:ILE:H	1:A:228:THR:CG2	2.22	0.52
1:C:475:ILE:HD11	1:C:509:LEU:HG	1.91	0.52
1:G:24:ASP:OD2	1:G:416:SER:OG	2.28	0.52
1:B:366:GLU:O	1:B:370:THR:HG23	2.09	0.52
1:C:488:GLN:NE2	5:C:701:HOH:O	2.20	0.52
1:C:496:ILE:O	1:C:496:ILE:HG13	2.10	0.52
1:C:182:TYR:OH	1:C:191:LEU:HG	2.10	0.51
1:B:215:ILE:H	1:B:228:THR:CG2	2.22	0.51
1:D:207:ARG:HD2	1:D:275:PHE:HE2	1.74	0.51
1:H:293:SER:O	1:H:297:GLU:HG3	2.10	0.51
1:A:14:PHE:HB2	1:A:380:VAL:HB	1.92	0.51
1:A:122:THR:HG22	1:A:128:PRO:HA	1.92	0.51
1:A:485:PHE:CZ	1:A:496:ILE:HG12	2.45	0.51
1:A:225:LEU:HB2	1:A:228:THR:HG23	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:320:GLU:HG3	1:E:349:GLY:HA3	1.92	0.51
1:F:191:LEU:HB3	1:F:235:PHE:HZ	1.76	0.51
5:A:851:HOH:O	1:B:411:THR:HG22	2.10	0.50
1:D:43:LEU:O	1:D:48:VAL:HG22	2.12	0.50
1:C:499:ASN:HB2	1:C:541:MET:CE	2.41	0.50
1:H:107:THR:O	1:H:178:PRO:HD2	2.12	0.50
1:H:163:GLU:HG3	1:H:164:GLN:H	1.75	0.50
1:A:313:ILE:HD11	1:A:376:PRO:O	2.12	0.50
1:A:506:ALA:HB2	1:G:528:LEU:HD22	1.93	0.50
1:C:52:TRP:CE2	1:C:207:ARG:HD3	2.47	0.50
1:G:470:GLY:HA2	1:G:489:TYR:HB2	1.94	0.50
1:A:52:TRP:CE2	1:A:207:ARG:HD3	2.47	0.50
1:E:74:ILE:HD11	1:E:79:GLY:O	2.12	0.50
1:E:280:MET:HB3	1:E:281:PRO:HD3	1.94	0.50
1:H:74:ILE:HD12	1:H:75:HIS:O	2.12	0.50
1:A:228:THR:HG21	5:A:778:HOH:O	2.12	0.49
1:E:269:PRO:HB3	1:E:308:PHE:CE2	2.46	0.49
1:B:66:TYR:CG	4:B:603:TRS:H22	2.48	0.49
1:D:16:GLU:OE2	1:D:318:HIS:ND1	2.41	0.49
1:E:476:GLU:HG3	5:E:881:HOH:O	2.12	0.49
1:H:335:TYR:CE1	1:H:345:LYS:HG2	2.47	0.49
1:D:130:GLU:H	1:D:130:GLU:CD	2.16	0.49
1:H:173:PHE:CZ	4:H:603:TRS:H32	2.48	0.49
1:D:459:GLU:OE1	1:F:343:ARG:NH2	2.46	0.49
1:E:21:THR:HG22	5:E:784:HOH:O	2.12	0.49
1:A:192:HIS:HE1	5:A:801:HOH:O	1.95	0.49
1:C:223:GLU:H	1:C:225:LEU:HD13	1.78	0.49
1:D:81:LEU:CD1	1:D:85:LYS:HE3	2.43	0.49
1:D:288:LYS:HG2	1:D:337:ALA:HB1	1.94	0.49
1:G:43:LEU:HD13	1:G:51:LEU:HD11	1.95	0.49
1:B:522:LEU:HD22	1:B:548:TRP:HB3	1.95	0.49
1:F:74:ILE:CD1	1:F:78:LEU:HB2	2.43	0.48
1:C:130:GLU:OE1	1:C:130:GLU:N	2.41	0.48
1:D:225:LEU:HB2	1:D:228:THR:HG23	1.95	0.48
4:C:603:TRS:H21	5:C:781:HOH:O	2.12	0.48
1:H:485:PHE:CE1	1:H:496:ILE:HG12	2.48	0.48
1:A:276:ASN:CG	1:A:279:VAL:HG22	2.34	0.48
1:G:314:PHE:HB3	1:G:380:VAL:HG13	1.95	0.48
1:D:225:LEU:HB2	1:D:228:THR:CG2	2.43	0.48
1:B:521:THR:CG2	1:B:526:SER:H	2.18	0.48
1:D:366:GLU:O	1:D:370:THR:HG23	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:18:SER:HB2	1:G:54:LEU:HD22	1.95	0.48
1:G:67:ASP:O	1:G:108:SER:HB2	2.14	0.48
1:A:393:LEU:HD23	1:A:393:LEU:HA	1.51	0.47
1:C:184:ASN:ND2	5:C:710:HOH:O	2.45	0.47
1:E:370:THR:HG21	1:E:546:TYR:CD2	2.49	0.47
1:H:233:LYS:HG3	1:H:270:GLU:CG	2.44	0.47
1:B:207:ARG:NH2	1:B:209:ASP:OD1	2.47	0.47
1:G:74:ILE:HD11	1:G:79:GLY:O	2.14	0.47
1:E:475:ILE:HD11	1:E:509:LEU:HB3	1.95	0.47
1:A:224:ASN:HB3	5:A:788:HOH:O	2.15	0.47
1:H:464:HIS:HD2	1:H:492:GLU:OE2	1.97	0.47
1:A:255:TRP:O	1:A:259:VAL:HG23	2.15	0.47
1:G:233:LYS:HG3	1:G:270:GLU:HG3	1.96	0.47
1:H:362:ARG:NE	1:H:366:GLU:OE1	2.45	0.47
1:A:44:LYS:HE2	1:A:94:ARG:O	2.15	0.47
1:A:146:ASP:N	1:A:146:ASP:OD1	2.48	0.47
1:A:314:PHE:HB3	1:A:380:VAL:HG13	1.97	0.47
1:D:247:LEU:O	1:D:248:LEU:HD23	2.15	0.47
1:D:343:ARG:NH1	1:D:351:ARG:HH22	2.13	0.47
1:E:196:ARG:NH1	5:E:707:HOH:O	2.37	0.47
1:F:496:ILE:O	1:F:496:ILE:HG13	2.14	0.47
1:C:462:ARG:NH2	1:E:394:GLY:HA3	2.30	0.47
1:C:130:GLU:CD	1:C:130:GLU:H	2.11	0.47
1:A:104:THR:HA	1:A:191:LEU:CD2	2.45	0.47
1:A:241:ARG:NH1	1:A:242:GLU:OE2	2.48	0.47
1:G:139:ASP:OD1	1:G:167:LYS:HE2	2.15	0.47
1:A:499:ASN:O	1:A:544:TYR:HA	2.15	0.46
1:E:292:THR:HG21	1:E:483:LEU:HB2	1.96	0.46
1:H:197:PHE:O	1:H:201:LEU:HD13	2.15	0.46
1:D:107:THR:O	1:D:178:PRO:HD2	2.16	0.46
1:E:182:TYR:OH	1:E:191:LEU:CD2	2.63	0.46
1:H:512:ALA:HB3	1:H:513:PRO:HD3	1.97	0.46
1:A:315:LEU:HG	1:A:372:LEU:HD13	1.96	0.46
1:D:289:ARG:HG3	1:D:333:PHE:CZ	2.50	0.46
1:C:276:ASN:OD1	1:C:279:VAL:HG23	2.16	0.46
1:F:140:GLU:CB	1:F:142:LYS:HD2	2.45	0.46
1:F:446:ASP:O	1:F:452:LYS:HD2	2.15	0.46
1:B:215:ILE:HB	1:B:228:THR:HG22	1.98	0.46
1:B:138:SER:HB3	1:B:159:TRP:CZ3	2.51	0.46
1:C:88:LEU:HD22	1:C:92:HIS:CE1	2.51	0.46
1:C:404:PRO:HB3	1:C:415:PHE:CG	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:81:LEU:HD13	1:D:81:LEU:O	2.16	0.46
1:G:138:SER:OG	1:G:141:GLY:N	2.45	0.46
1:H:173:PHE:CE1	4:H:603:TRS:H32	2.50	0.46
1:C:233:LYS:HD3	1:C:268:GLU:HB3	1.98	0.45
1:C:460:LEU:HD13	1:E:343:ARG:HD3	1.97	0.45
1:E:50:CYS:HA	1:E:97:TRP:O	2.16	0.45
1:F:214:LEU:HB2	1:F:228:THR:HB	1.98	0.45
1:B:477:THR:HA	1:B:509:LEU:HD12	1.98	0.45
1:E:276:ASN:OD1	1:E:279:VAL:HG22	2.16	0.45
1:G:344:MET:HG2	1:G:393:LEU:HD21	1.98	0.45
1:H:360:ASN:HB2	1:H:433:TYR:OH	2.17	0.45
1:G:211:VAL:HG11	1:G:271:PHE:CZ	2.52	0.45
1:H:294:SER:HA	1:H:297:GLU:HG3	1.97	0.45
1:H:408:ASN:O	1:H:413:GLY:HA2	2.17	0.45
1:D:492:GLU:HG2	1:D:494:LEU:HD13	1.98	0.45
1:E:250:ALA:HB2	1:E:271:PHE:CG	2.52	0.45
1:F:485:PHE:CZ	1:F:496:ILE:HG12	2.52	0.45
1:G:232:LEU:HD13	1:G:271:PHE:HE2	1.82	0.45
1:B:182:TYR:OH	1:B:191:LEU:HG	2.17	0.45
1:B:488:GLN:HG3	1:B:493:THR:HG23	1.98	0.45
1:G:367:LEU:HD21	1:G:498:SER:HB3	1.98	0.45
1:H:291:ASP:OD1	1:H:480:PRO:HB2	2.17	0.45
1:D:485:PHE:CZ	1:D:496:ILE:HG12	2.52	0.44
1:A:7:GLU:HA	5:A:812:HOH:O	2.18	0.44
1:B:367:LEU:HD11	1:B:498:SER:HB3	1.99	0.44
1:G:88:LEU:HD22	1:G:92:HIS:CE1	2.52	0.44
1:A:404:PRO:HB3	1:A:415:PHE:CG	2.51	0.44
1:B:89:ARG:NH1	1:B:90:GLU:OE2	2.51	0.44
1:C:355:ALA:HB3	1:C:356:PRO:HD3	2.00	0.44
1:E:209:ASP:OD1	4:E:603:TRS:H32	2.17	0.44
1:F:466:ALA:HB3	1:F:494:LEU:HD22	1.99	0.44
1:H:314:PHE:HB3	1:H:380:VAL:HG13	1.99	0.44
1:A:147:THR:HG22	1:A:148:ALA:O	2.18	0.44
1:B:496:ILE:O	1:B:496:ILE:HG13	2.15	0.44
1:C:499:ASN:HB2	1:C:541:MET:HE3	1.99	0.44
1:D:250:ALA:HB2	1:D:271:PHE:CD2	2.52	0.44
1:C:475:ILE:O	1:C:475:ILE:HG13	2.15	0.44
1:A:214:LEU:HB2	1:A:228:THR:HB	1.99	0.44
1:B:74:ILE:CD1	1:B:81:LEU:HA	2.48	0.44
1:D:250:ALA:HB2	1:D:271:PHE:CG	2.52	0.44
1:D:260:VAL:CG2	1:D:303:PRO:HD2	2.45	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:285:MET:SD	1:G:330:GLU:HG2	2.58	0.44
1:H:272:HIS:O	1:H:309:GLY:HA2	2.17	0.44
1:A:111:HIS:CE1	1:A:113:TRP:CD2	3.05	0.44
1:A:335:TYR:OH	1:A:348:VAL:HA	2.17	0.44
1:A:470:GLY:HA2	1:A:489:TYR:HB2	2.00	0.44
1:B:503:ASN:ND2	1:H:521:THR:HG21	2.33	0.44
1:D:462:ARG:NH2	1:F:394:GLY:HA3	2.33	0.44
1:F:408:ASN:O	1:F:413:GLY:HA2	2.17	0.44
1:H:218:GLU:O	1:H:220:THR:HG23	2.18	0.44
1:A:88:LEU:HD23	1:A:88:LEU:HA	1.87	0.43
1:C:158:ASN:HB2	1:C:170:TRP:CZ3	2.53	0.43
1:A:304:LYS:H	1:A:304:LYS:HG2	1.57	0.43
1:C:482:ILE:HG23	1:C:541:MET:HE2	2.01	0.43
1:G:233:LYS:HE3	1:G:270:GLU:OE2	2.18	0.43
1:H:16:GLU:OE2	1:H:318:HIS:ND1	2.48	0.43
1:H:517:ARG:NE	1:H:552:ASN:O	2.40	0.43
1:A:250:ALA:HB2	1:A:271:PHE:CG	2.54	0.43
1:B:247:LEU:HD12	1:B:272:HIS:HB2	2.00	0.43
1:F:74:ILE:HD12	1:F:78:LEU:HB2	2.00	0.43
1:G:191:LEU:HB3	1:G:235:PHE:HZ	1.84	0.43
1:A:182:TYR:OH	1:A:191:LEU:HD22	2.19	0.43
1:B:71:TYR:OH	1:B:107:THR:HG22	2.18	0.43
1:D:21:THR:HG21	1:D:383:TYR:OH	2.18	0.43
1:E:282:ARG:H	1:E:282:ARG:HG2	1.62	0.43
1:F:499:ASN:O	1:F:544:TYR:HA	2.19	0.43
1:H:68:VAL:HG11	1:H:71:TYR:CZ	2.54	0.43
1:A:462:ARG:NH2	1:H:394:GLY:HA3	2.33	0.43
1:C:138:SER:HB3	1:C:159:TRP:CH2	2.53	0.43
1:D:52:TRP:CD1	1:D:52:TRP:C	2.91	0.43
1:D:88:LEU:HD22	1:D:92:HIS:CE1	2.53	0.43
1:D:316:ARG:HD2	1:D:316:ARG:HA	1.87	0.43
1:F:123:LEU:HD13	1:F:129:ASN:HB2	2.01	0.43
1:B:207:ARG:HH21	1:B:209:ASP:HB2	1.84	0.43
1:D:74:ILE:CD1	1:D:78:LEU:HB2	2.48	0.43
1:A:149:ILE:HG21	1:A:155:GLU:O	2.18	0.43
1:D:506:ALA:HB2	1:E:528:LEU:HD22	2.01	0.43
1:E:149:ILE:HG21	1:E:155:GLU:O	2.19	0.43
1:E:333:PHE:HD1	1:F:333:PHE:HD2	1.65	0.43
1:B:232:LEU:HD13	1:B:271:PHE:HE2	1.84	0.43
1:B:236:ARG:NH1	1:B:270:GLU:O	2.38	0.43
1:D:102:LEU:HB2	1:D:206:PHE:CD1	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:211:VAL:HG11	1:E:271:PHE:CZ	2.54	0.43
1:G:446:ASP:O	1:G:452:LYS:HD2	2.19	0.43
1:A:288:LYS:HG2	1:A:337:ALA:HB1	2.01	0.43
1:F:310:GLN:HA	1:F:310:GLN:HE21	1.84	0.43
1:G:74:ILE:HD11	1:G:79:GLY:C	2.39	0.43
1:G:250:ALA:HB2	1:G:271:PHE:CG	2.54	0.43
1:H:171:HIS:CD2	1:H:175:ALA:HA	2.54	0.43
1:A:459:GLU:OE2	1:H:343:ARG:NH2	2.50	0.42
1:C:111:HIS:CE1	1:C:113:TRP:CD2	3.07	0.42
1:G:320:GLU:HG3	1:G:349:GLY:HA3	2.01	0.42
1:H:246:ARG:HA	1:H:246:ARG:HD3	1.82	0.42
1:A:52:TRP:CD1	1:A:52:TRP:C	2.92	0.42
1:C:257:GLU:CD	1:C:257:GLU:H	2.22	0.42
1:E:316:ARG:HD2	1:E:316:ARG:HA	1.91	0.42
1:F:88:LEU:HD12	1:F:88:LEU:HA	1.77	0.42
1:G:107:THR:O	1:G:177:GLN:HA	2.18	0.42
1:A:320:GLU:OE2	1:A:398:ARG:HD3	2.19	0.42
1:D:404:PRO:HB3	1:D:415:PHE:CG	2.54	0.42
1:H:428:ILE:HG22	1:H:434:GLY:HA2	2.01	0.42
1:C:14:PHE:O	1:C:380:VAL:HA	2.19	0.42
1:E:250:ALA:HB2	1:E:271:PHE:CD2	2.54	0.42
1:H:211:VAL:HG11	1:H:271:PHE:CZ	2.55	0.42
1:G:75:HIS:HB3	1:G:78:LEU:HD22	2.01	0.42
1:H:85:LYS:HD2	5:H:809:HOH:O	2.17	0.42
1:B:452:LYS:NZ	5:B:717:HOH:O	2.52	0.42
1:E:16:GLU:OE2	1:E:318:HIS:ND1	2.49	0.42
1:E:107:THR:O	1:E:177:GLN:HA	2.19	0.42
1:B:485:PHE:CZ	1:B:496:ILE:HG12	2.54	0.42
1:E:551:LEU:HA	1:E:551:LEU:HD23	1.71	0.42
1:F:233:LYS:HG2	1:F:270:GLU:HG3	2.02	0.42
1:H:212:PRO:O	1:H:223:GLU:HA	2.20	0.42
1:H:476:GLU:O	1:H:478:GLY:N	2.45	0.42
1:D:243:TYR:O	1:D:246:ARG:HG2	2.19	0.42
1:H:203:LEU:HD12	1:H:203:LEU:HA	1.84	0.42
1:A:521:THR:HG22	1:A:526:SER:N	2.34	0.42
1:D:314:PHE:HB3	1:D:380:VAL:HG13	2.02	0.42
1:E:366:GLU:O	1:E:370:THR:HG23	2.19	0.42
1:F:250:ALA:HB2	1:F:271:PHE:CD2	2.55	0.42
1:G:137:TRP:CZ3	1:G:169:TYR:HB3	2.54	0.42
1:C:546:TYR:OH	1:F:543:LYS:NZ	2.52	0.41
1:E:276:ASN:CG	1:E:279:VAL:HG22	2.41	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:207:ARG:NH1	5:G:712:HOH:O	2.52	0.41
1:C:43:LEU:O	1:C:48:VAL:HG22	2.21	0.41
1:C:485:PHE:CE2	1:C:496:ILE:HG12	2.55	0.41
1:D:111:HIS:CE1	1:D:113:TRP:CD2	3.08	0.41
1:H:521:THR:HA	1:H:549:LEU:HD23	2.02	0.41
1:B:52:TRP:CE2	1:B:207:ARG:HD3	2.54	0.41
1:B:499:ASN:O	1:B:544:TYR:HA	2.20	0.41
1:H:43:LEU:O	1:H:48:VAL:HG22	2.21	0.41
1:H:249:LEU:HD13	1:H:273:MET:HB2	2.03	0.41
1:A:152:THR:HG22	5:A:886:HOH:O	2.21	0.41
1:A:316:ARG:HD2	1:A:316:ARG:HA	1.92	0.41
1:C:100:GLY:O	1:C:207:ARG:N	2.45	0.41
1:C:550:ARG:NH2	1:E:153:ASP:O	2.54	0.41
1:D:324:GLU:HG2	1:D:348:VAL:HB	2.03	0.41
1:E:82:ASP:O	1:E:86:VAL:HG13	2.20	0.41
1:E:367:LEU:HD21	1:E:498:SER:HB3	2.01	0.41
1:H:517:ARG:C	1:H:530:VAL:HG23	2.41	0.41
1:A:257:GLU:H	1:A:257:GLU:CD	2.24	0.41
1:C:261:GLU:H	1:C:261:GLU:HG2	1.63	0.41
1:F:236:ARG:NH1	1:F:270:GLU:O	2.44	0.41
1:G:412:SER:HB3	1:G:427:PRO:HG2	2.01	0.41
1:H:43:LEU:HD13	1:H:51:LEU:HD11	2.02	0.41
1:A:363:ARG:HD2	5:G:718:HOH:O	2.19	0.41
1:C:248:LEU:HA	1:C:248:LEU:HD23	1.66	0.41
1:C:250:ALA:HB2	1:C:271:PHE:CG	2.55	0.41
1:H:104:THR:HA	1:H:191:LEU:HD21	2.02	0.41
1:H:528:LEU:HB3	1:H:529:PRO:HD2	2.03	0.41
1:B:16:GLU:OE2	1:B:318:HIS:ND1	2.52	0.41
1:F:81:LEU:HD23	1:F:81:LEU:HA	1.84	0.41
1:A:471:ASP:OD2	1:A:488:GLN:HB3	2.21	0.41
1:B:408:ASN:O	1:B:413:GLY:HA2	2.21	0.41
1:D:355:ALA:HB3	1:D:356:PRO:HD3	2.02	0.41
1:E:99:ILE:HG21	1:E:247:LEU:HD23	2.02	0.41
1:G:467:PHE:HE1	1:G:496:ILE:HD11	1.86	0.41
1:H:88:LEU:HD23	1:H:88:LEU:HA	1.74	0.41
1:C:82:ASP:O	1:C:86:VAL:HG12	2.21	0.41
1:C:278:PRO:HB3	1:C:298:ILE:HD12	2.03	0.41
1:F:21:THR:HG22	5:F:765:HOH:O	2.21	0.41
1:F:211:VAL:HG11	1:F:271:PHE:CZ	2.56	0.41
1:A:67:ASP:HB2	1:A:108:SER:HB2	2.01	0.40
1:A:506:ALA:CB	1:G:529:PRO:HD3	2.52	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:249:LEU:HD12	1:C:250:ALA:N	2.35	0.40
1:C:375:LEU:HB3	1:C:376:PRO:HD2	2.03	0.40
1:C:475:ILE:HD13	1:C:511:LEU:HD23	2.02	0.40
1:G:439:ASN:O	1:G:443:GLN:HG3	2.21	0.40
1:A:366:GLU:O	1:A:370:THR:HG23	2.21	0.40
1:A:369:ASN:O	1:A:372:LEU:HB3	2.21	0.40
1:D:275:PHE:HD1	1:D:312:CYS:HB3	1.86	0.40
1:E:136:VAL:HB	1:E:170:TRP:HB3	2.03	0.40
1:F:52:TRP:HB2	1:F:99:ILE:HD11	2.03	0.40
1:F:397:ASP:HB3	5:F:732:HOH:O	2.21	0.40
1:H:341:ASP:OD2	1:H:343:ARG:NH1	2.53	0.40
1:B:541:MET:HE3	1:B:541:MET:HB2	1.92	0.40
1:C:16:GLU:OE2	1:C:318:HIS:ND1	2.48	0.40
1:G:99:ILE:HG21	1:G:247:LEU:HD23	2.03	0.40
1:G:136:VAL:HB	1:G:170:TRP:HB3	2.02	0.40
1:H:250:ALA:HB2	1:H:271:PHE:CG	2.56	0.40
1:B:21:THR:HG21	1:B:383:TYR:OH	2.21	0.40
1:C:227:GLU:OE1	1:C:227:GLU:N	2.41	0.40
1:D:446:ASP:HA	1:D:447:PRO:HD3	1.97	0.40
1:F:298:ILE:HD12	1:F:298:ILE:HA	1.87	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	A	546/571 (96%)	526 (96%)	20 (4%)	0	100 100
1	B	546/571 (96%)	527 (96%)	19 (4%)	0	100 100
1	C	546/571 (96%)	524 (96%)	21 (4%)	1 (0%)	44 54
1	D	546/571 (96%)	525 (96%)	21 (4%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	546/571 (96%)	530 (97%)	16 (3%)	0	100	100
1	F	546/571 (96%)	527 (96%)	19 (4%)	0	100	100
1	G	546/571 (96%)	526 (96%)	19 (4%)	1 (0%)	44	54
1	H	546/571 (96%)	529 (97%)	16 (3%)	1 (0%)	44	54
All	All	4368/4568 (96%)	4214 (96%)	151 (4%)	3 (0%)	48	60

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	G	525	ALA
1	H	477	THR
1	C	348	VAL

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	A	464/483 (96%)	442 (95%)	22 (5%)	22	32
1	B	464/483 (96%)	440 (95%)	24 (5%)	19	28
1	C	464/483 (96%)	440 (95%)	24 (5%)	19	28
1	D	464/483 (96%)	432 (93%)	32 (7%)	13	17
1	E	464/483 (96%)	435 (94%)	29 (6%)	15	20
1	F	464/483 (96%)	439 (95%)	25 (5%)	18	26
1	G	464/483 (96%)	443 (96%)	21 (4%)	23	34
1	H	464/483 (96%)	442 (95%)	22 (5%)	22	32
All	All	3712/3864 (96%)	3513 (95%)	199 (5%)	18	26

All (199) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	17	LEU

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Mol	Chain	Res	Type
1	A	32	ASP
1	A	82	ASP
1	A	98	VAL
1	A	101	ASP
1	A	138	SER
1	A	146	ASP
1	A	179	ASP
1	A	216	GLU
1	A	218	GLU
1	A	246	ARG
1	A	282	ARG
1	A	304	LYS
1	A	320	GLU
1	A	343	ARG
1	A	380	VAL
1	A	472	LEU
1	A	477	THR
1	A	496	ILE
1	A	521	THR
1	A	550	ARG
1	A	553	SER
1	B	21	THR
1	B	54	LEU
1	B	98	VAL
1	B	101	ASP
1	B	133	ASP
1	B	138	SER
1	B	146	ASP
1	B	192	HIS
1	B	216	GLU
1	B	225	LEU
1	B	246	ARG
1	B	282	ARG
1	B	289	ARG
1	B	298	ILE
1	B	310	GLN
1	B	343	ARG
1	B	362	ARG
1	B	472	LEU
1	B	475	ILE
1	B	494	LEU
1	B	496	ILE

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Mol	Chain	Res	Type
1	B	521	THR
1	B	522	LEU
1	B	523	SER
1	C	11	SER
1	C	52	TRP
1	C	54	LEU
1	C	82	ASP
1	C	86	VAL
1	C	88	LEU
1	C	98	VAL
1	C	101	ASP
1	C	123	LEU
1	C	138	SER
1	C	179	ASP
1	C	192	HIS
1	C	216	GLU
1	C	218	GLU
1	C	228	THR
1	C	246	ARG
1	C	298	ILE
1	C	320	GLU
1	C	343	ARG
1	C	411	THR
1	C	475	ILE
1	C	476	GLU
1	C	490	ASP
1	C	496	ILE
1	D	17	LEU
1	D	20	ARG
1	D	21	THR
1	D	32	ASP
1	D	44	LYS
1	D	54	LEU
1	D	68	VAL
1	D	74	ILE
1	D	87	PHE
1	D	88	LEU
1	D	98	VAL
1	D	101	ASP
1	D	130	GLU
1	D	133	ASP
1	D	138	SER

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Mol	Chain	Res	Type
1	D	139	ASP
1	D	146	ASP
1	D	179	ASP
1	D	216	GLU
1	D	228	THR
1	D	289	ARG
1	D	367	LEU
1	D	391	ASP
1	D	405	MET
1	D	411	THR
1	D	430	ASP
1	D	472	LEU
1	D	494	LEU
1	D	496	ILE
1	D	521	THR
1	D	522	LEU
1	D	523	SER
1	E	21	THR
1	E	54	LEU
1	E	74	ILE
1	E	86	VAL
1	E	98	VAL
1	E	122	THR
1	E	138	SER
1	E	163	GLU
1	E	179	ASP
1	E	192	HIS
1	E	207	ARG
1	E	216	GLU
1	E	225	LEU
1	E	228	THR
1	E	246	ARG
1	E	249	LEU
1	E	279	VAL
1	E	282	ARG
1	E	312	CYS
1	E	411	THR
1	E	421	SER
1	E	475	ILE
1	E	476	GLU
1	E	496	ILE
1	E	520	VAL

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Mol	Chain	Res	Type
1	E	521	THR
1	E	526	SER
1	E	552	ASN
1	E	553	SER
1	F	17	LEU
1	F	21	THR
1	F	68	VAL
1	F	74	ILE
1	F	86	VAL
1	F	98	VAL
1	F	101	ASP
1	F	123	LEU
1	F	154	THR
1	F	164	GLN
1	F	225	LEU
1	F	228	THR
1	F	241	ARG
1	F	246	ARG
1	F	249	LEU
1	F	310	GLN
1	F	328	ASP
1	F	343	ARG
1	F	367	LEU
1	F	380	VAL
1	F	494	LEU
1	F	496	ILE
1	F	520	VAL
1	F	522	LEU
1	F	526	SER
1	G	74	ILE
1	G	78	LEU
1	G	81	LEU
1	G	98	VAL
1	G	101	ASP
1	G	125	ASP
1	G	138	SER
1	G	147	THR
1	G	161	LEU
1	G	179	ASP
1	G	192	HIS
1	G	216	GLU
1	G	228	THR

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Mol	Chain	Res	Type
1	G	230	GLU
1	G	279	VAL
1	G	288	LYS
1	G	380	VAL
1	G	391	ASP
1	G	494	LEU
1	G	521	THR
1	G	526	SER
1	H	21	THR
1	H	81	LEU
1	H	88	LEU
1	H	98	VAL
1	H	122	THR
1	H	127	SER
1	H	154	THR
1	H	167	LYS
1	H	179	ASP
1	H	207	ARG
1	H	239	VAL
1	H	241	ARG
1	H	246	ARG
1	H	251	GLU
1	H	346	ILE
1	H	362	ARG
1	H	367	LEU
1	H	411	THR
1	H	477	THR
1	H	490	ASP
1	H	496	ILE
1	H	521	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	115	GLN
1	A	192	HIS
1	A	419	GLN
1	A	441	GLN
1	A	464	HIS
1	B	310	GLN
1	B	441	GLN
1	B	445	GLN

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Mol	Chain	Res	Type
1	B	464	HIS
1	C	192	HIS
1	C	429	GLN
1	C	464	HIS
1	D	164	GLN
1	D	229	HIS
1	D	488	GLN
1	E	164	GLN
1	E	192	HIS
1	E	419	GLN
1	E	445	GLN
1	F	192	HIS
1	F	253	ASN
1	F	310	GLN
1	F	445	GLN
1	F	464	HIS
1	G	158	ASN
1	G	253	ASN
1	G	445	GLN
1	G	464	HIS
1	H	464	HIS

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 24 ligands modelled in this entry, 16 are monoatomic - leaving 8 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	$\#\|Z\| > 2$
4	TRS	H	603	-	7,7,7	0.23	0	9,9,9	0.74	0
4	TRS	B	603	-	7,7,7	0.41	0	9,9,9	1.59	2 (22%)
4	TRS	D	603	-	7,7,7	0.33	0	9,9,9	0.82	0
4	TRS	G	603	-	7,7,7	0.52	0	9,9,9	0.85	1 (11%)
4	TRS	F	603	-	7,7,7	0.49	0	9,9,9	1.19	1 (11%)
4	TRS	A	603	-	7,7,7	0.30	0	9,9,9	0.70	0
4	TRS	C	603	-	7,7,7	0.62	0	9,9,9	1.09	1 (11%)
4	TRS	E	603	-	7,7,7	0.30	0	9,9,9	0.93	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
4	TRS	H	603	-	-	0/9/9/9	-
4	TRS	B	603	-	-	6/9/9/9	-
4	TRS	D	603	-	-	3/9/9/9	-
4	TRS	G	603	-	-	3/9/9/9	-
4	TRS	F	603	-	-	6/9/9/9	-
4	TRS	A	603	-	-	3/9/9/9	-
4	TRS	C	603	-	-	9/9/9/9	-
4	TRS	E	603	-	-	4/9/9/9	-

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	F	603	TRS	O3-C3-C	-3.16	100.99	111.00
4	B	603	TRS	O3-C3-C	2.77	119.76	111.00
4	B	603	TRS	C3-C-C1	2.59	118.85	110.81
4	G	603	TRS	O3-C3-C	-2.03	104.56	111.00
4	C	603	TRS	C1-C-N	2.00	113.95	107.98

There are no chirality outliers.

All (34) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	603	TRS	C2-C-C1-O1
4	B	603	TRS	C3-C-C1-O1
4	B	603	TRS	N-C-C1-O1
4	B	603	TRS	C1-C-C3-O3
4	B	603	TRS	C2-C-C3-O3
4	B	603	TRS	N-C-C3-O3
4	C	603	TRS	N-C-C1-O1
4	C	603	TRS	C3-C-C2-O2
4	C	603	TRS	C1-C-C3-O3
4	C	603	TRS	C2-C-C3-O3
4	C	603	TRS	N-C-C3-O3
4	D	603	TRS	C2-C-C1-O1
4	D	603	TRS	C3-C-C1-O1
4	D	603	TRS	N-C-C1-O1
4	E	603	TRS	C2-C-C1-O1
4	E	603	TRS	C3-C-C1-O1
4	E	603	TRS	N-C-C1-O1
4	F	603	TRS	C2-C-C1-O1
4	F	603	TRS	C3-C-C1-O1
4	F	603	TRS	N-C-C1-O1
4	C	603	TRS	C3-C-C1-O1
4	C	603	TRS	C1-C-C2-O2
4	F	603	TRS	N-C-C3-O3
4	G	603	TRS	N-C-C2-O2
4	A	603	TRS	C1-C-C3-O3
4	A	603	TRS	C2-C-C3-O3
4	C	603	TRS	C2-C-C1-O1
4	F	603	TRS	C1-C-C3-O3
4	F	603	TRS	C2-C-C3-O3
4	G	603	TRS	C3-C-C2-O2
4	A	603	TRS	C2-C-C1-O1
4	C	603	TRS	N-C-C2-O2
4	E	603	TRS	C3-C-C2-O2
4	G	603	TRS	C1-C-C2-O2

There are no ring outliers.

5 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	H	603	TRS	2	0
4	B	603	TRS	1	0

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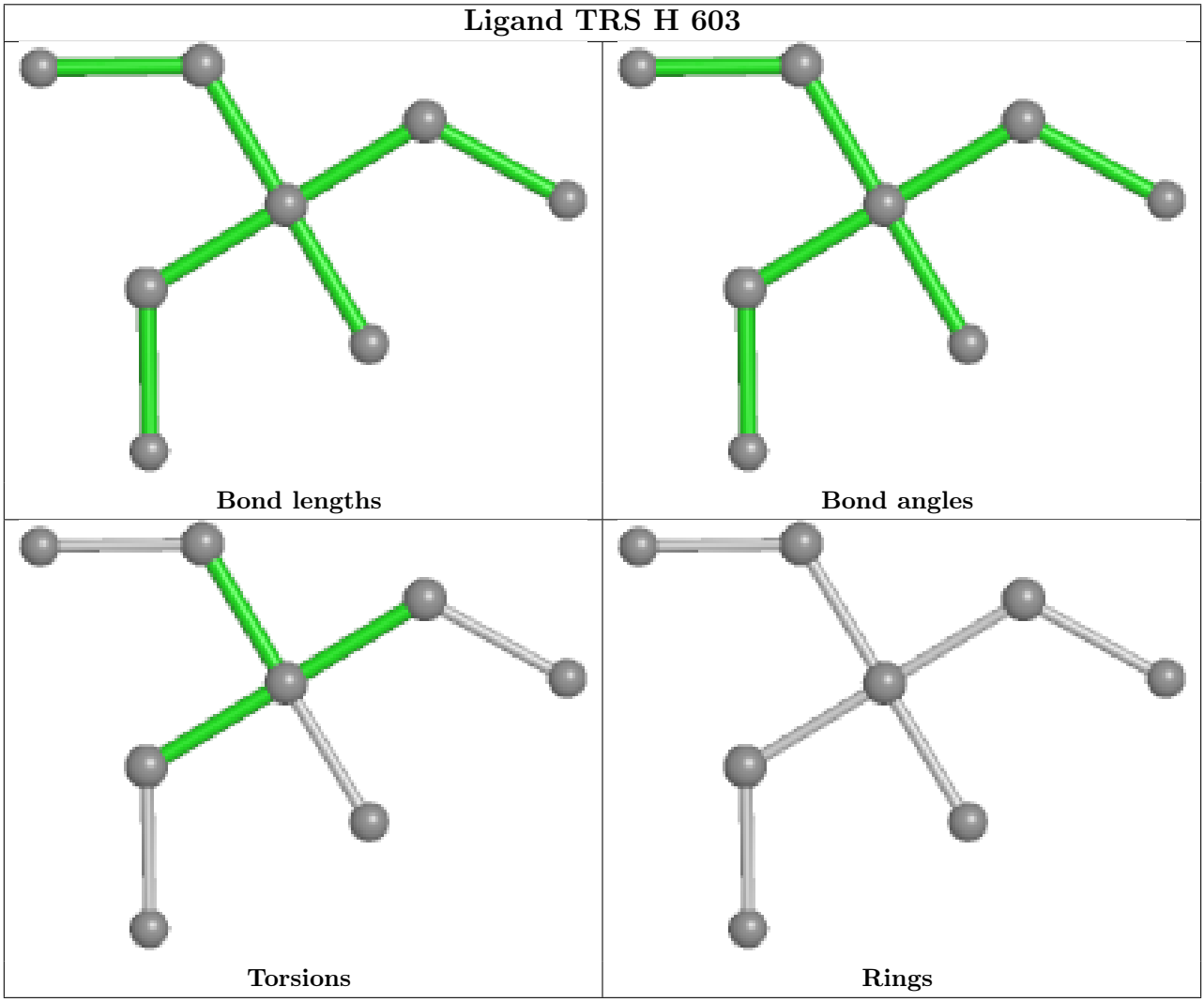
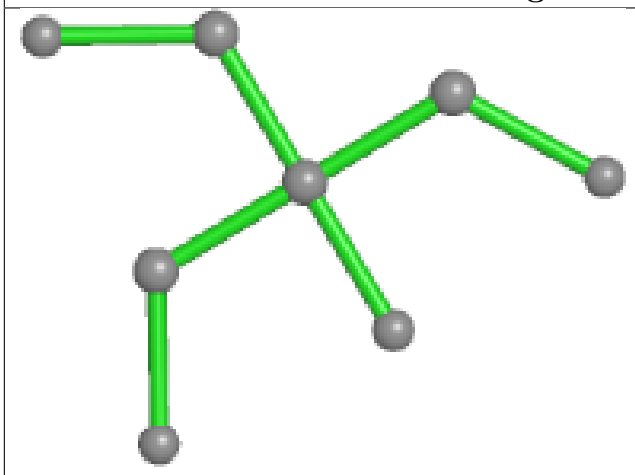
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	603	TRS	1	0
4	C	603	TRS	2	0
4	E	603	TRS	1	0

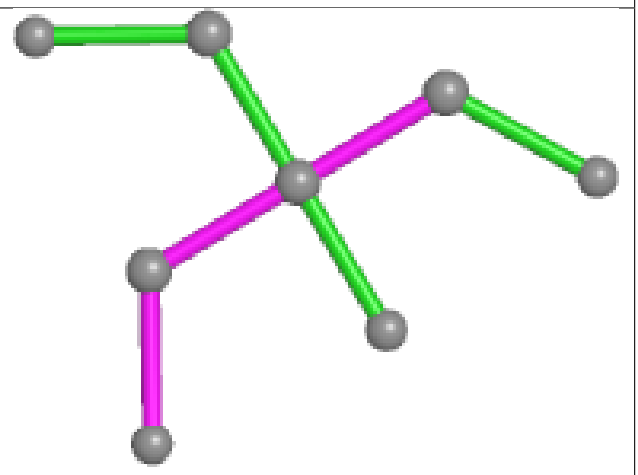
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



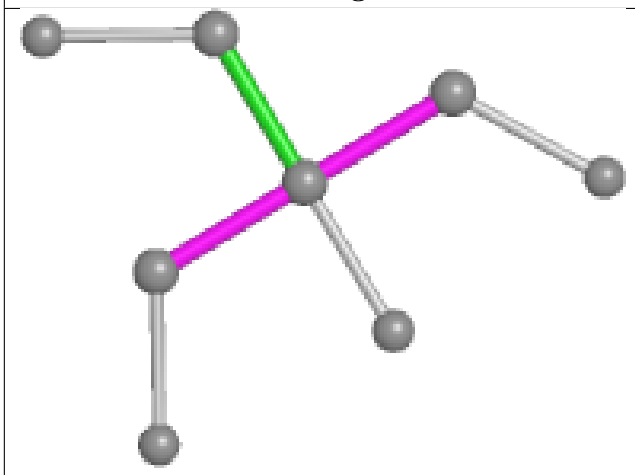
Ligand TRS B 603



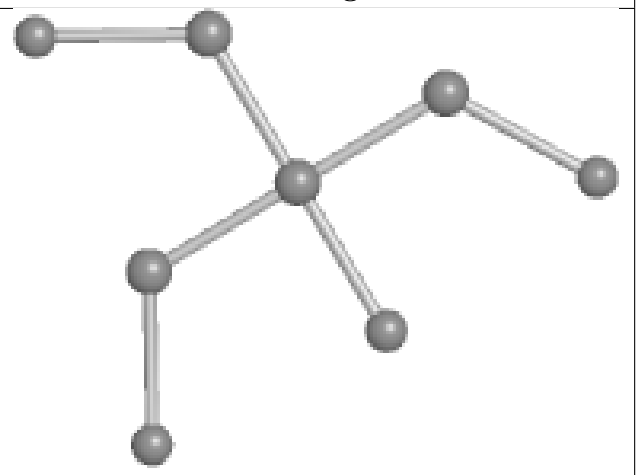
Bond lengths



Bond angles

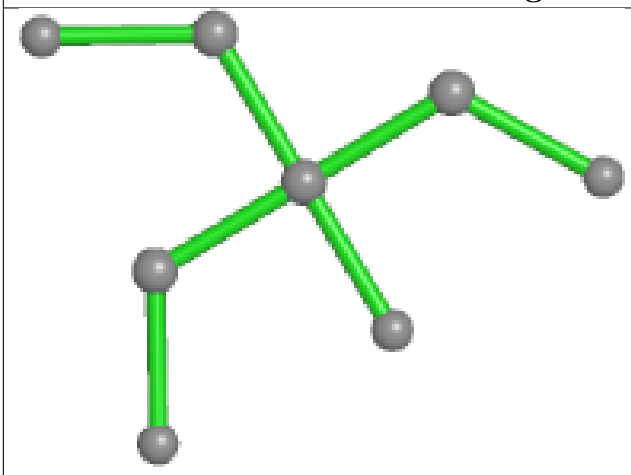


Torsions

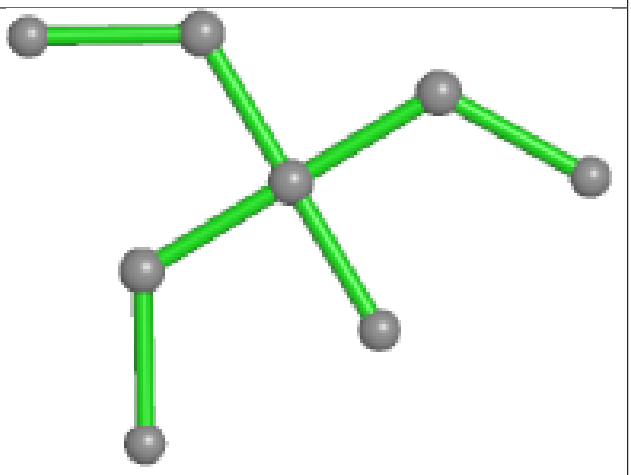


Rings

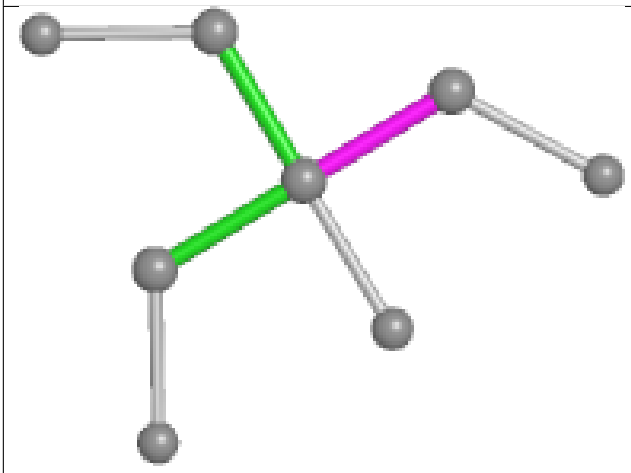
Ligand TRS D 603



Bond lengths



Bond angles



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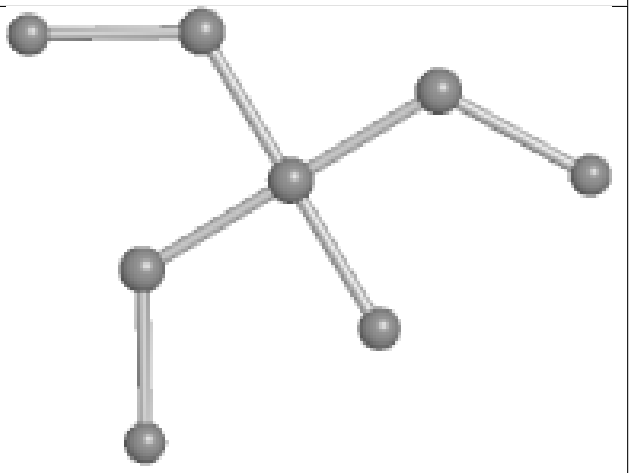
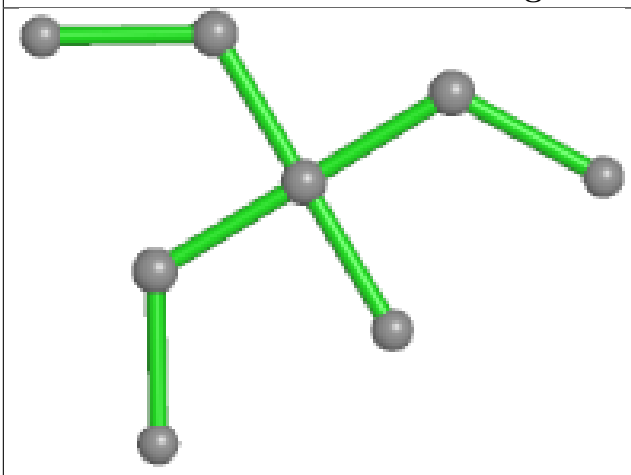
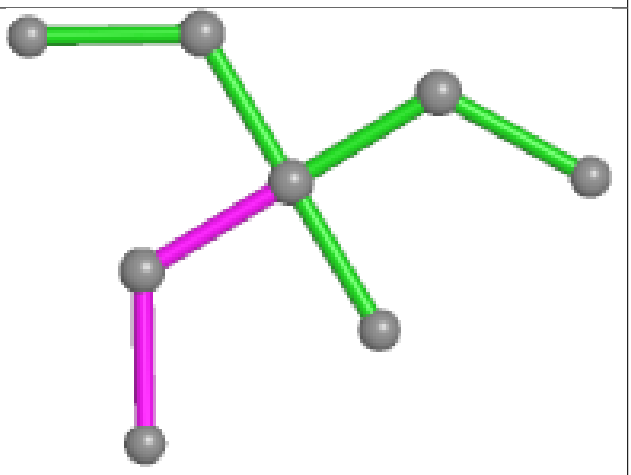


Rings

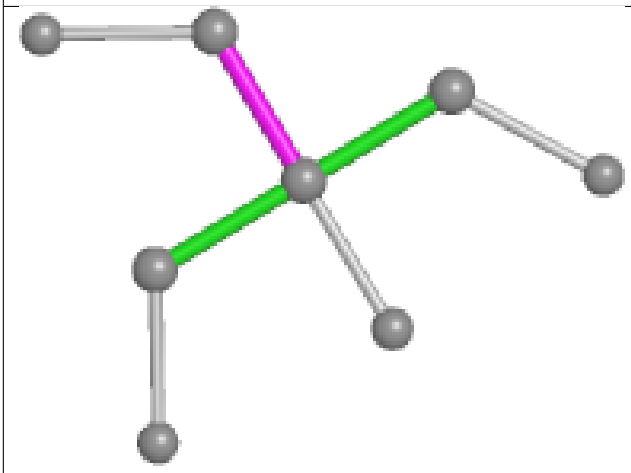
Ligand TRS G 603



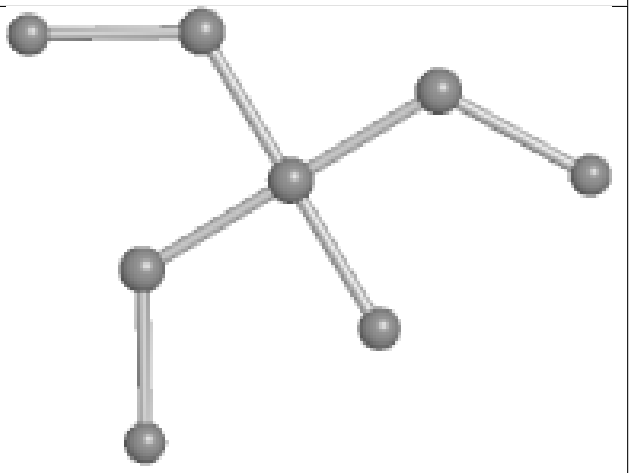
Bond lengths



Bond angles

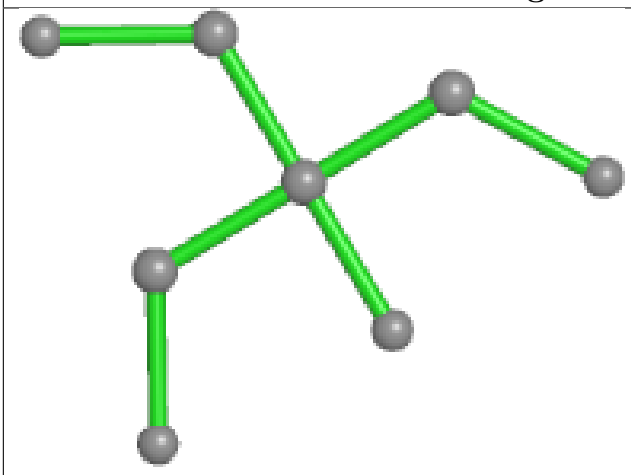


Torsions

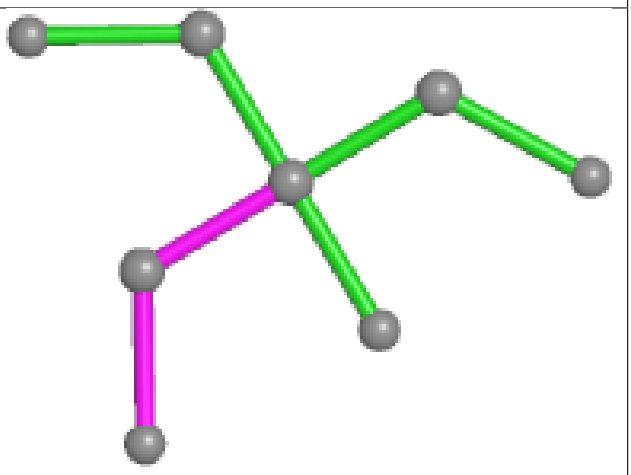


Rings

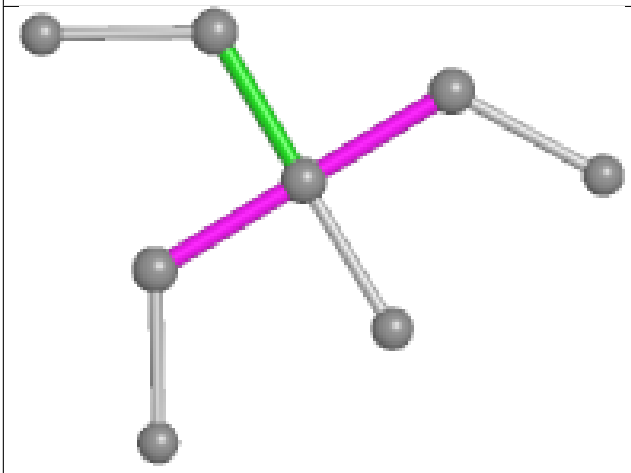
Ligand TRS F 603



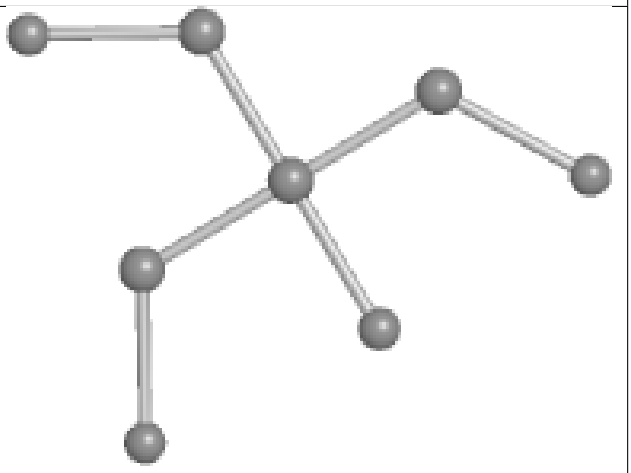
Bond lengths



Bond angles

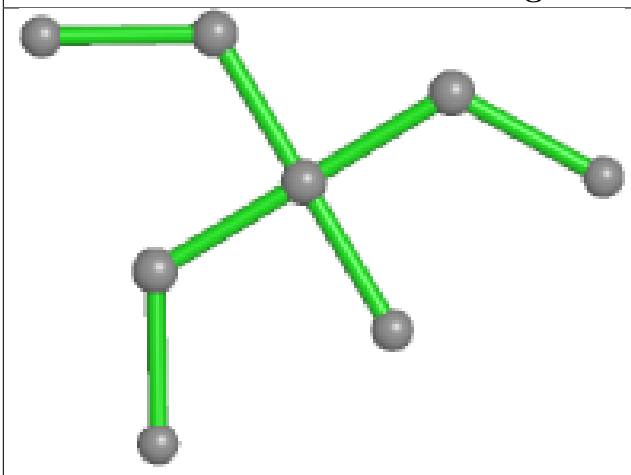


Torsions

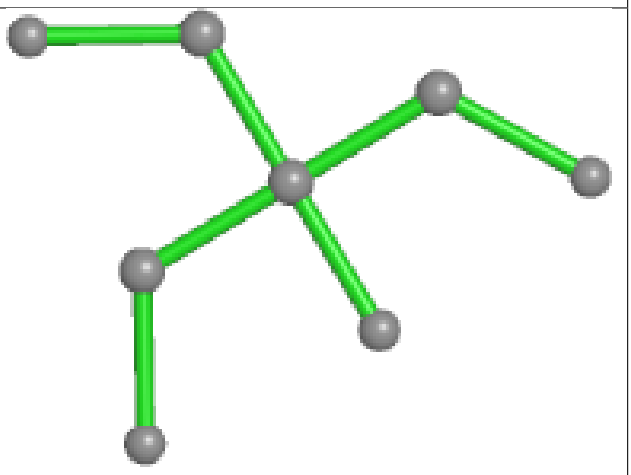


Rings

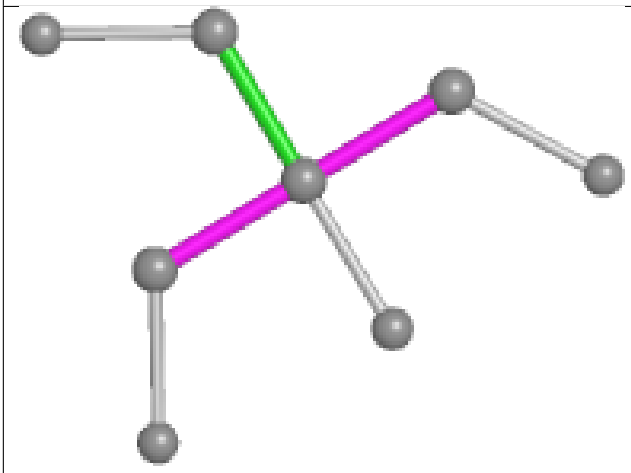
Ligand TRS A 603



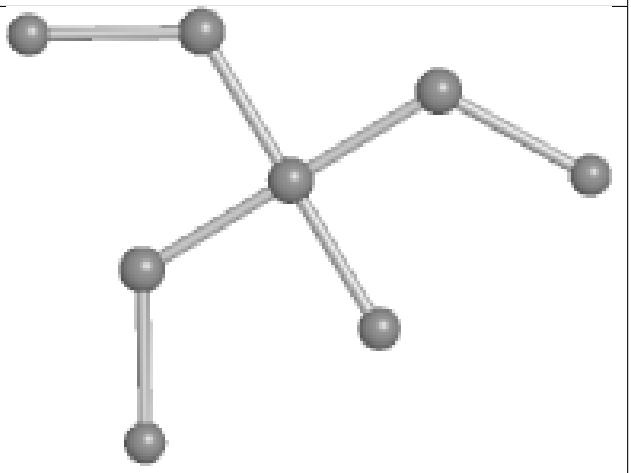
Bond lengths



Bond angles

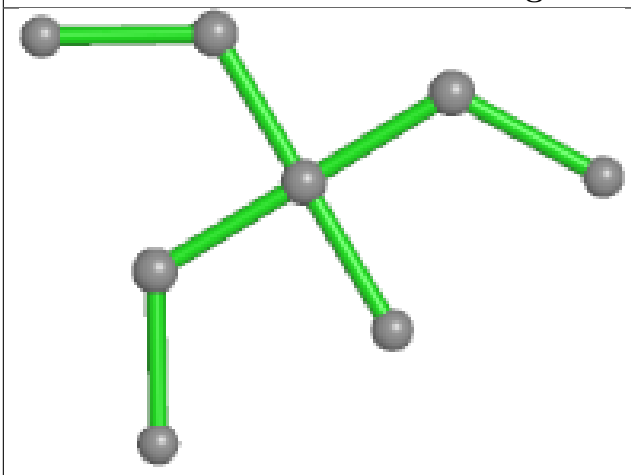


Torsions

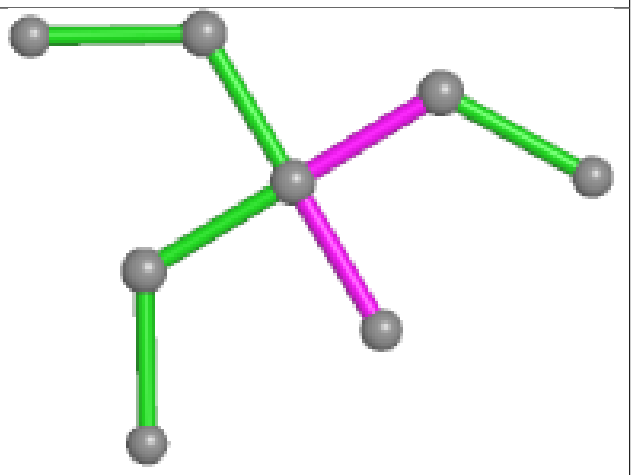


Rings

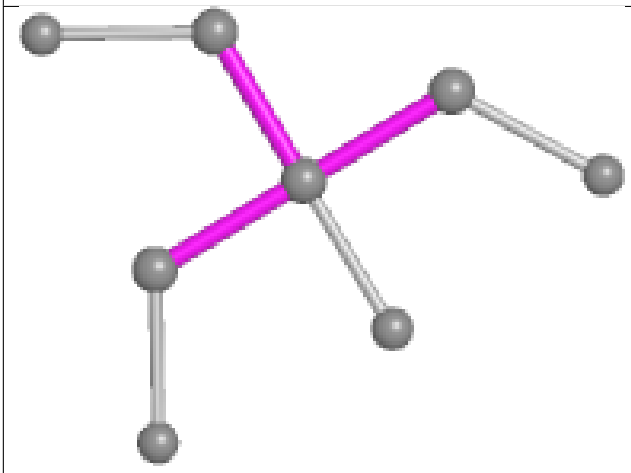
Ligand TRS C 603



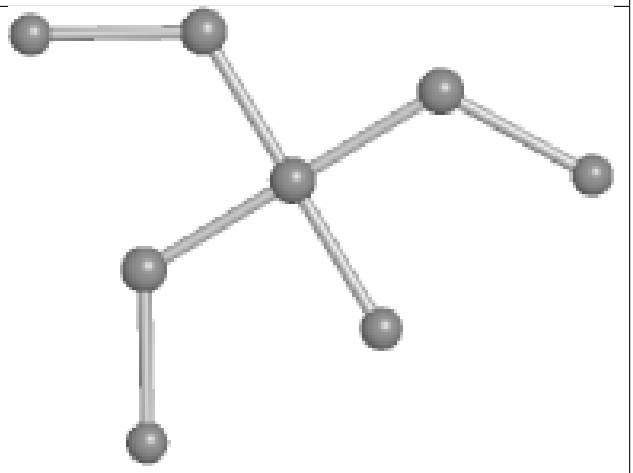
Bond lengths



Bond angles

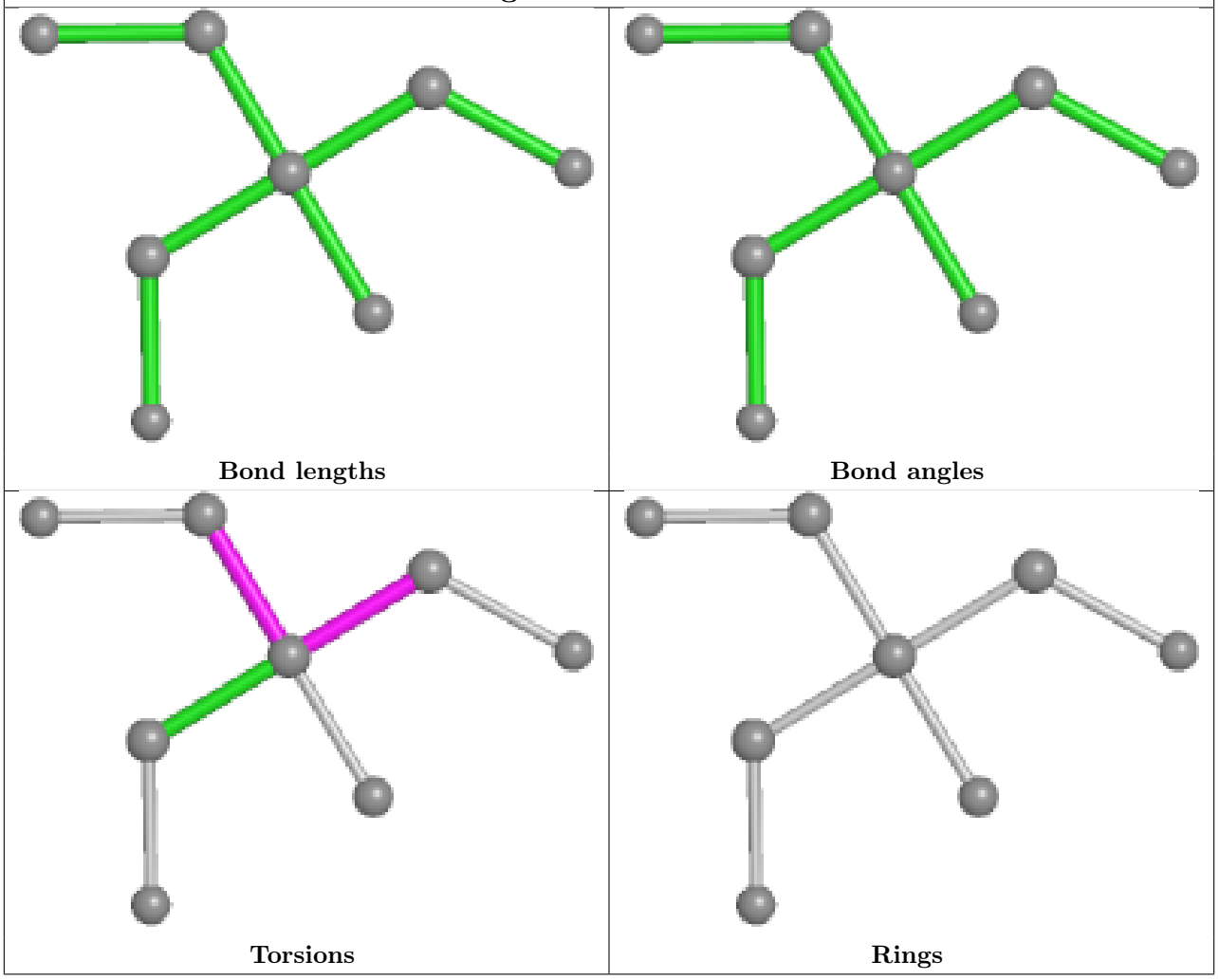


Torsions



Rings

Ligand TRS E 603



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	A	548/571 (95%)	-1.74	0	100	100	17, 30, 44, 72	0
1	B	548/571 (95%)	-1.74	0	100	100	18, 29, 45, 80	0
1	C	548/571 (95%)	-1.74	0	100	100	17, 30, 47, 76	0
1	D	548/571 (95%)	-1.72	0	100	100	19, 32, 49, 68	0
1	E	548/571 (95%)	-1.73	0	100	100	18, 30, 45, 58	0
1	F	548/571 (95%)	-1.75	0	100	100	17, 29, 46, 72	0
1	G	548/571 (95%)	-1.72	0	100	100	17, 32, 50, 78	0
1	H	548/571 (95%)	-1.71	0	100	100	18, 34, 55, 92	0
All	All	4384/4568 (95%)	-1.73	0	100	100	17, 31, 48, 92	0

There are no RSRZ outliers to report.

6.2 Non-standard residues in protein, DNA, RNA chains

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

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands

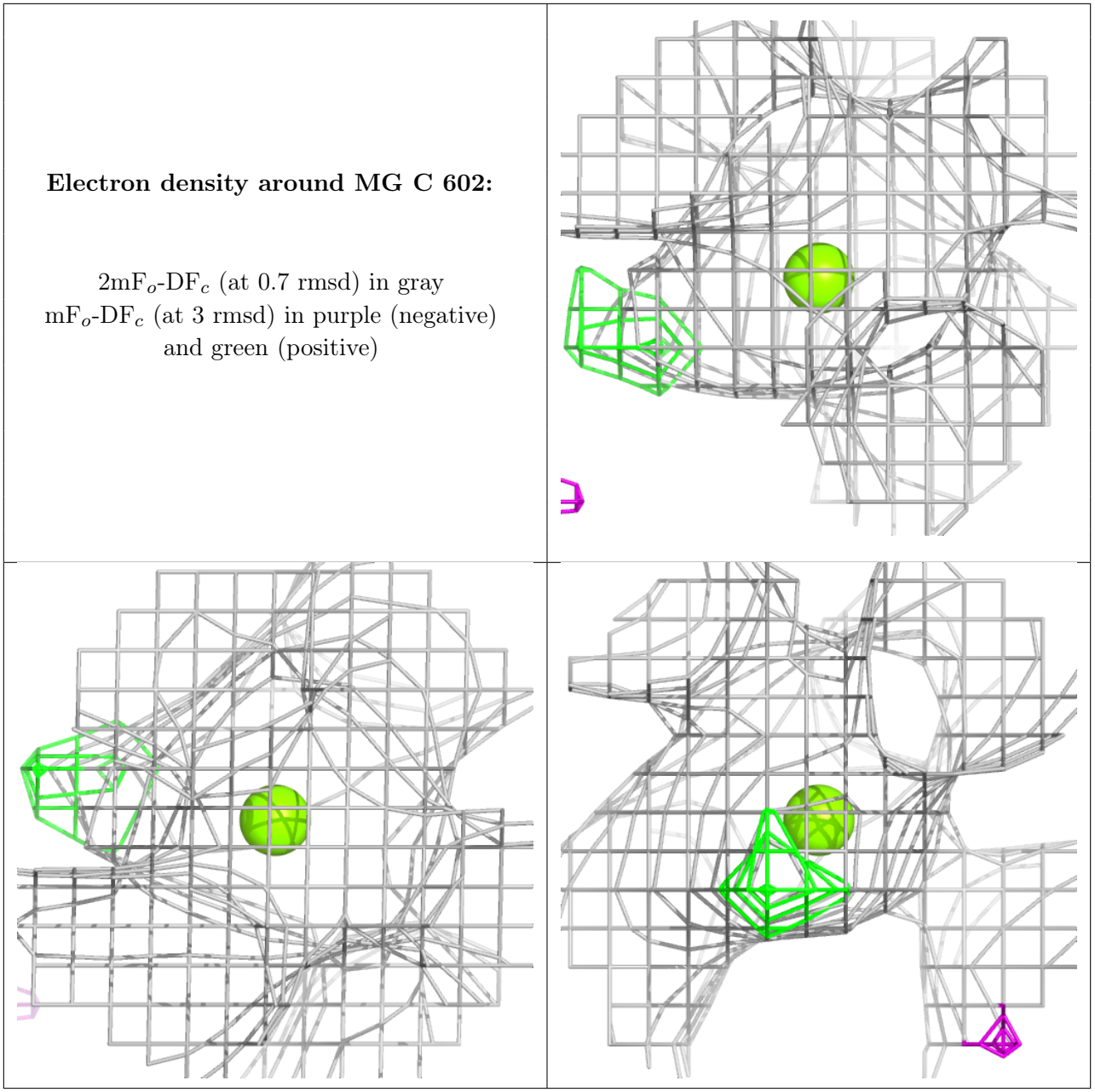
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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	MG	C	602	1/1	0.98	0.03	30,30,30,30	0
4	TRS	B	603	8/8	0.98	0.04	28,33,37,39	0
4	TRS	G	603	8/8	0.98	0.04	34,38,46,51	0
2	CA	C	601	1/1	0.99	0.01	33,33,33,33	0
3	MG	D	602	1/1	0.99	0.02	32,32,32,32	0
3	MG	E	602	1/1	0.99	0.04	34,34,34,34	0
3	MG	F	602	1/1	0.99	0.03	29,29,29,29	0
3	MG	G	602	1/1	0.99	0.03	31,31,31,31	0
3	MG	H	602	1/1	0.99	0.02	27,27,27,27	0
4	TRS	A	603	8/8	0.99	0.02	26,31,34,36	0
2	CA	H	601	1/1	0.99	0.02	39,39,39,39	0
4	TRS	C	603	8/8	0.99	0.03	35,36,41,43	0
4	TRS	D	603	8/8	0.99	0.03	35,38,40,41	0
4	TRS	E	603	8/8	0.99	0.04	31,39,41,57	0
4	TRS	F	603	8/8	0.99	0.03	29,36,43,47	0
3	MG	B	602	1/1	0.99	0.01	24,24,24,24	0
4	TRS	H	603	8/8	0.99	0.04	36,45,47,59	0
2	CA	D	601	1/1	1.00	0.01	35,35,35,35	0
2	CA	E	601	1/1	1.00	0.01	29,29,29,29	0
2	CA	F	601	1/1	1.00	0.01	29,29,29,29	0
2	CA	G	601	1/1	1.00	0.01	32,32,32,32	0
2	CA	B	601	1/1	1.00	0.01	31,31,31,31	0
3	MG	A	602	1/1	1.00	0.01	23,23,23,23	0
2	CA	A	601	1/1	1.00	0.01	27,27,27,27	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.

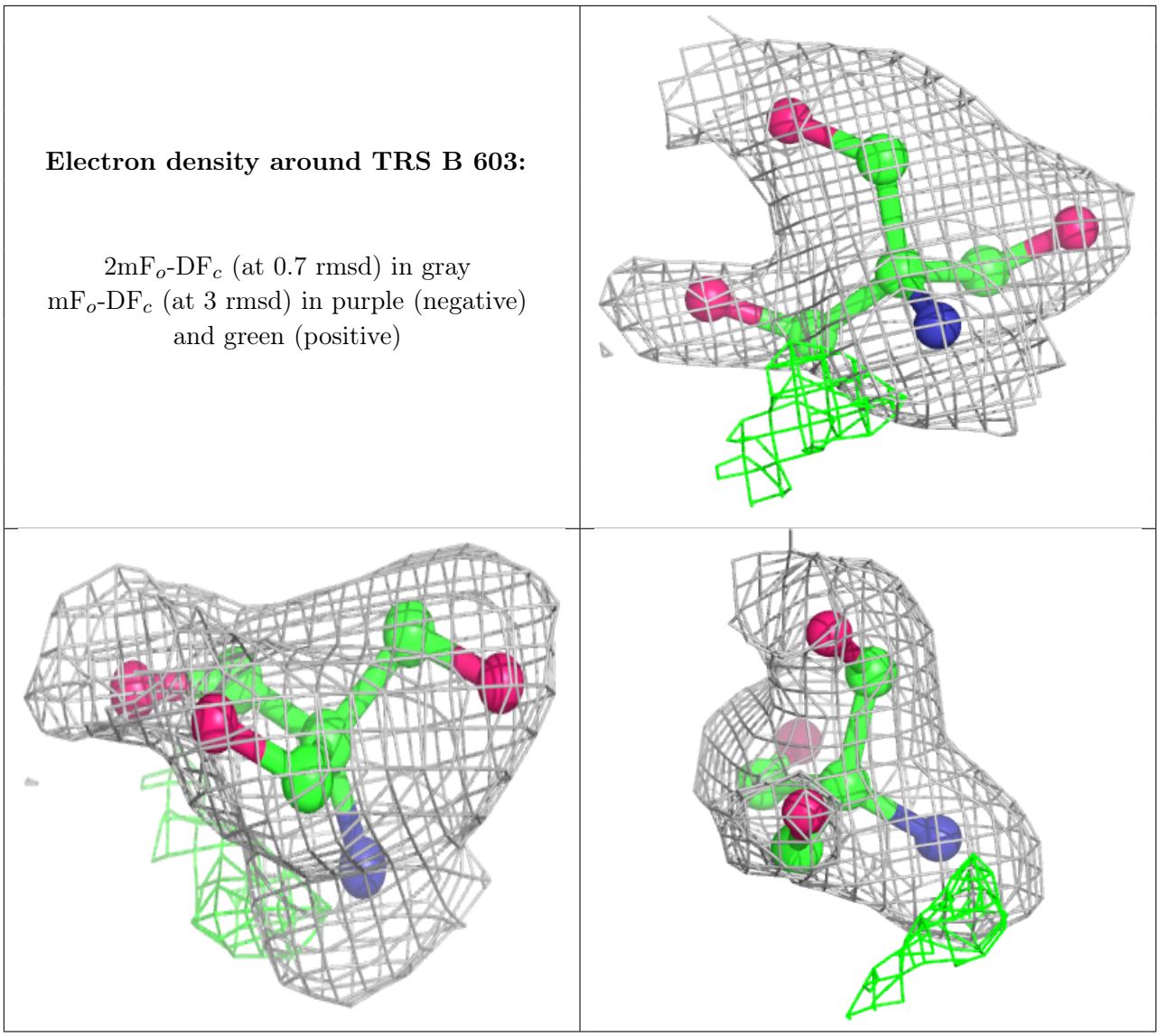
Electron density around MG C 602:

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



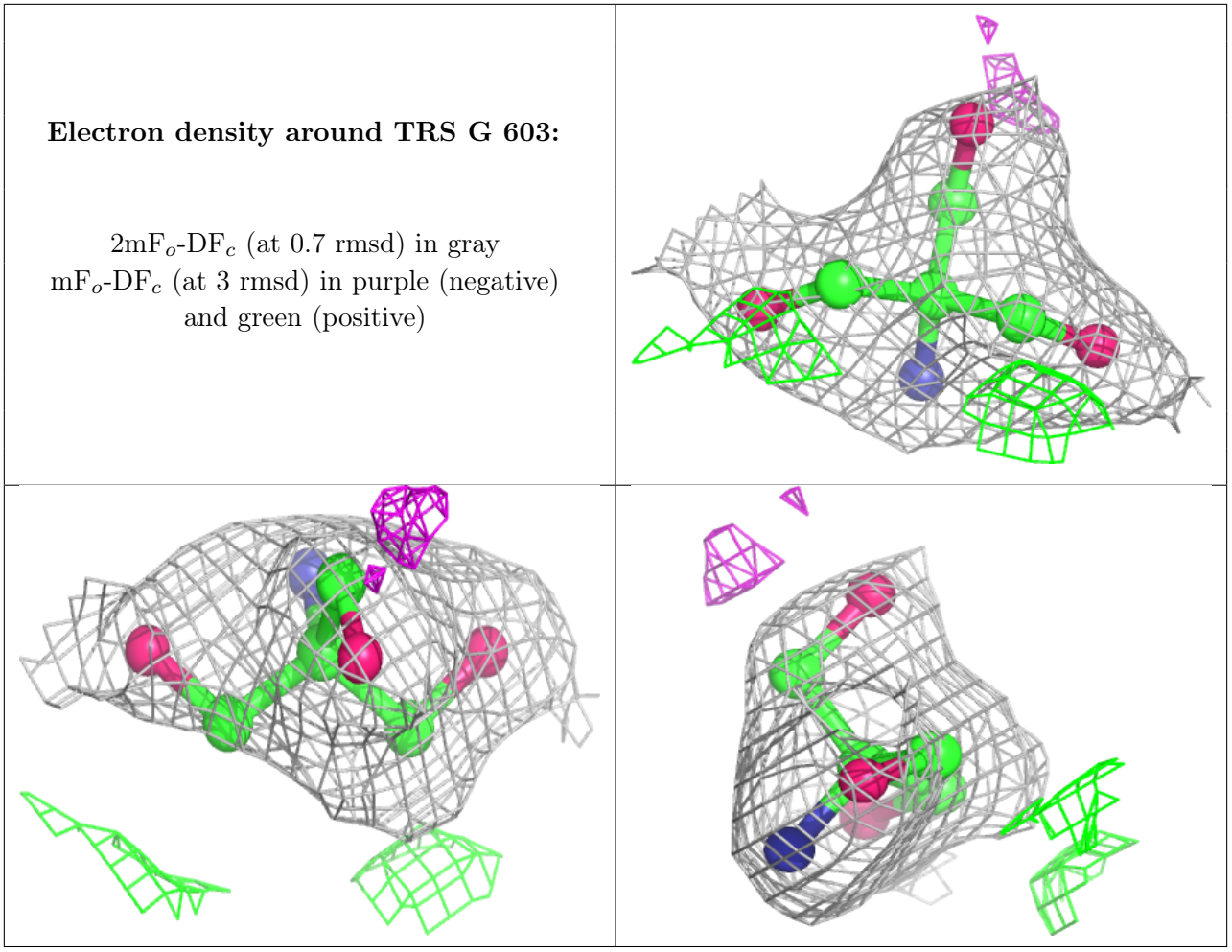
Electron density around TRS B 603:

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



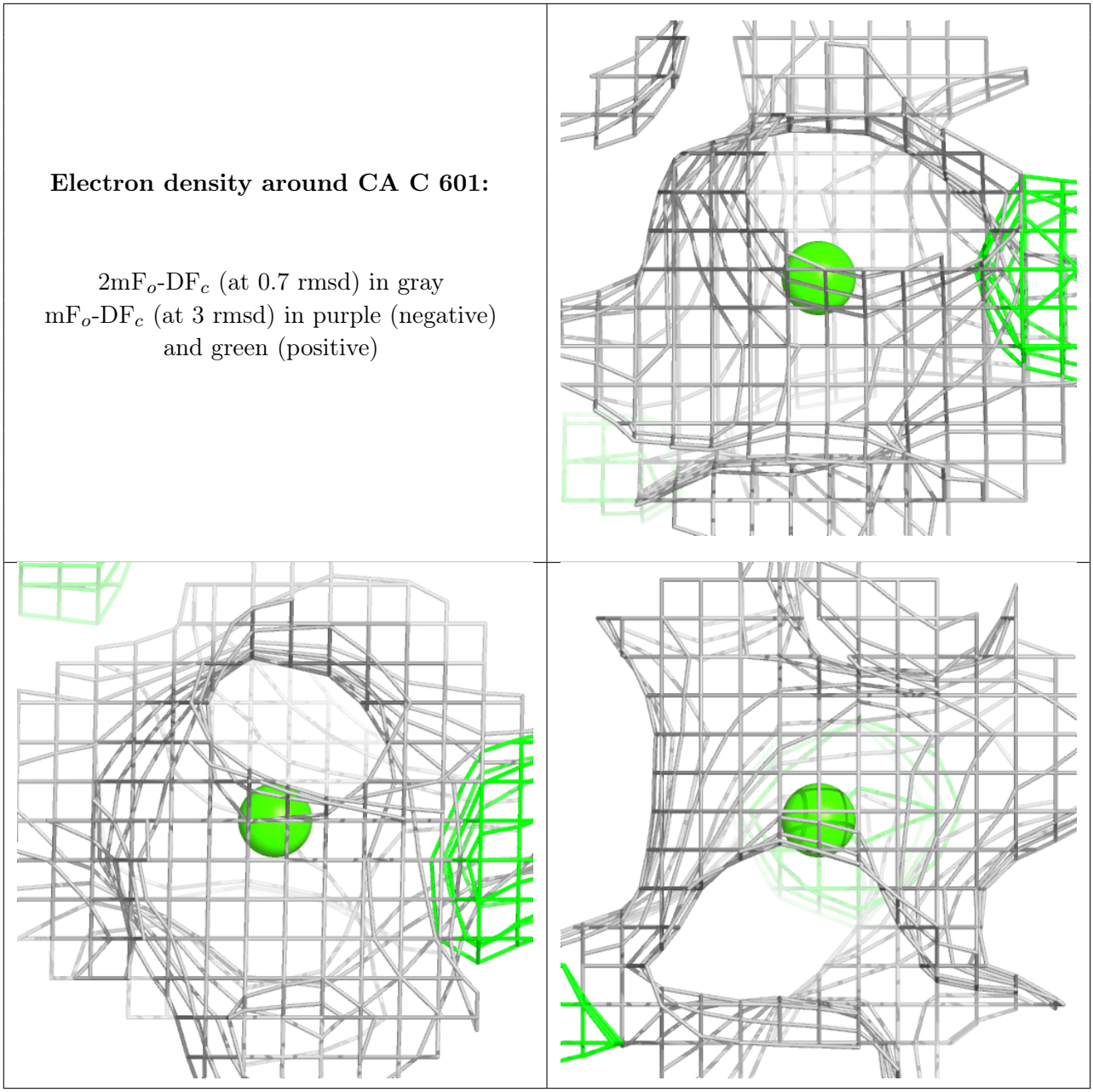
Electron density around TRS G 603:

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



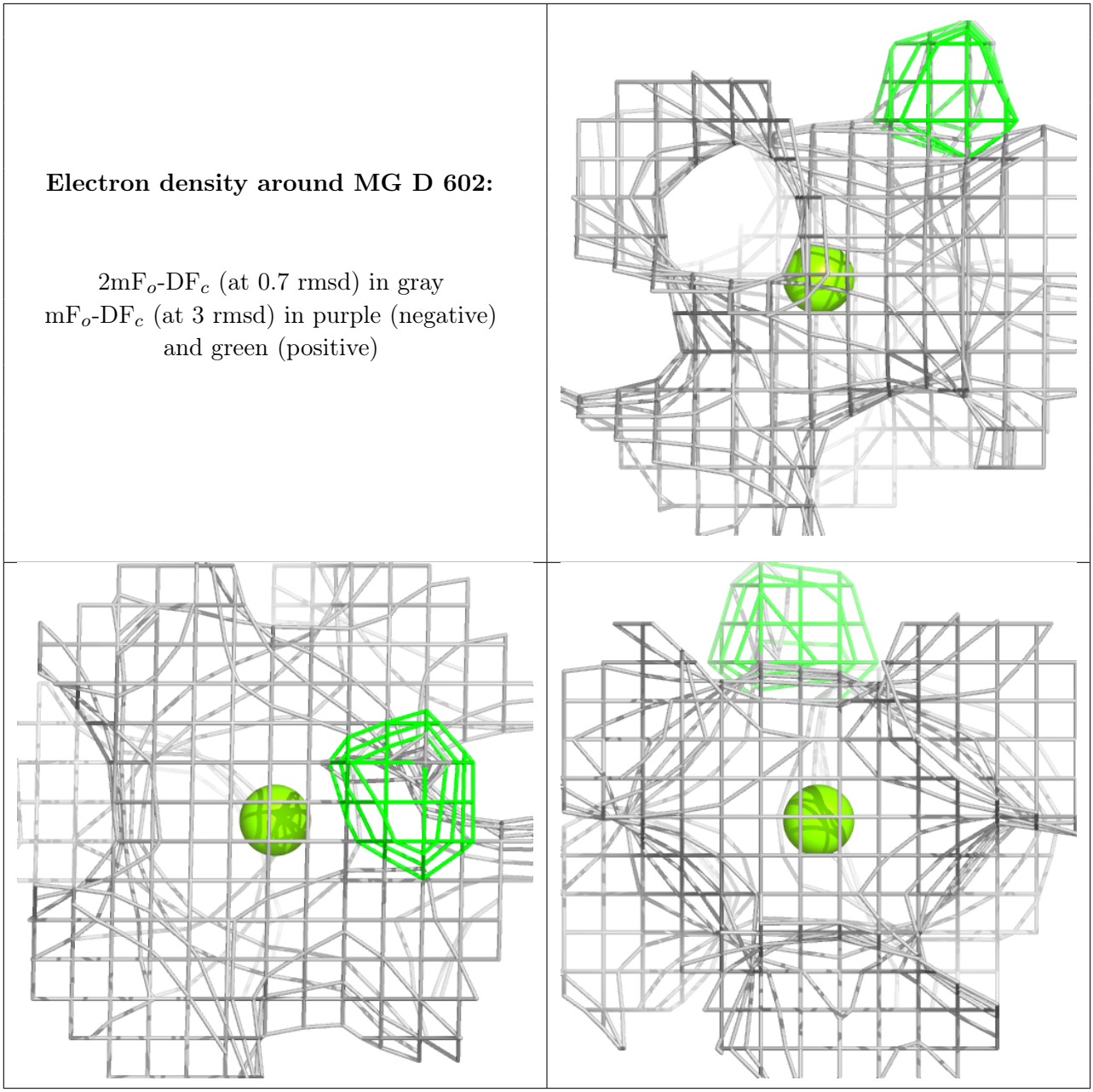
Electron density around CA C 601:

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



Electron density around MG D 602:

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



Electron density around MG E 602:

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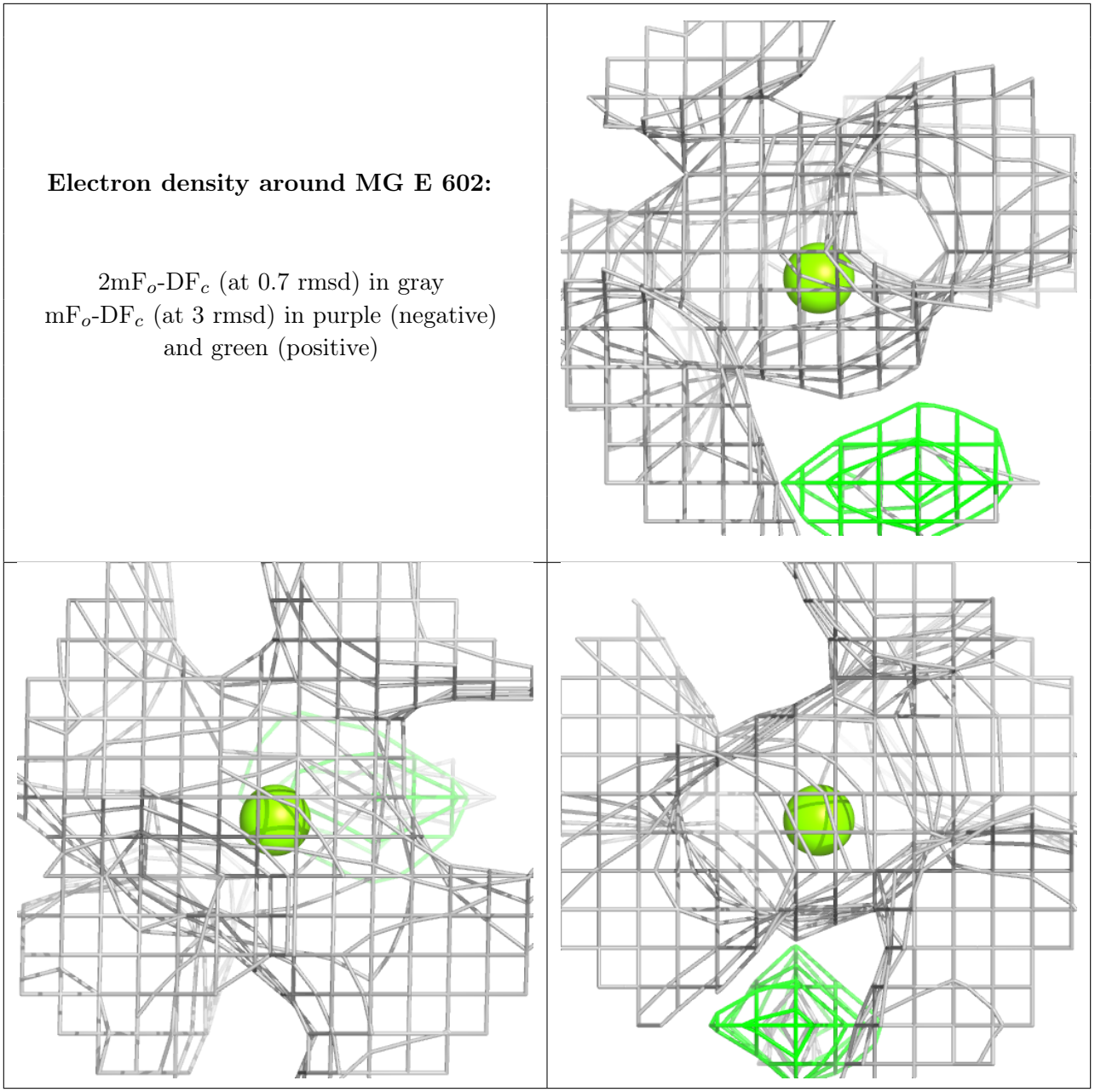
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around MG F 602:

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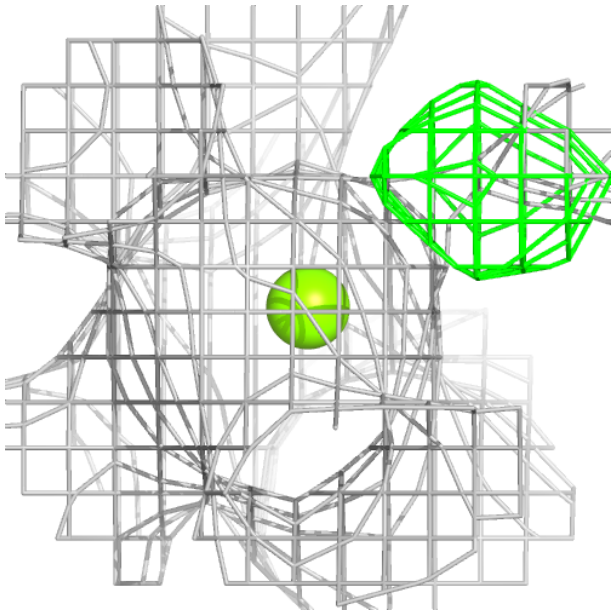
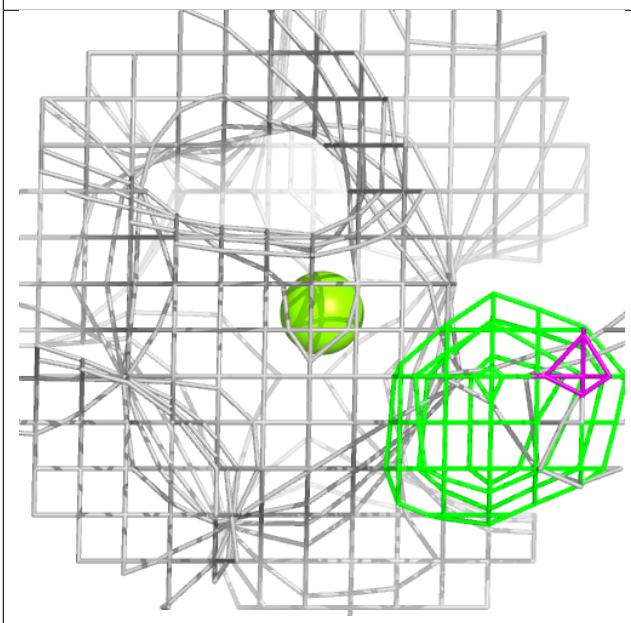
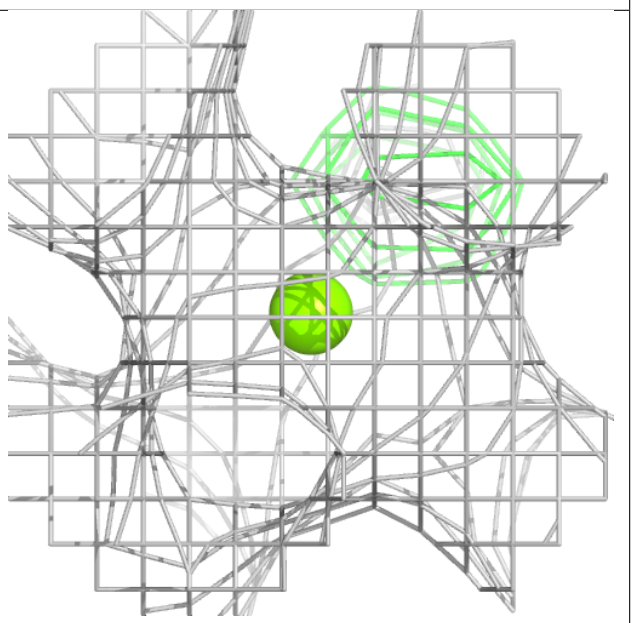
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

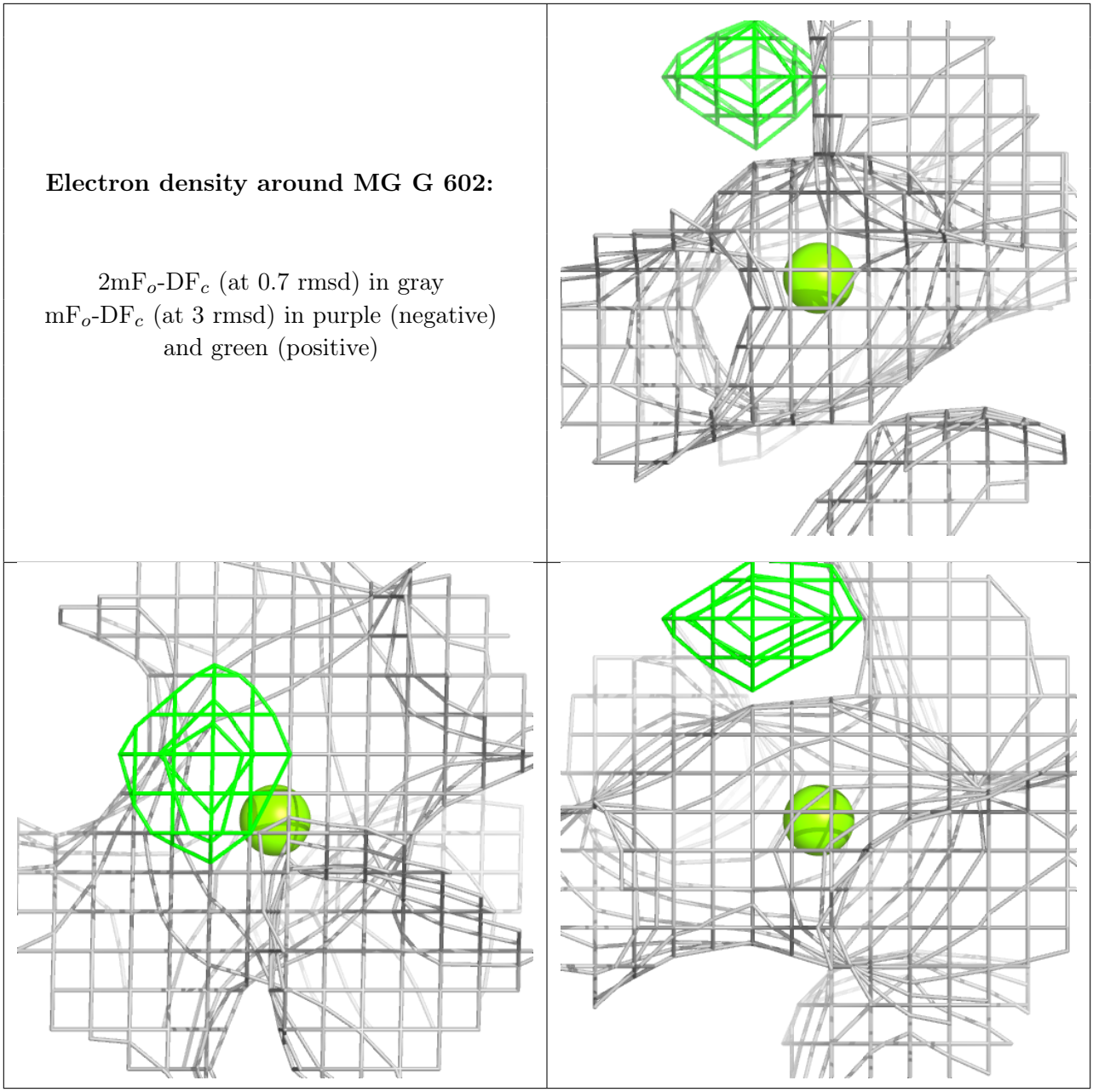






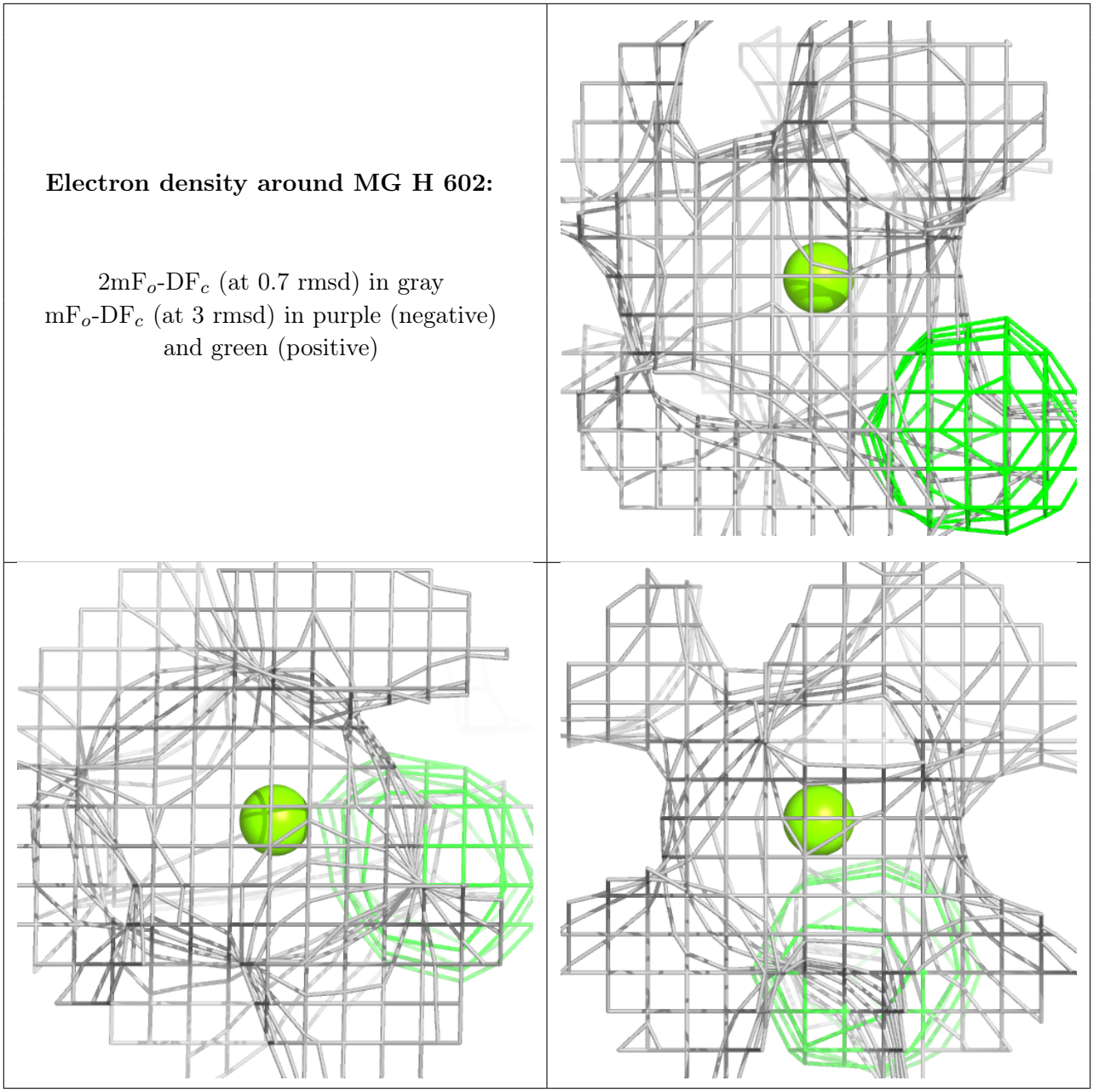
Electron density around MG G 602:

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



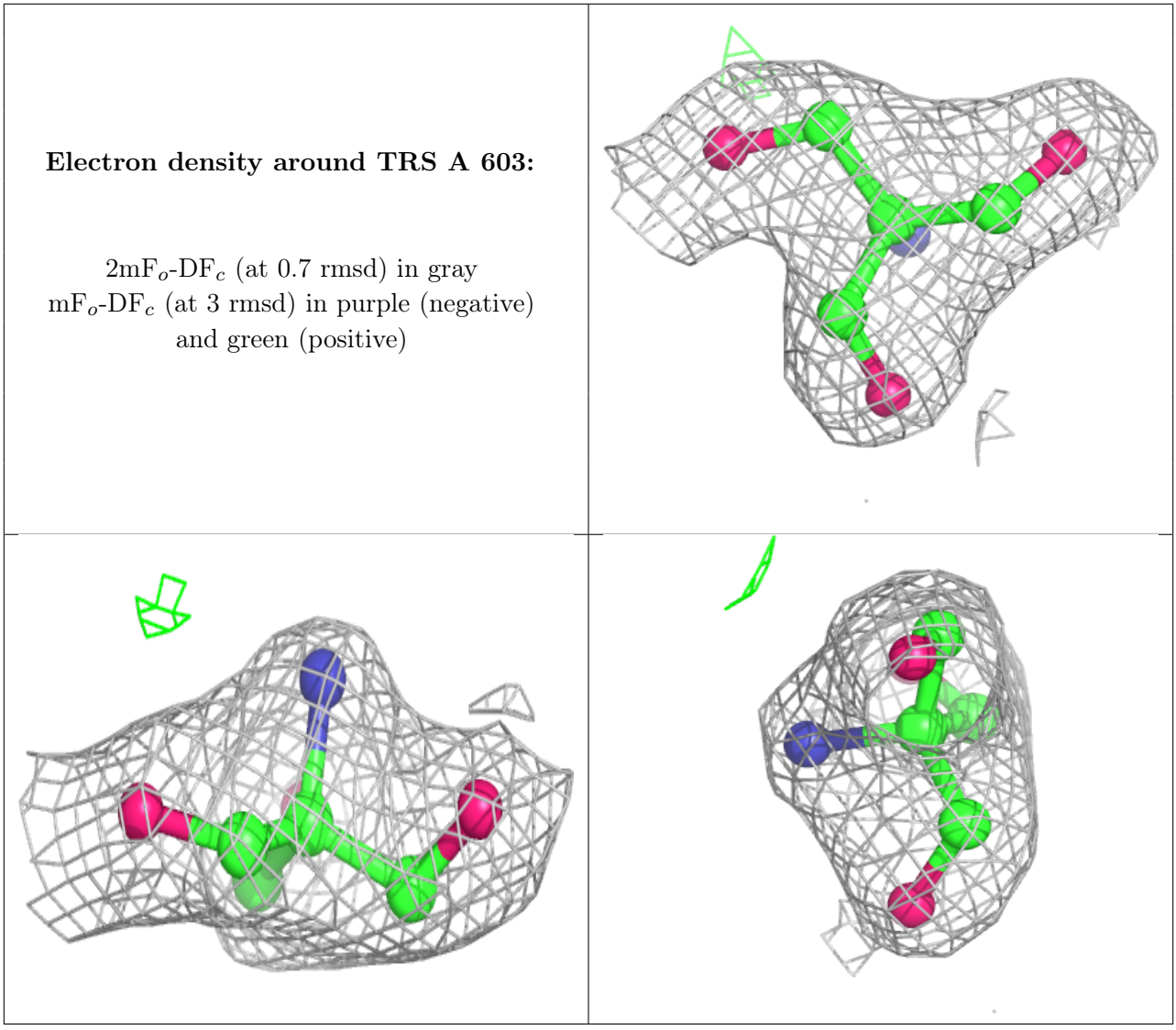
Electron density around MG H 602:

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



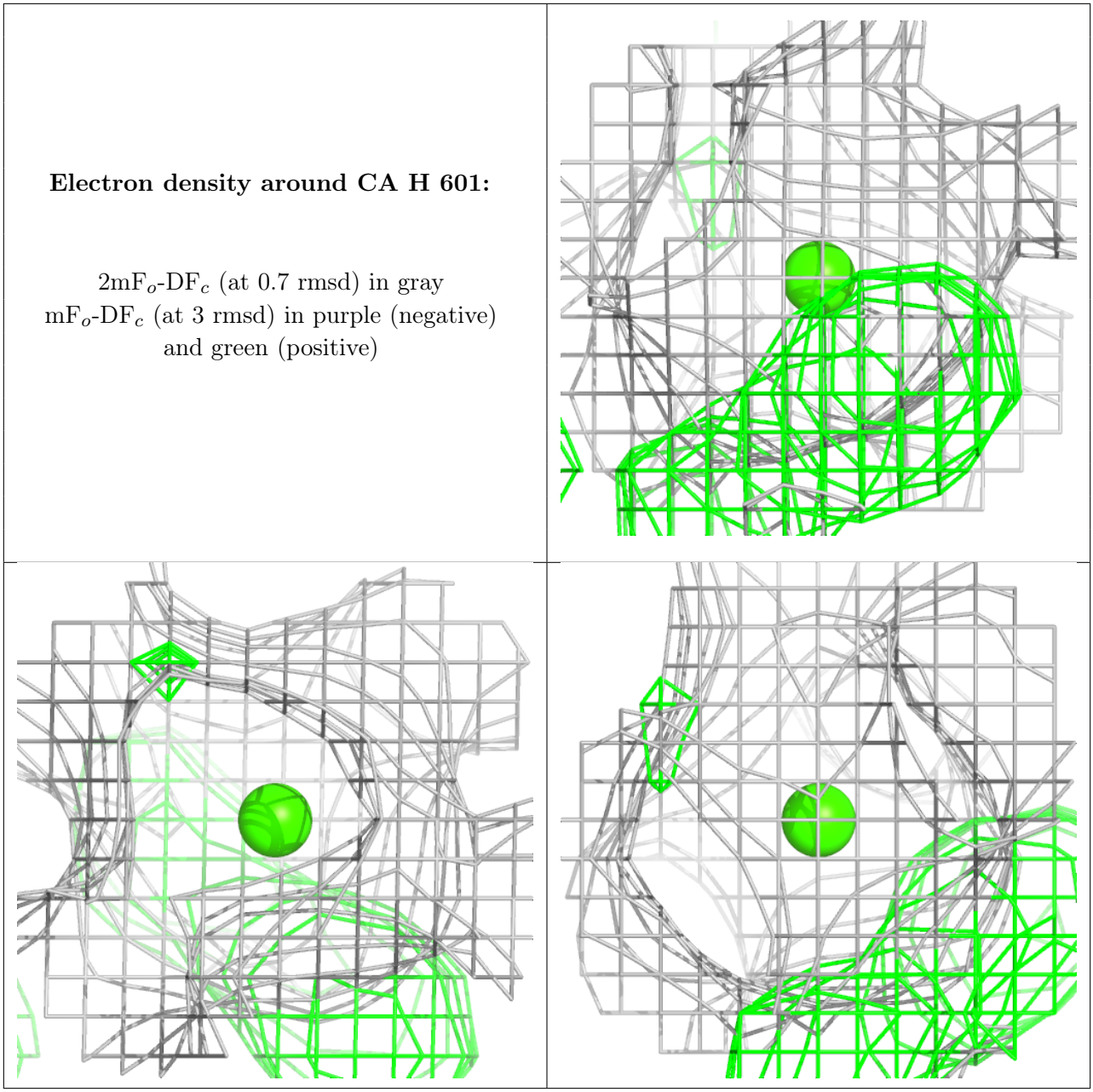
Electron density around TRS A 603:

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



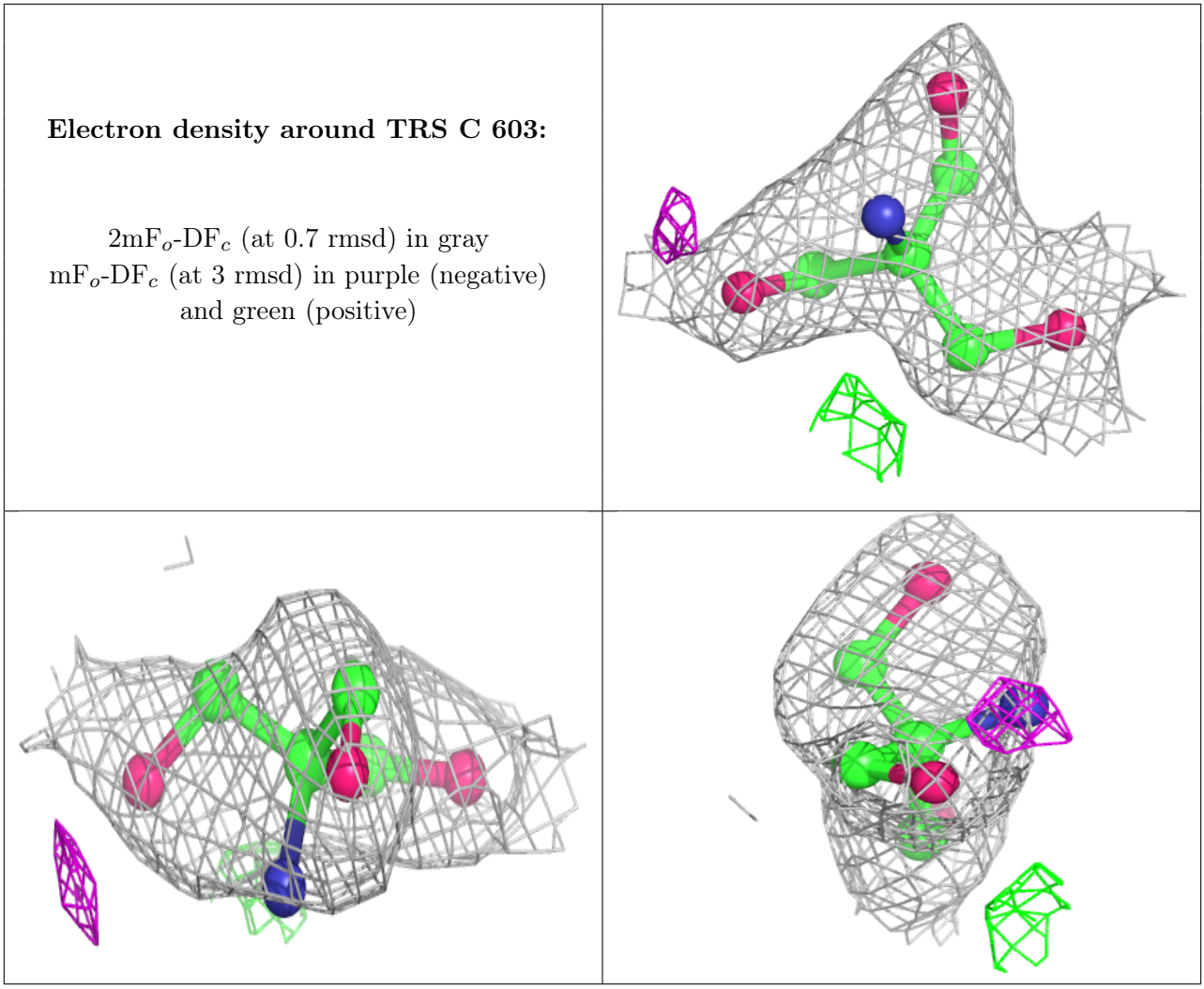
Electron density around CA H 601:

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



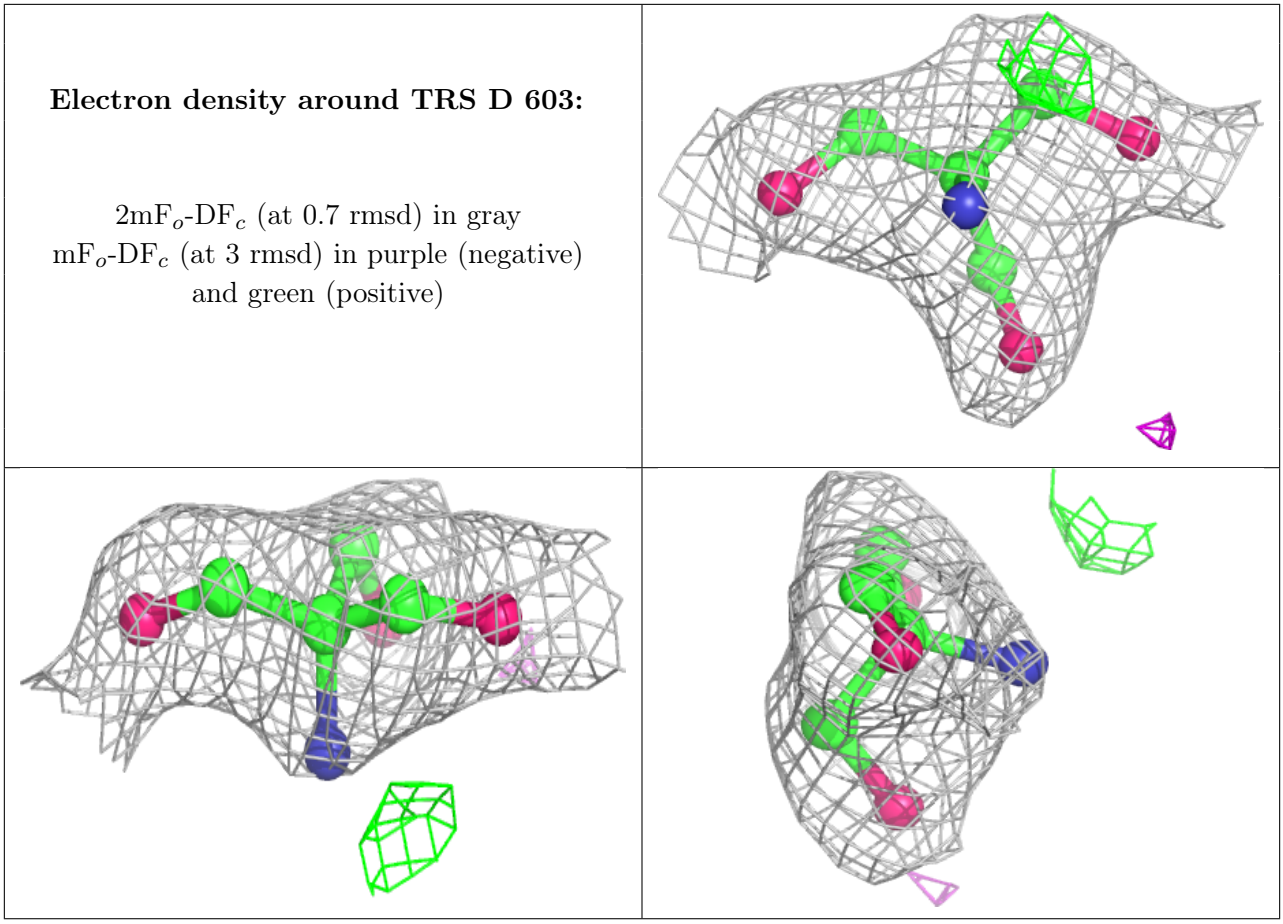
Electron density around TRS C 603:

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



Electron density around TRS D 603:

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



Electron density around TRS E 603:

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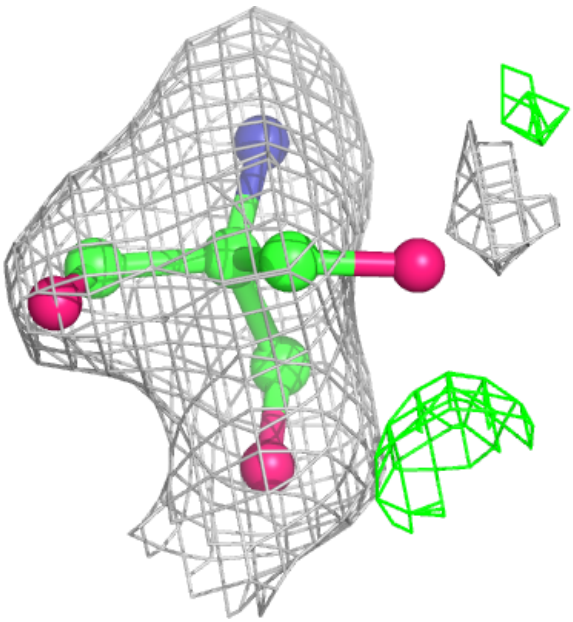
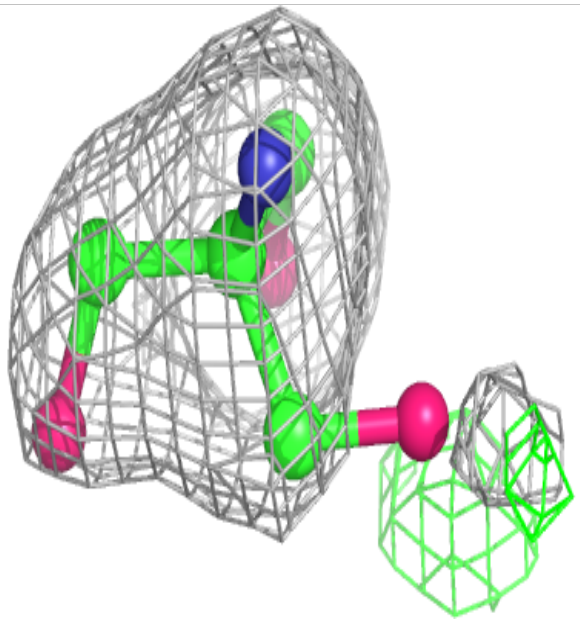
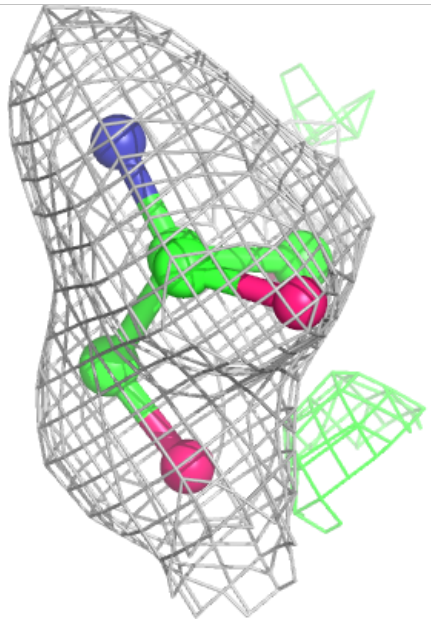
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

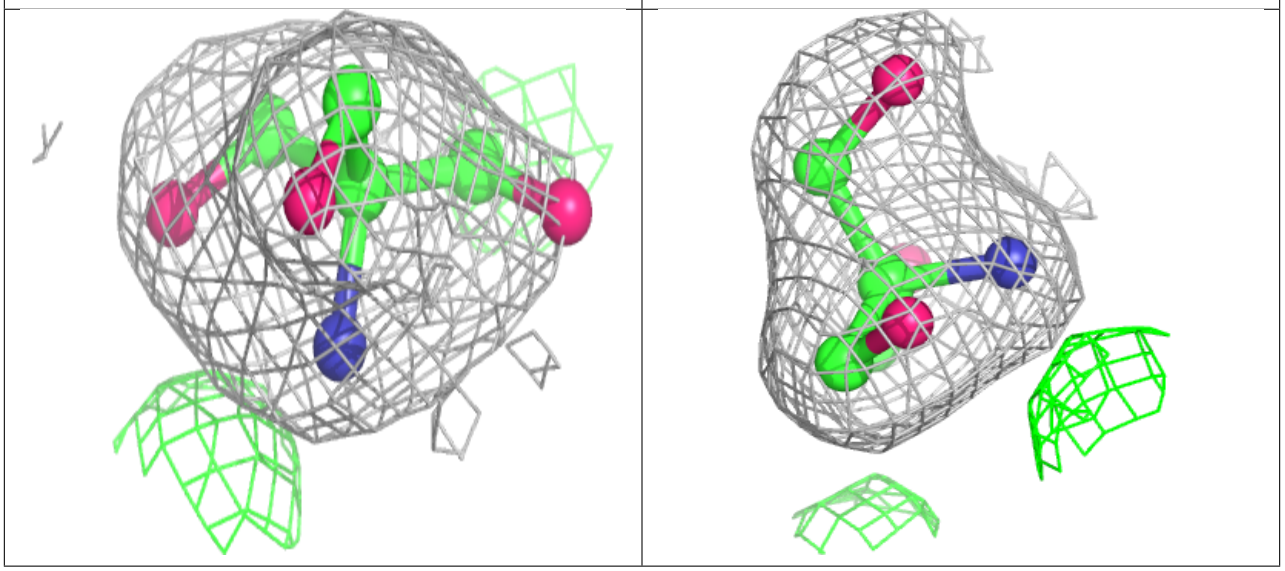






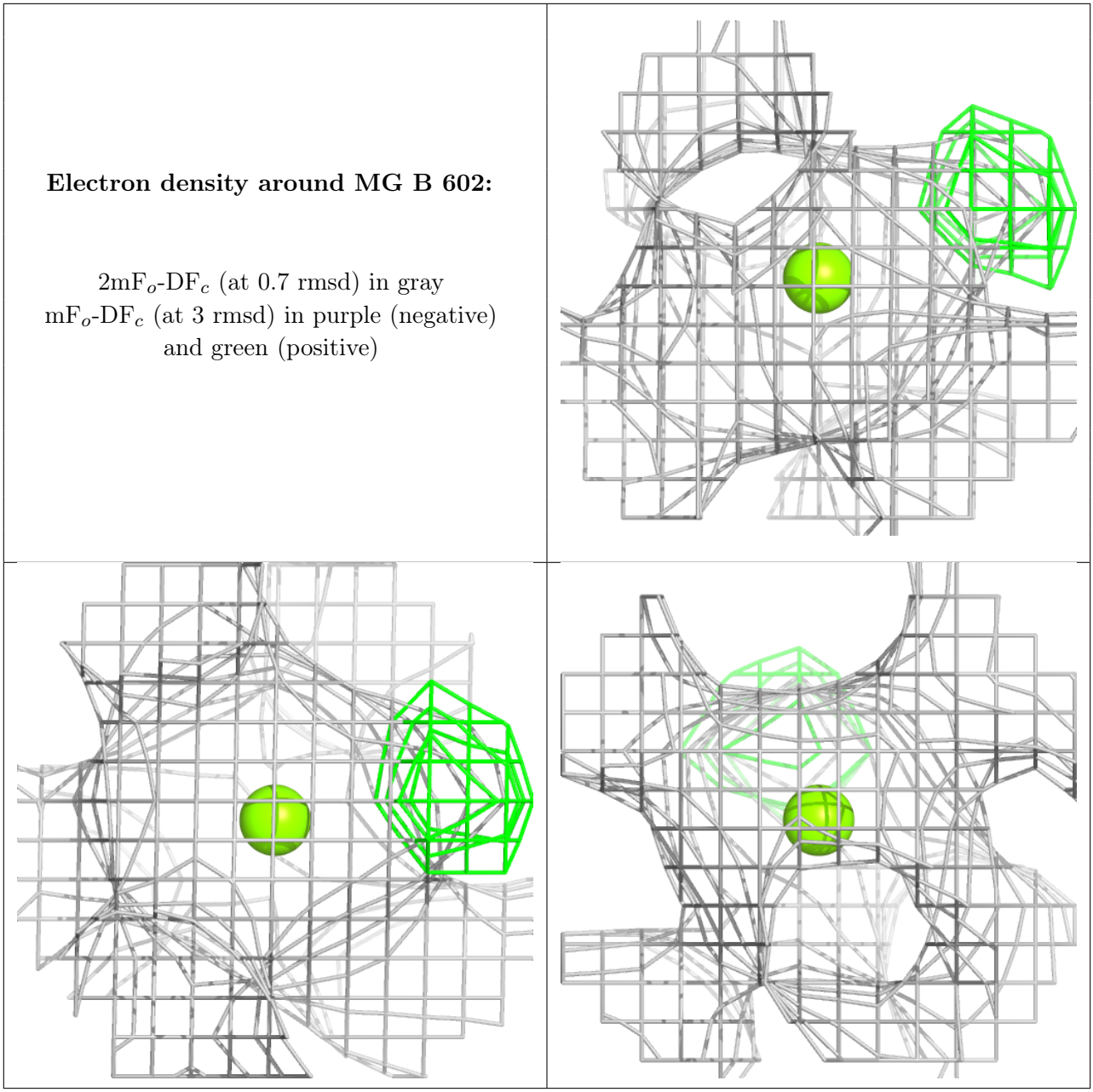
Electron density around TRS F 603:

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



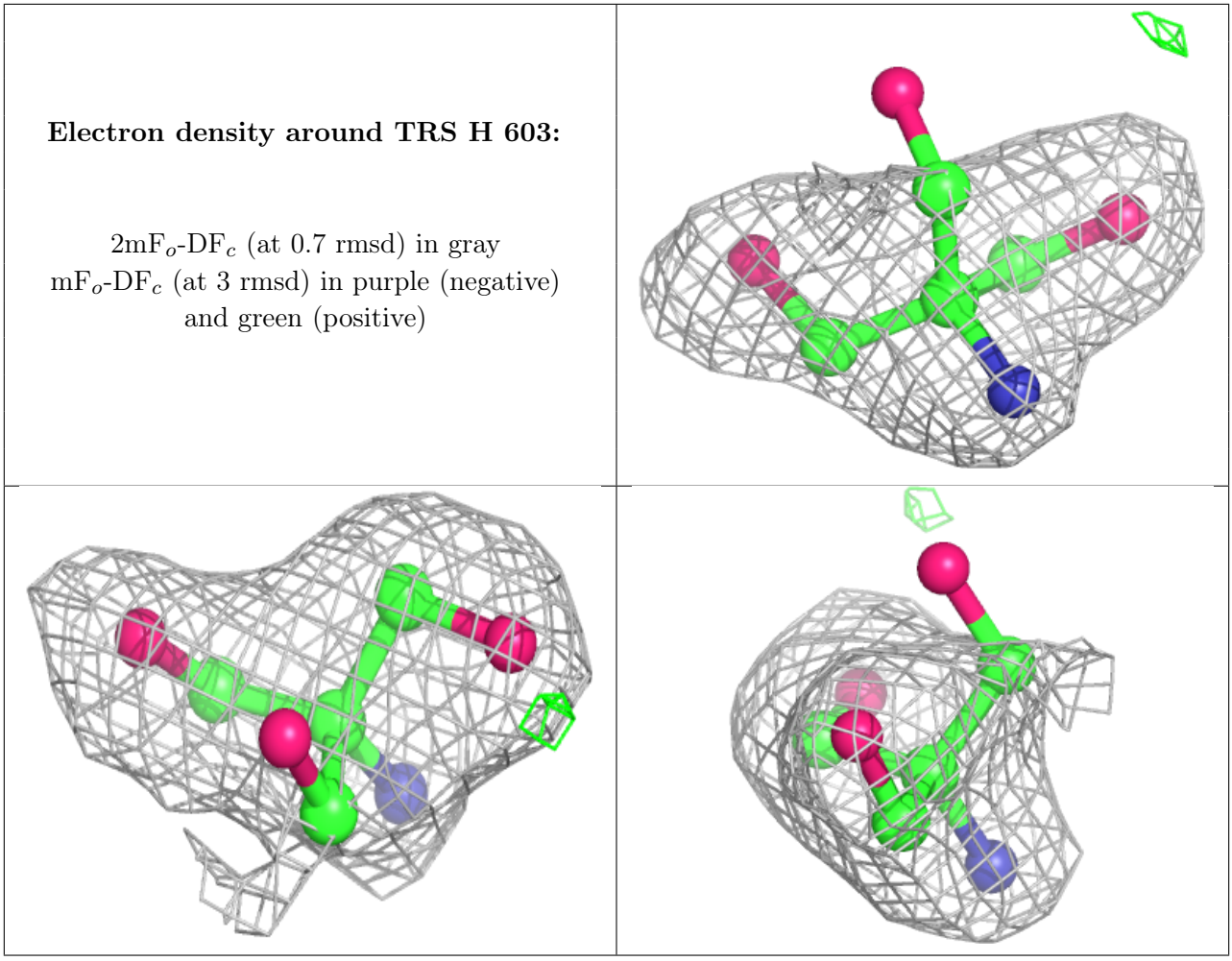
Electron density around MG B 602:

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



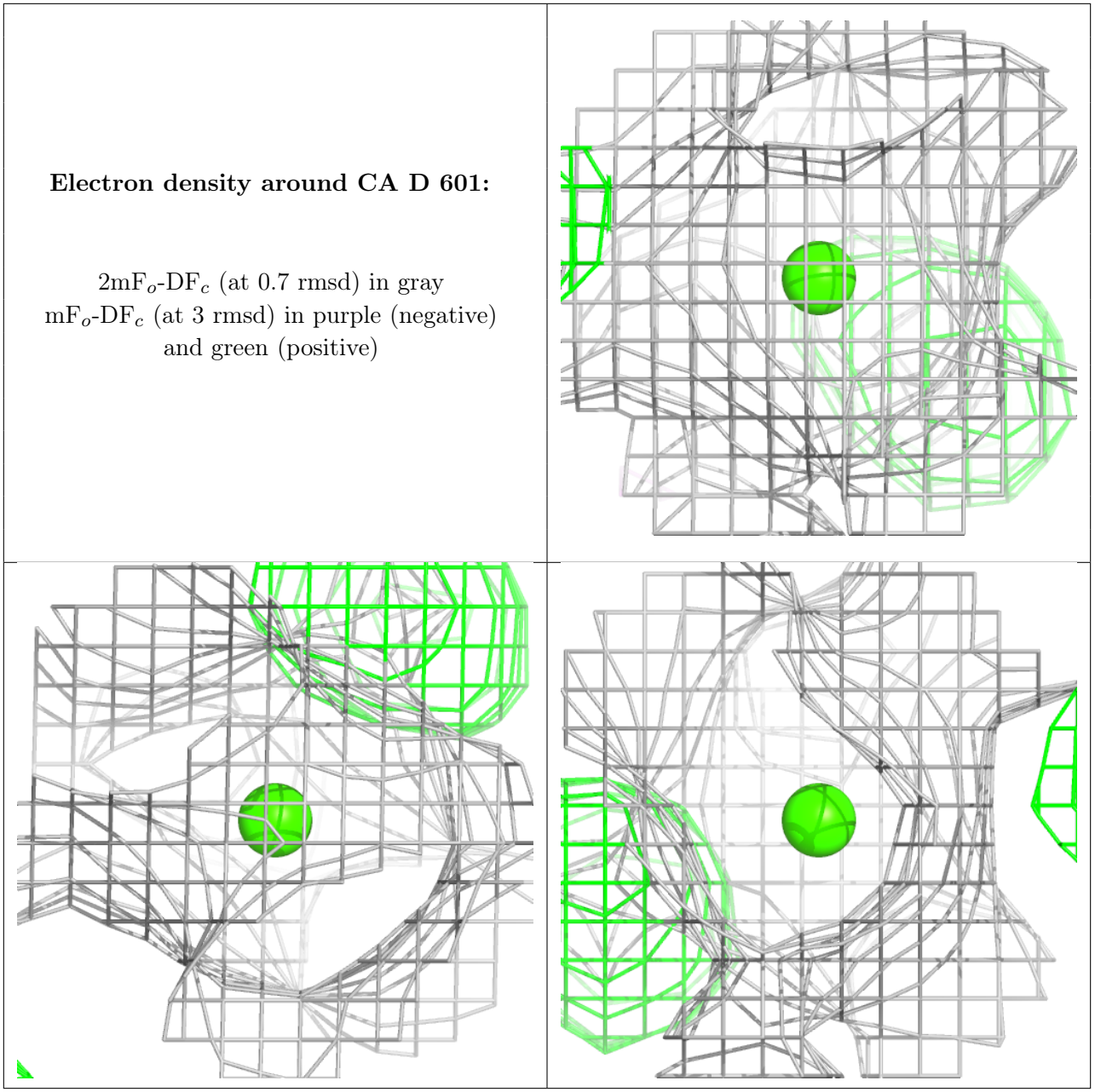
Electron density around TRS H 603:

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



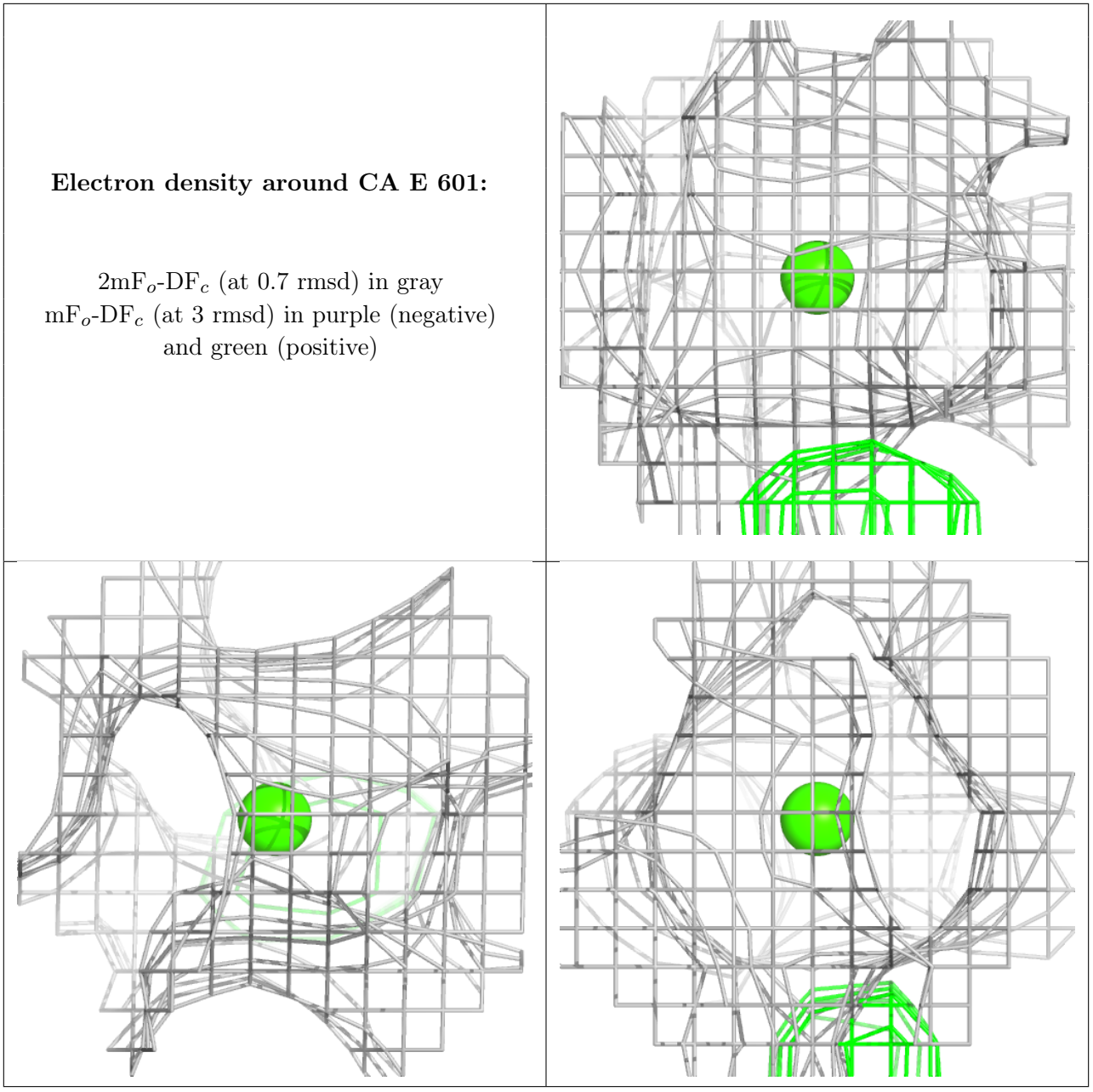
Electron density around CA D 601:

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



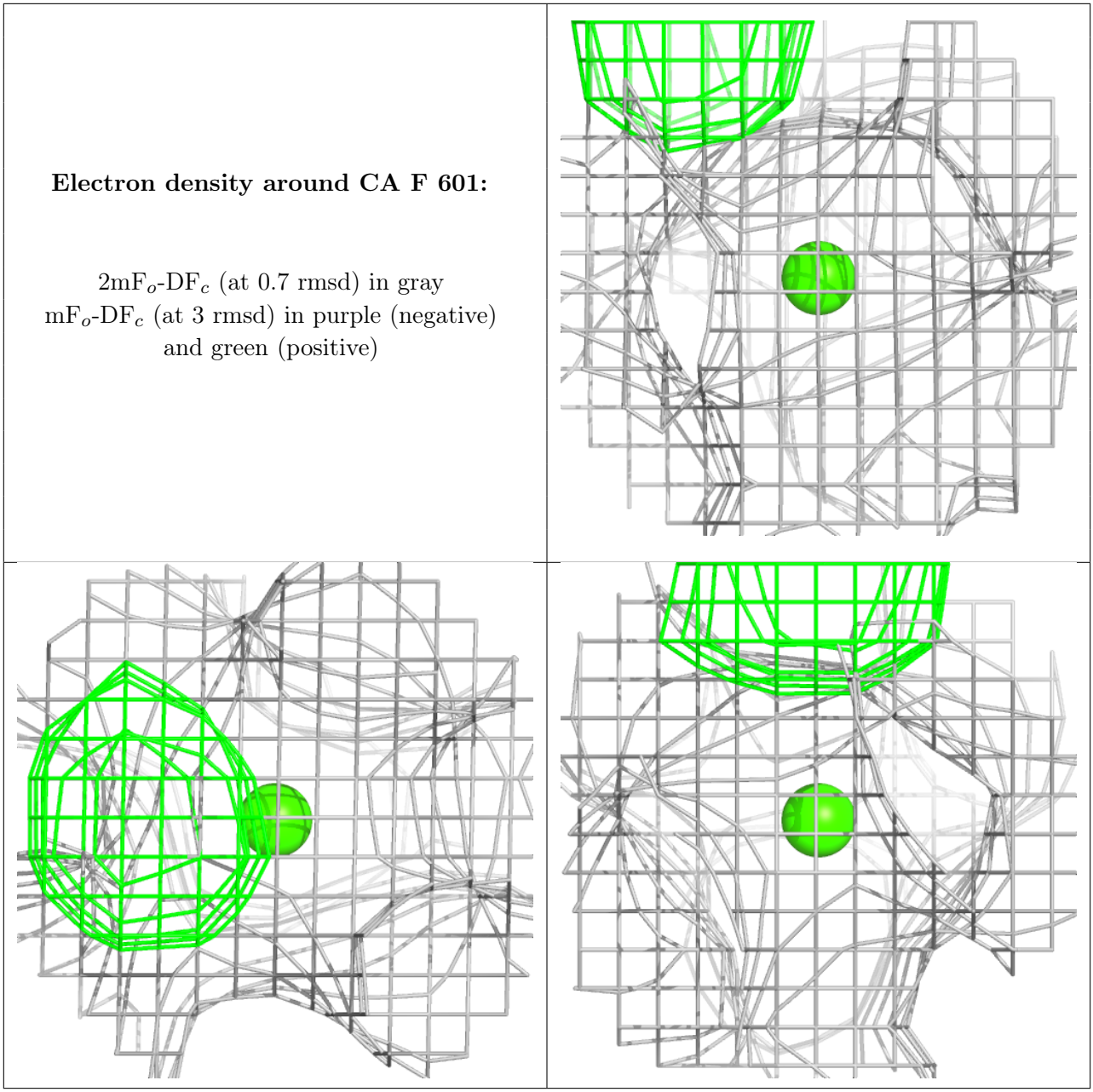
Electron density around CA E 601:

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



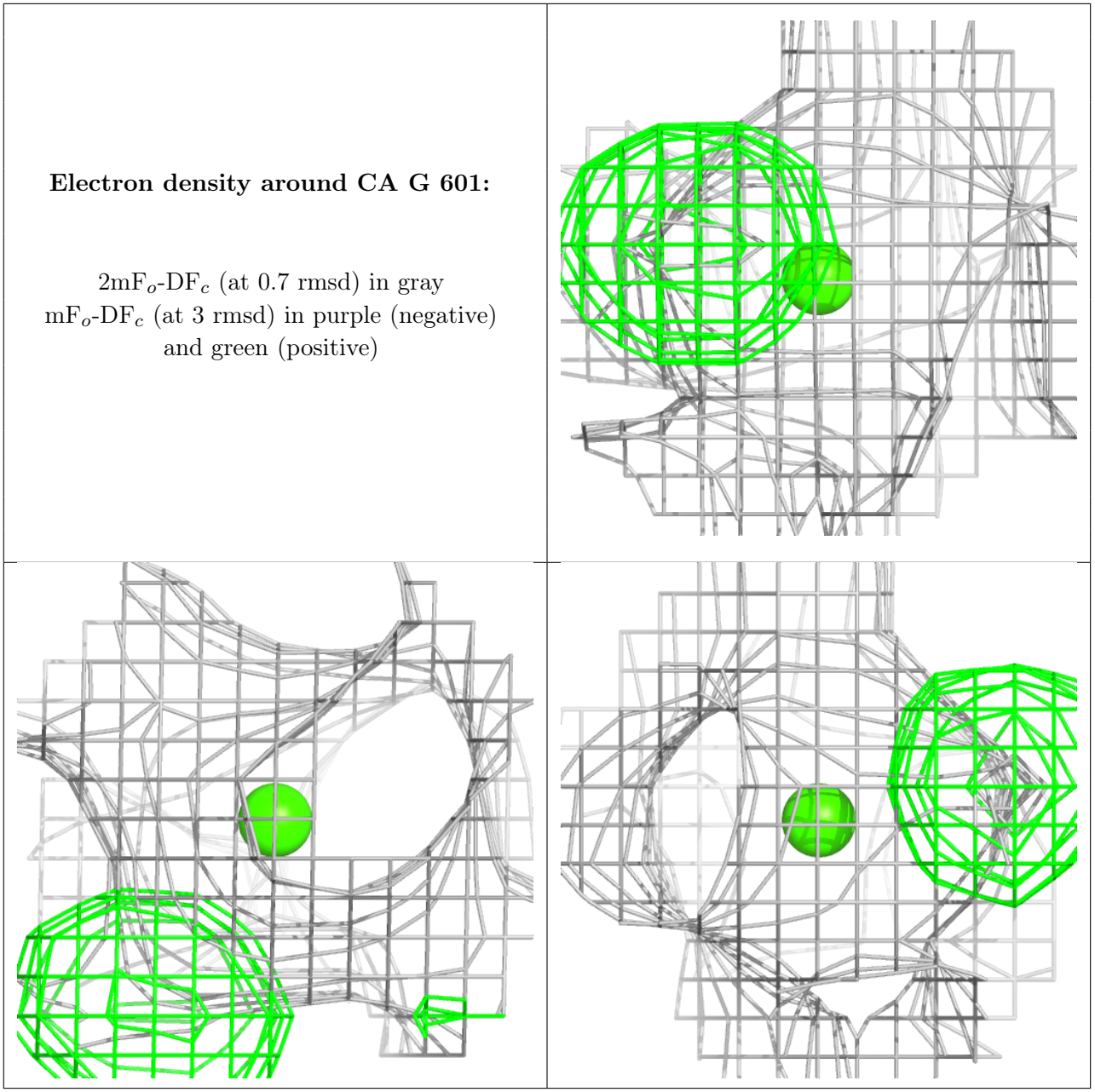
Electron density around CA F 601:

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



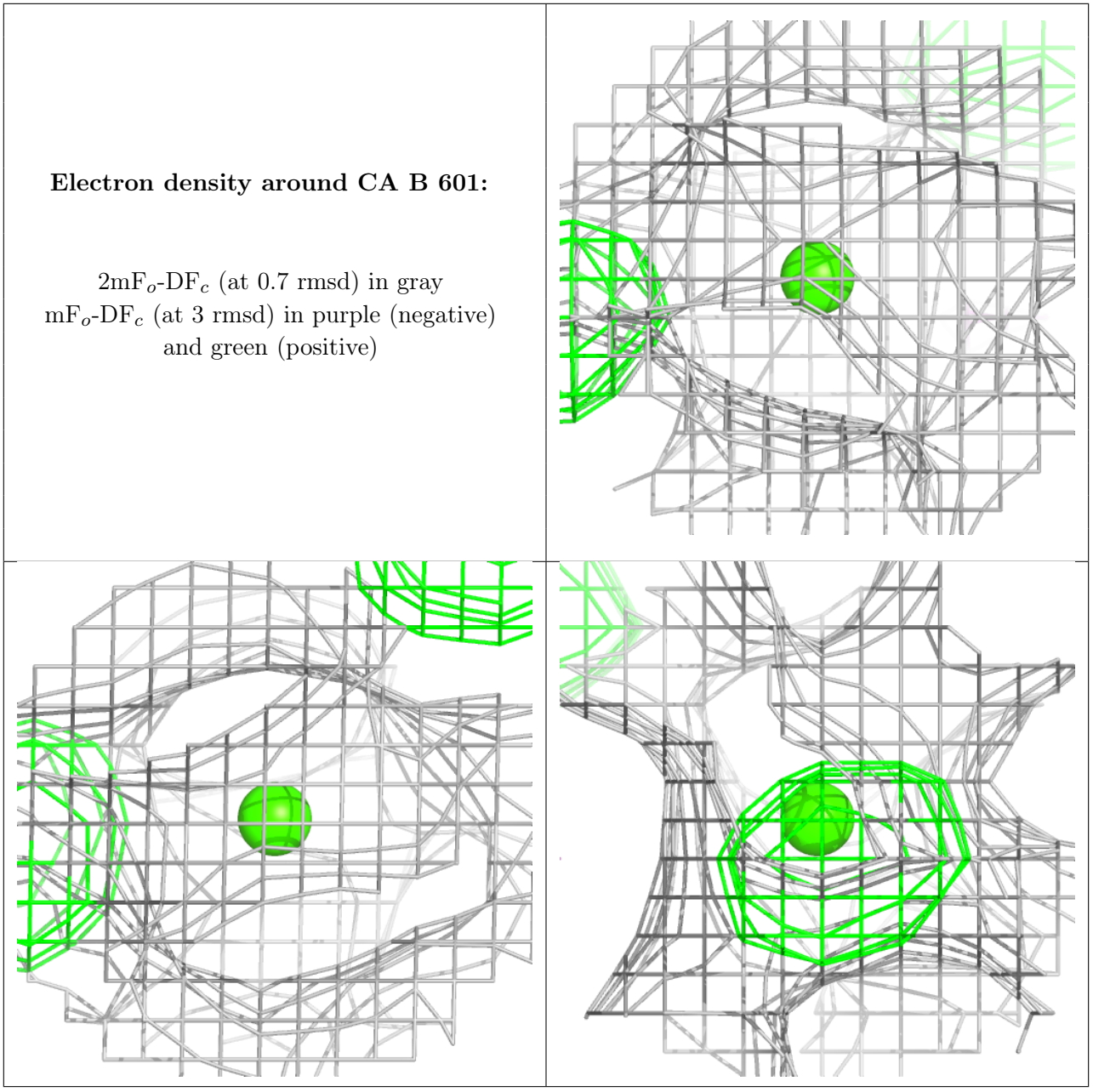
Electron density around CA G 601:

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



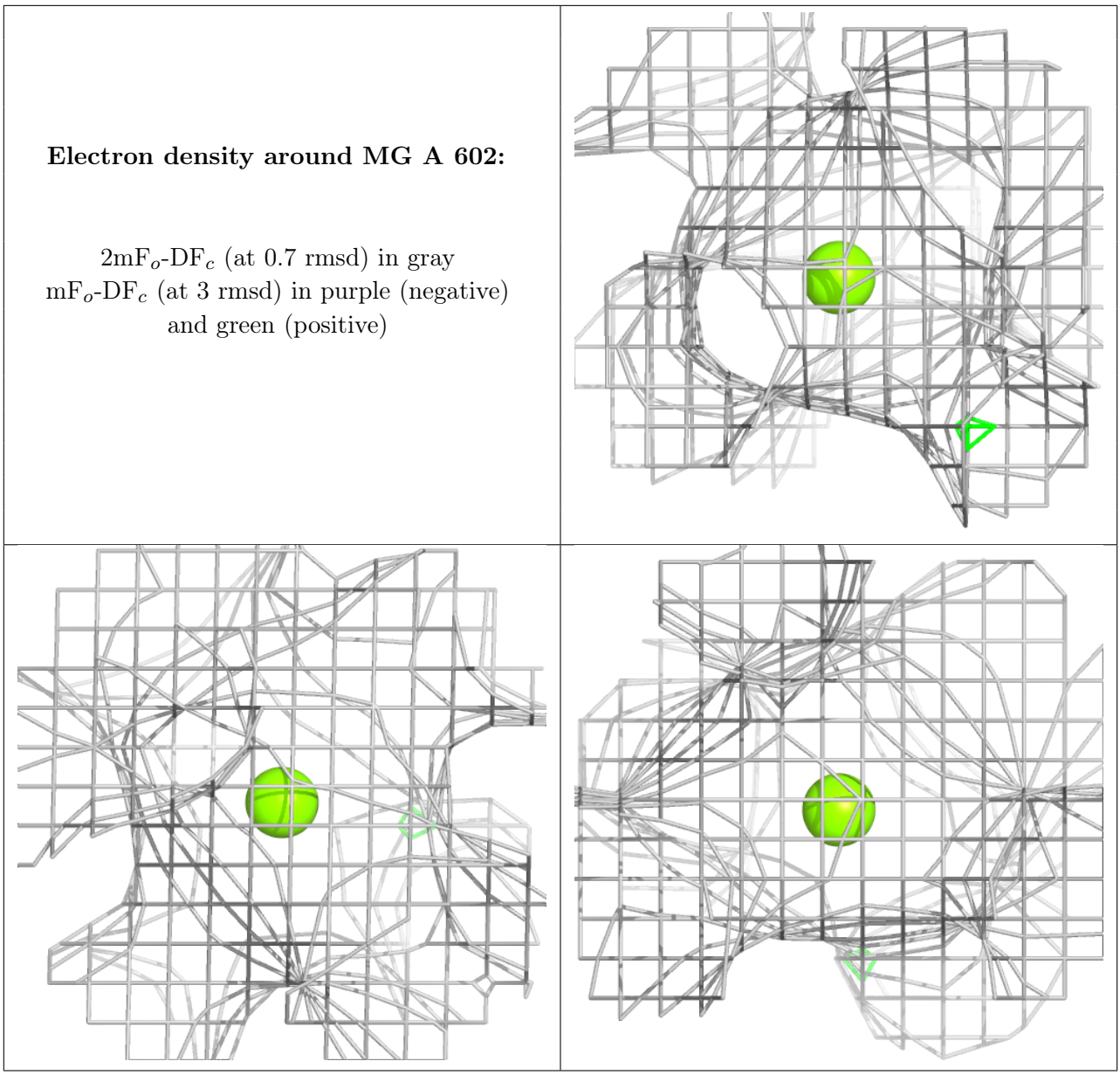
Electron density around CA B 601:

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



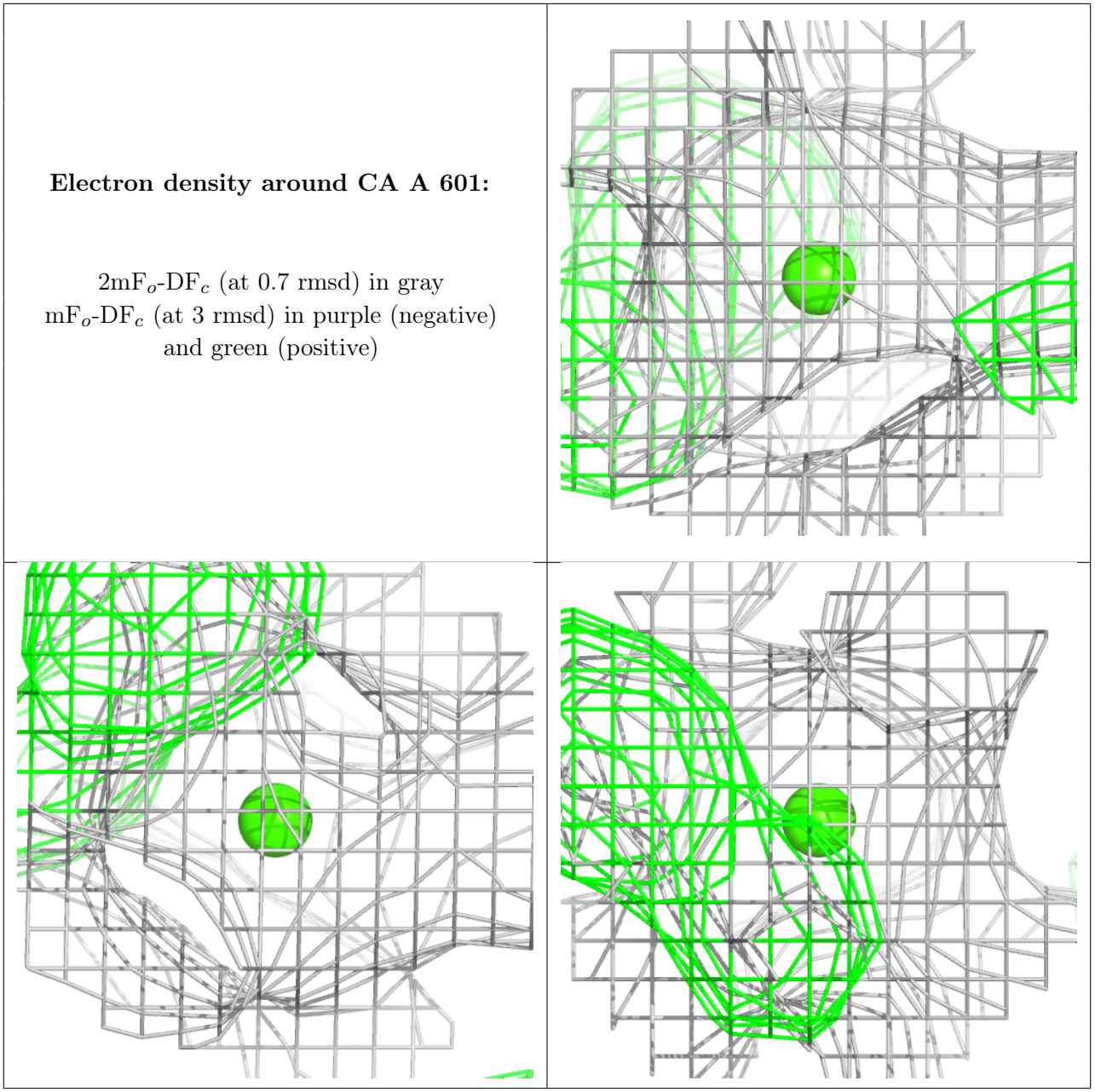
Electron density around MG A 602:

$2mF_o$-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 A 601:

$2mF_o$-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.