Full wwPDB X-ray Structure Validation Report ⓘ

Sep 30, 2024 – 02:16 PM JST

PDB ID	:	8J4Y
Title	:	Structure of Mycobacterium tuberculosis NrdF2:NrdIcomplex (reduced) determined at 3 angstrom resolution
Authors	:	Yadav, L.R.; Mande, S.C.
Deposited on	:	2023-04-21
Resolution	:	3.02 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:

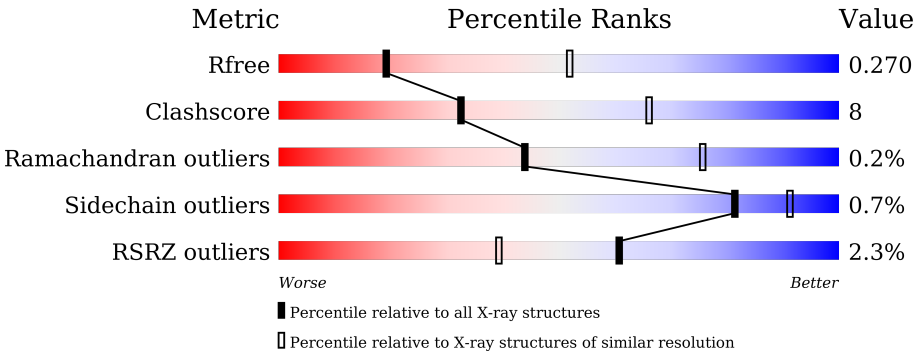
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 3.02 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	2927 (3.04-3.00)
Clashscore	180529	3300 (3.04-3.00)
Ramachandran outliers	177936	3188 (3.04-3.00)
Sidechain outliers	177891	3191 (3.04-3.00)
RSRZ outliers	164620	2939 (3.04-3.00)

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	324	70% 17% 13%
1	B	324	71% 16% 12%
1	C	324	72% 15% 13%
1	D	324	68% 19% 13%
1	E	324	72% 15% 13%
1	F	324	69% 19% 12%

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Mol	Chain	Length	Quality of chain
2	G	150	7% 69% 17% 14%
2	I	150	9% 72% 18% 10%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	OH	B	403	-	-	X	-

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 15956 atoms, of which 4 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 Ribonucleoside-diphosphate reductase subunit beta nrdF2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	283	Total	C	N	O	S	16	0	0
			2297	1470	377	443	7			
1	B	284	Total	C	N	O	S	20	0	0
			2304	1475	378	444	7			
1	C	283	Total	C	N	O	S	29	0	0
			2297	1470	377	443	7			
1	D	282	Total	C	N	O	S	4	0	0
			2286	1464	373	442	7			
1	E	283	Total	C	N	O	S	53	0	0
			2297	1470	377	443	7			
1	F	285	Total	C	N	O	S	9	0	0
			2312	1479	379	447	7			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	VAL	-	expression tag	UNP P9WH71
B	1	VAL	-	expression tag	UNP P9WH71
C	1	VAL	-	expression tag	UNP P9WH71
D	1	VAL	-	expression tag	UNP P9WH71
E	1	VAL	-	expression tag	UNP P9WH71
F	1	VAL	-	expression tag	UNP P9WH71

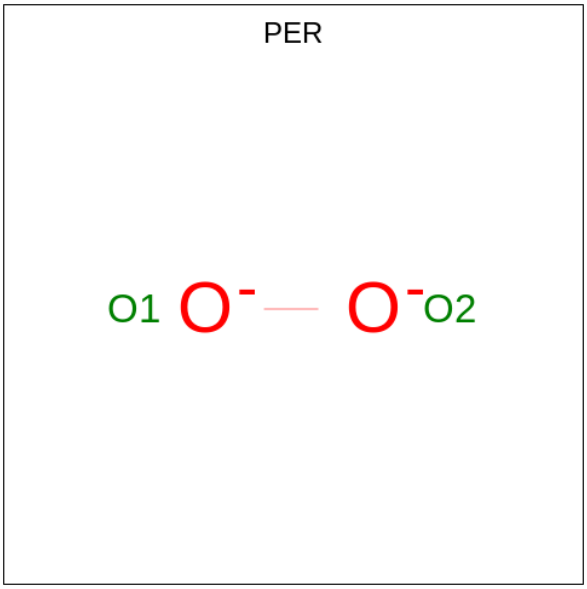
- Molecule 2 is a protein called Protein NrdI.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	G	129	Total	C	N	O	S	46	0	0
			1009	644	177	185	3			
2	I	135	Total	C	N	O	S	36	0	0
			1050	668	184	194	4			

- Molecule 3 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn) (labeled as "Ligand of Interest" by depositor).

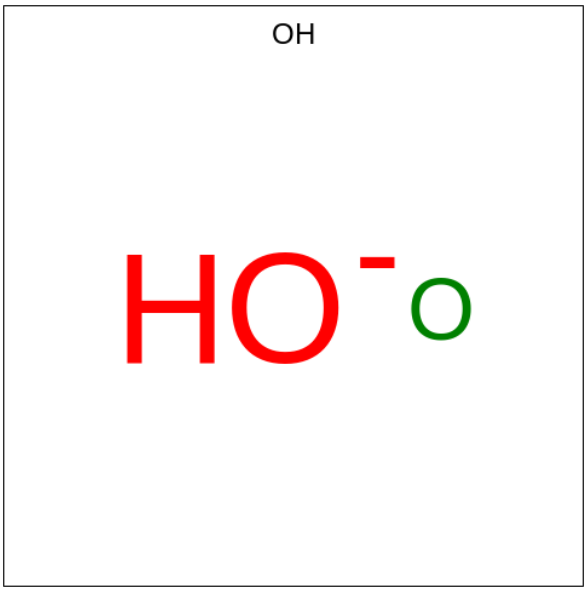
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	2	Total Mn 2 2	0	0
3	B	2	Total Mn 2 2	0	0
3	C	2	Total Mn 2 2	0	0
3	D	2	Total Mn 2 2	0	0
3	E	2	Total Mn 2 2	0	0
3	F	2	Total Mn 2 2	0	0

- Molecule 4 is PEROXIDE ION (three-letter code: PER) (formula: O_2) (labeled as "Ligand of Interest" by depositor).



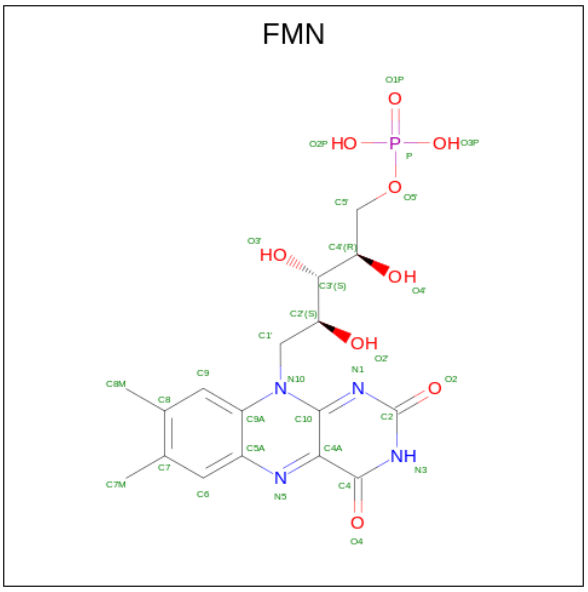
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O 2 2	0	0
4	D	1	Total O 2 2	0	0
4	F	1	Total O 2 2	0	0

- Molecule 5 is HYDROXIDE ION (three-letter code: OH) (formula: HO) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total H O 2 1 1	0	0
5	C	1	Total H O 2 1 1	0	0
5	D	1	Total H O 2 1 1	0	0
5	F	1	Total H O 2 1 1	0	0

- Molecule 6 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: $C_{17}H_{21}N_4O_9P$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	G	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
6	I	1	Total	C	N	O	P	0	0
			31	17	4	9	1		

- Molecule 7 is water.

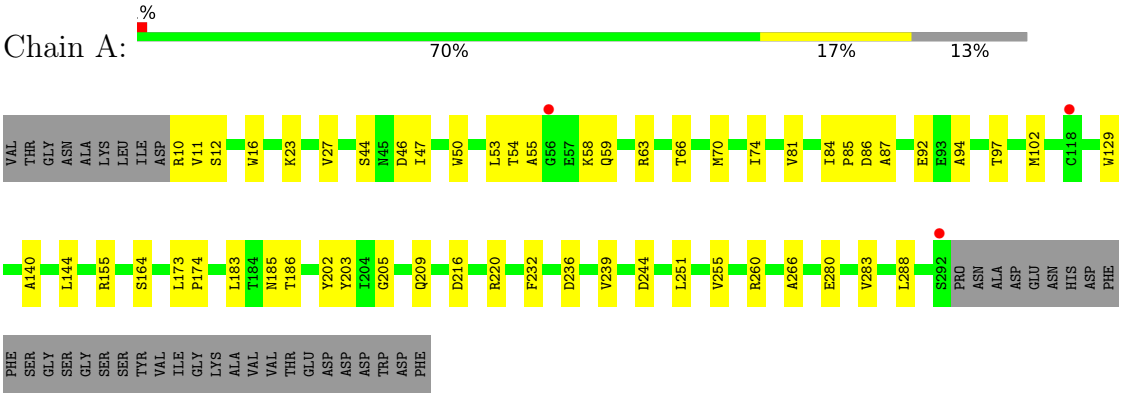
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	B	4	Total	O	0	0
			4	4		
7	C	2	Total	O	0	0
			2	2		
7	D	4	Total	O	0	0
			4	4		
7	E	2	Total	O	0	0
			2	2		
7	F	3	Total	O	0	0
			3	3		
7	I	1	Total	O	0	0
			1	1		

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.

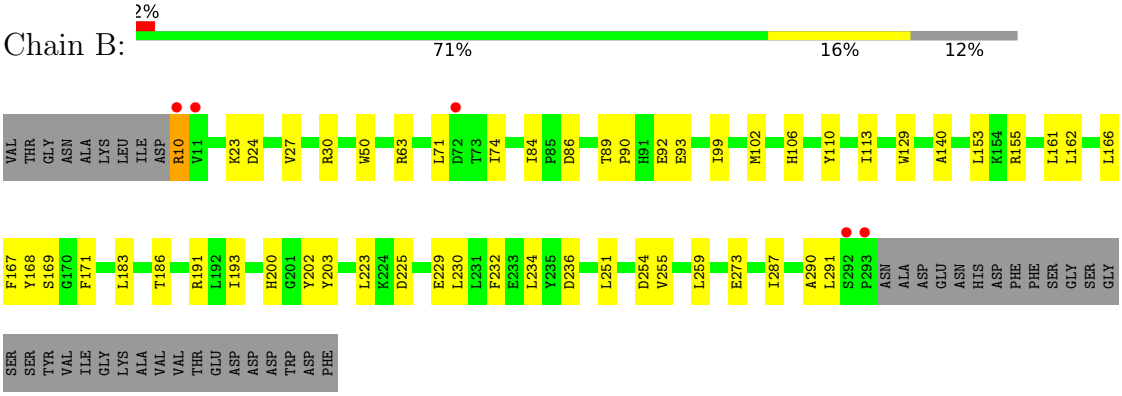
• Molecule 1: Ribonucleoside-diphosphate reductase subunit beta nrdF2

Chain A:



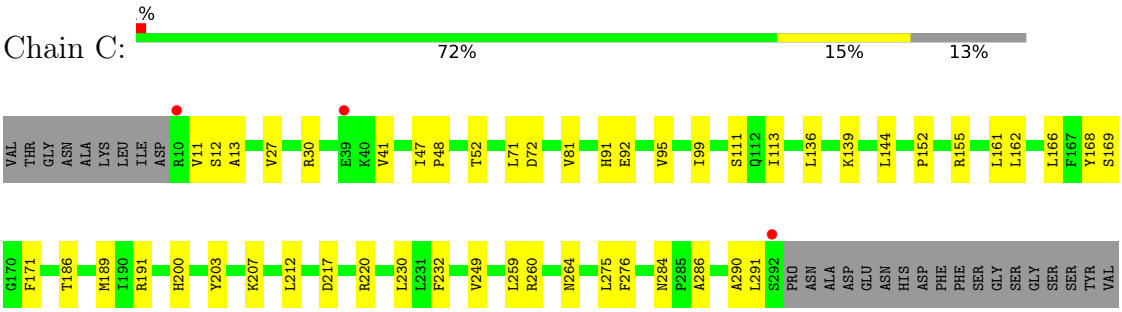
• Molecule 1: Ribonucleoside-diphosphate reductase subunit beta nrdF2

Chain B:



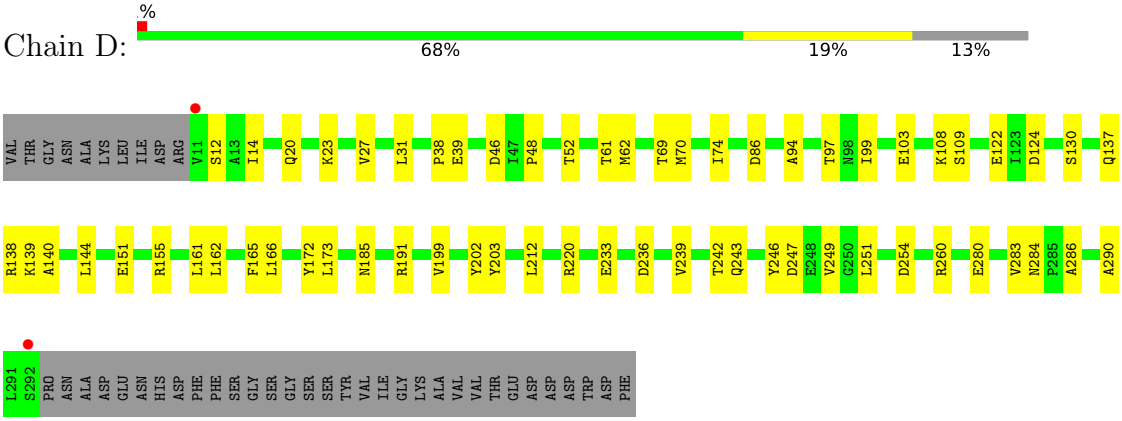
• Molecule 1: Ribonucleoside-diphosphate reductase subunit beta nrdF2

Chain C:



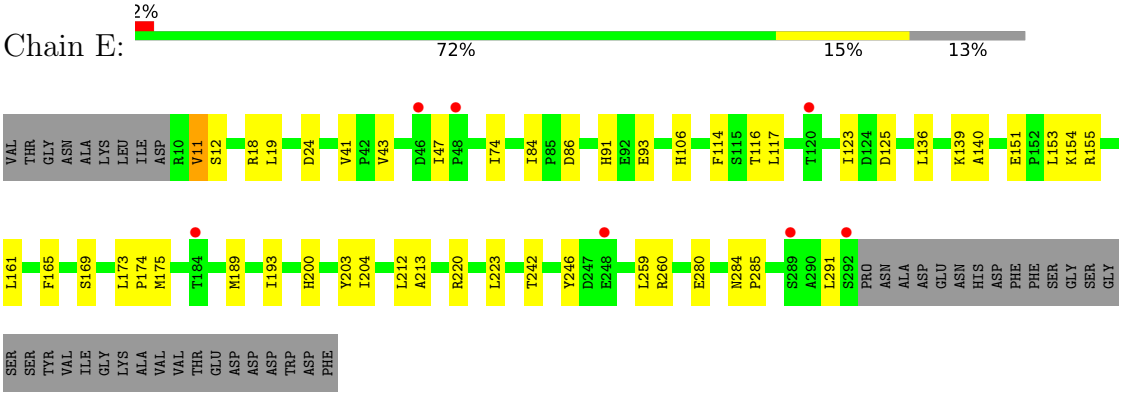
• Molecule 1: Ribonucleoside-diphosphate reductase subunit beta nrdF2

Chain D:



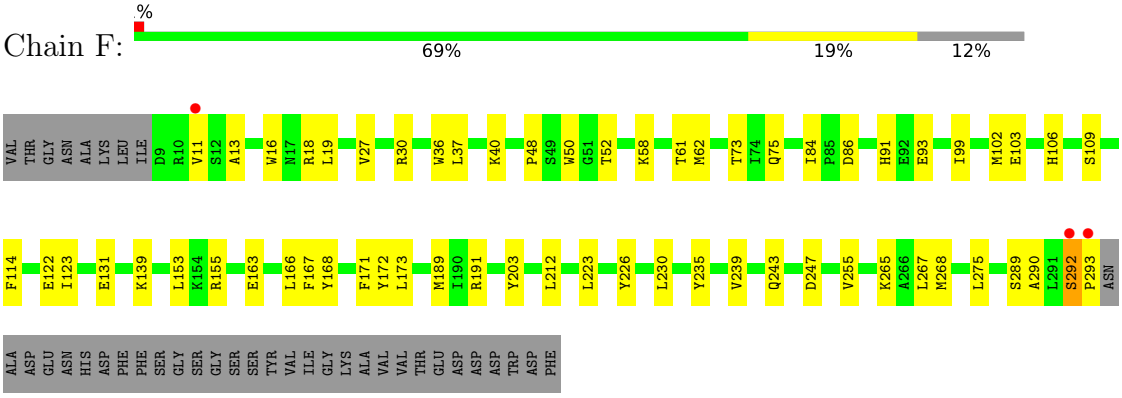
• Molecule 1: Ribonucleoside-diphosphate reductase subunit beta nrdF2

Chain E:



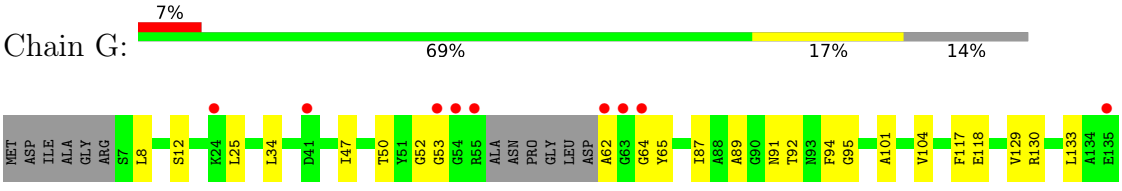
• Molecule 1: Ribonucleoside-diphosphate reductase subunit beta nrdF2

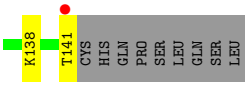
Chain F:



• Molecule 2: Protein NrdI

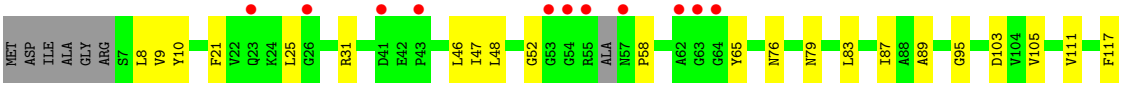
Chain G:

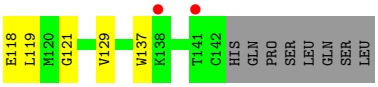




• Molecule 2: Protein NrdI

Chain I:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 42 21 2	Depositor
Cell constants a, b, c, α, β, γ	160.43Å 160.43Å 310.40Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	91.58 – 3.02 91.58 – 3.02	Depositor EDS
% Data completeness (in resolution range)	99.9 (91.58-3.02) 100.0 (91.58-3.02)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.92 (at 3.01Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487, PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.230 , 0.266 0.235 , 0.270	Depositor DCC
R_{free} test set	4032 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	47.3	Xtriage
Anisotropy	0.100	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 62.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.43$, $< L^2 > = 0.26$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	15956	wwPDB-VP
Average B, all atoms (Å^2)	60.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 43.89 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.6521e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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: FMN, OH, PER, MN

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	0.25	0/2348	0.44	0/3190
1	B	0.25	0/2356	0.44	0/3202
1	C	0.25	0/2348	0.45	0/3190
1	D	0.26	0/2337	0.44	0/3176
1	E	0.25	0/2348	0.43	0/3190
1	F	0.26	0/2364	0.45	0/3213
2	G	0.25	0/1032	0.49	0/1399
2	I	0.25	0/1074	0.49	0/1457
All	All	0.25	0/16207	0.45	0/22017

There are no bond length outliers.

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	A	2297	0	2244	43	0
1	B	2304	0	2251	35	0
1	C	2297	0	2244	39	0
1	D	2286	0	2231	41	0
1	E	2297	0	2244	26	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2312	0	2255	50	0
2	G	1009	0	987	17	0
2	I	1050	0	1023	21	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
3	E	2	0	0	0	0
3	F	2	0	0	0	0
4	A	2	0	0	1	0
4	D	2	0	0	0	0
4	F	2	0	0	1	0
5	B	1	1	0	2	0
5	C	1	1	0	1	0
5	D	1	1	0	0	0
5	F	1	1	0	0	0
6	G	31	0	19	1	0
6	I	31	0	19	0	0
7	B	4	0	0	1	0
7	C	2	0	0	0	0
7	D	4	0	0	0	0
7	E	2	0	0	0	0
7	F	3	0	0	0	0
7	I	1	0	0	0	0
All	All	15952	4	15517	242	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 8.

All (242) 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:D:212:LEU:HD22	1:D:220:ARG:HG3	1.59	0.84
2:I:83:LEU:HG	2:I:111:VAL:HG11	1.64	0.79
1:F:36:TRP:HB2	1:F:40:LYS:HD2	1.65	0.79
1:C:162:LEU:HD12	1:C:166:LEU:HD12	1.65	0.78
1:F:62:MET:HE1	1:F:122:GLU:HB3	1.65	0.78
1:D:62:MET:HE1	1:D:122:GLU:HB3	1.65	0.76
1:B:153:LEU:HB3	1:B:223:LEU:HD21	1.69	0.73
1:F:191:ARG:NH1	1:F:290:ALA:O	2.22	0.73
1:A:183:LEU:HB3	1:A:186:THR:CG2	2.19	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:37:LEU:H	1:F:40:LYS:HE3	1.54	0.71
1:C:212:LEU:HD22	1:C:220:ARG:HG3	1.74	0.69
1:B:86:ASP:OD2	1:B:155:ARG:NH1	2.25	0.69
2:I:48:LEU:HD21	2:I:105:VAL:HG21	1.74	0.68
1:B:24:ASP:OD2	1:B:89:THR:HG21	1.94	0.68
1:F:86:ASP:OD2	1:F:155:ARG:NH1	2.27	0.68
2:G:52:GLY:HA3	2:G:65:TYR:CD1	2.28	0.67
1:B:191:ARG:NH1	1:B:290:ALA:O	2.29	0.66
2:G:138:LYS:O	2:G:141:THR:HG22	1.96	0.65
1:A:11:VAL:HG23	1:C:144:LEU:HD11	1.78	0.65
1:F:292:SER:OG	1:F:293:PRO:HD3	1.95	0.65
1:B:161:LEU:HD22	1:B:230:LEU:HD23	1.76	0.65
1:D:74:ILE:CG1	1:F:11:VAL:HG21	2.26	0.65
1:B:153:LEU:CB	1:B:223:LEU:HD21	2.27	0.65
1:A:44:SER:O	1:A:47:ILE:HG13	1.97	0.65
1:D:124:ASP:OD2	1:F:18:ARG:NH2	2.29	0.65
1:C:191:ARG:NH1	1:C:290:ALA:O	2.30	0.65
1:B:63:ARG:HG2	1:B:129:TRP:CD2	2.31	0.64
1:F:102:MET:HG3	4:F:403:PER:O2	1.97	0.64
1:C:291:LEU:O	2:G:95:GLY:HA2	1.98	0.64
1:A:183:LEU:HB3	1:A:186:THR:HG21	1.79	0.63
1:C:284:ASN:HD21	1:C:286:ALA:HB3	1.63	0.63
1:F:37:LEU:O	1:F:40:LYS:HG2	1.99	0.63
1:E:260:ARG:NH1	1:E:280:GLU:O	2.28	0.63
1:E:242:THR:HG23	1:E:246:TYR:HD2	1.64	0.63
1:E:169:SER:HB2	1:E:259:LEU:HD21	1.82	0.62
1:A:102:MET:HG3	4:A:403:PER:O1	2.00	0.62
1:E:41:VAL:HG11	1:E:189:MET:HB2	1.83	0.60
1:C:161:LEU:HD12	1:C:230:LEU:HD23	1.84	0.60
1:A:11:VAL:CG2	1:C:144:LEU:HD11	2.32	0.60
1:F:243:GLN:O	1:F:247:ASP:HB2	2.00	0.60
1:A:144:LEU:HD11	1:C:11:VAL:HG23	1.84	0.59
1:B:84:ILE:HG23	1:B:93:GLU:HG2	1.84	0.59
1:B:162:LEU:HD12	1:B:166:LEU:HD12	1.85	0.59
1:C:264:ASN:HD21	1:C:276:PHE:HB2	1.68	0.59
2:I:46:LEU:HD21	2:I:48:LEU:HD23	1.84	0.59
1:A:70:MET:HE2	1:C:13:ALA:H	1.67	0.59
1:F:265:LYS:HE3	2:I:118:GLU:OE2	2.03	0.58
1:F:61:THR:HA	1:F:173:LEU:HD23	1.86	0.58
1:A:59:GLN:O	1:A:63:ARG:HG2	2.04	0.58
1:B:71:LEU:HD22	1:B:162:LEU:HD11	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:153:LEU:HD13	1:F:223:LEU:CD1	2.35	0.57
1:A:260:ARG:NH1	1:A:280:GLU:O	2.37	0.57
1:B:89:THR:HG23	1:B:92:GLU:H	1.69	0.56
2:I:25:LEU:HD11	2:I:129:VAL:HG11	1.87	0.56
1:A:260:ARG:NH2	1:B:225:ASP:OD1	2.38	0.56
2:G:12:SER:OG	6:G:201:FMN:O2P	2.23	0.56
1:A:27:VAL:HG21	1:A:203:TYR:CD1	2.40	0.56
1:E:86:ASP:OD2	1:E:155:ARG:NH1	2.38	0.56
1:F:48:PRO:O	1:F:52:THR:HG23	2.04	0.56
1:B:113:ILE:HD13	1:B:186:THR:HG23	1.87	0.56
1:F:267:LEU:HD11	1:F:275:LEU:HD23	1.88	0.56
2:I:48:LEU:HD12	2:I:48:LEU:O	2.06	0.56
2:I:89:ALA:HB2	2:I:117:PHE:CZ	2.40	0.56
2:G:47:ILE:HG12	2:G:87:ILE:HB	1.87	0.56
1:B:89:THR:OG1	1:B:90:PRO:HD2	2.07	0.55
1:D:31:LEU:HD11	1:D:199:VAL:HG11	1.88	0.55
1:E:47:ILE:HD11	1:E:116:THR:O	2.06	0.55
1:C:71:LEU:HD22	1:C:162:LEU:HD11	1.89	0.54
1:C:249:VAL:HG12	1:C:249:VAL:O	2.07	0.54
2:I:47:ILE:HG12	2:I:87:ILE:HB	1.89	0.54
1:A:50:TRP:CZ2	1:A:58:LYS:HB2	2.42	0.54
1:F:153:LEU:HD13	1:F:223:LEU:HD11	1.90	0.54
1:F:268:MET:HE2	2:I:119:LEU:HB2	1.90	0.54
1:D:31:LEU:HD11	1:D:199:VAL:CG1	2.37	0.54
1:A:46:ASP:OD1	1:A:185:ASN:HB2	2.07	0.53
1:A:11:VAL:HG12	1:A:12:SER:H	1.74	0.53
1:B:27:VAL:HG21	1:B:203:TYR:CD1	2.43	0.53
1:D:74:ILE:HG13	1:F:11:VAL:HG21	1.90	0.53
1:F:99:ILE:O	1:F:103:GLU:HG2	2.09	0.53
1:B:161:LEU:HD23	1:B:234:LEU:HD12	1.91	0.52
1:F:75:GLN:NE2	1:F:163:GLU:OE2	2.42	0.52
2:G:62:ALA:HB1	2:G:104:VAL:HG22	1.90	0.52
1:A:205:GLY:O	1:A:209:GLN:HG3	2.09	0.52
1:C:169:SER:HB3	1:C:259:LEU:HD21	1.92	0.52
1:C:284:ASN:ND2	1:C:286:ALA:HB3	2.24	0.52
1:A:63:ARG:HD2	1:A:129:TRP:CD2	2.46	0.51
1:B:169:SER:HB2	1:B:259:LEU:HD21	1.93	0.51
1:A:63:ARG:O	1:A:66:THR:HG22	2.11	0.51
1:A:164:SER:HB2	1:A:266:ALA:HB2	1.91	0.51
1:E:114:PHE:HB3	1:E:123:ILE:HD11	1.93	0.51
1:C:168:TYR:HA	1:C:171:PHE:HB2	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:84:ILE:HG23	1:E:93:GLU:HG2	1.91	0.51
1:D:99:ILE:O	1:D:103:GLU:HG2	2.11	0.51
2:G:50:THR:HG23	2:G:101:ALA:HB2	1.93	0.51
1:B:168:TYR:HA	1:B:171:PHE:HB2	1.91	0.51
1:C:232:PHE:HZ	1:C:275:LEU:HD21	1.75	0.51
1:D:69:THR:HG22	1:F:13:ALA:HB1	1.91	0.51
1:D:94:ALA:O	1:D:97:THR:OG1	2.28	0.51
1:B:99:ILE:HG12	1:B:200:HIS:CD2	2.46	0.51
1:D:31:LEU:CD1	1:D:199:VAL:HG11	2.40	0.51
1:F:268:MET:CE	2:I:119:LEU:HB2	2.40	0.51
1:B:23:LYS:HE3	1:B:202:TYR:OH	2.12	0.50
1:C:113:ILE:HD11	1:C:189:MET:HG2	1.92	0.50
1:D:23:LYS:HE3	1:D:202:TYR:OH	2.11	0.50
1:E:242:THR:HG23	1:E:246:TYR:CD2	2.45	0.50
1:B:287:ILE:O	1:B:291:LEU:HD12	2.12	0.50
1:D:191:ARG:NH1	1:D:290:ALA:O	2.43	0.50
1:A:11:VAL:HG12	1:A:12:SER:N	2.27	0.50
2:I:76:ASN:HB3	2:I:79:ASN:HB2	1.94	0.50
1:B:102:MET:HG3	7:B:503:HOH:O	2.11	0.50
1:B:106:HIS:CD2	1:B:193:ILE:HG12	2.47	0.50
1:C:162:LEU:HD12	1:C:166:LEU:CD1	2.39	0.49
1:D:254:ASP:OD1	1:D:283:VAL:HG23	2.11	0.49
1:D:284:ASN:OD1	1:D:286:ALA:HB3	2.12	0.49
1:A:232:PHE:HB3	1:B:232:PHE:HB3	1.93	0.49
1:D:172:TYR:HE2	1:D:251:LEU:HD23	1.77	0.49
1:C:232:PHE:CZ	1:C:275:LEU:HD21	2.47	0.49
1:A:86:ASP:OD2	1:A:155:ARG:NH1	2.46	0.49
1:F:106:HIS:O	1:F:109:SER:OG	2.30	0.49
1:D:38:PRO:HB3	1:D:109:SER:HA	1.94	0.48
1:D:108:LYS:HD2	1:F:16:TRP:CE2	2.48	0.48
1:D:70:MET:HE2	1:F:13:ALA:H	1.78	0.48
1:E:212:LEU:HG	1:E:220:ARG:HG3	1.96	0.48
1:D:14:ILE:HG22	1:F:73:THR:OG1	2.12	0.48
1:F:268:MET:HE3	2:I:121:GLY:N	2.29	0.48
1:D:74:ILE:HD11	1:D:140:ALA:HB1	1.96	0.48
1:C:11:VAL:HG12	1:C:12:SER:H	1.79	0.48
1:F:167:PHE:HB3	1:F:171:PHE:CE2	2.49	0.48
1:A:144:LEU:CD1	1:C:11:VAL:HG23	2.44	0.47
1:E:151:GLU:CD	1:E:154:LYS:HD2	2.35	0.47
1:F:61:THR:HA	1:F:173:LEU:CD2	2.44	0.47
1:A:10:ARG:HG2	1:A:11:VAL:N	2.28	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:46:ASP:OD1	1:D:185:ASN:HB2	2.14	0.47
1:A:251:LEU:O	1:A:255:VAL:HG23	2.15	0.47
1:C:30:ARG:CZ	2:G:53:GLY:HA3	2.45	0.47
1:C:136:LEU:HA	1:C:139:LYS:HE3	1.97	0.47
1:E:153:LEU:HD13	1:E:223:LEU:HD11	1.97	0.47
1:F:139:LYS:HD3	1:F:166:LEU:HD22	1.97	0.47
1:F:109:SER:HB2	1:F:189:MET:SD	2.55	0.47
1:A:220:ARG:NH2	1:D:20:GLN:O	2.47	0.47
1:C:113:ILE:HD13	1:C:186:THR:HG23	1.97	0.47
1:F:168:TYR:HA	1:F:171:PHE:HB2	1.96	0.46
1:D:242:THR:HG23	1:D:246:TYR:HD2	1.79	0.46
1:A:239:VAL:HG21	1:B:229:GLU:HG2	1.97	0.46
1:E:19:LEU:HA	1:E:91:HIS:CE1	2.51	0.46
1:C:99:ILE:HG23	1:C:200:HIS:CD2	2.51	0.46
2:G:64:GLY:O	2:G:65:TYR:HB2	2.15	0.46
1:C:27:VAL:HG21	1:C:203:TYR:CD1	2.50	0.46
1:B:10:ARG:HD3	1:B:10:ARG:N	2.30	0.46
1:D:48:PRO:O	1:D:52:THR:HG23	2.16	0.45
1:B:74:ILE:HD11	1:B:140:ALA:HB1	1.97	0.45
1:B:110:TYR:OH	5:B:403:OH:O	2.27	0.45
1:F:292:SER:HA	2:I:95:GLY:HA2	1.97	0.45
1:D:260:ARG:NH1	1:D:280:GLU:O	2.46	0.45
1:F:37:LEU:H	1:F:40:LYS:CE	2.23	0.45
1:C:72:ASP:OD2	5:C:403:OH:O	2.34	0.45
1:E:213:ALA:HA	1:E:220:ARG:HH21	1.80	0.45
1:A:50:TRP:HA	1:A:53:LEU:HD23	1.99	0.45
1:D:61:THR:HA	1:D:173:LEU:HD23	1.98	0.45
1:F:40:LYS:HB3	1:F:40:LYS:HE2	1.62	0.45
1:F:268:MET:HE3	2:I:121:GLY:H	1.81	0.45
2:G:89:ALA:HB2	2:G:117:PHE:CZ	2.52	0.45
1:B:162:LEU:O	1:B:167:PHE:HD2	1.99	0.45
1:D:27:VAL:HG21	1:D:203:TYR:CD1	2.52	0.44
1:D:161:LEU:O	1:D:165:PHE:HB3	2.17	0.44
1:A:16:TRP:HB2	1:C:111:SER:CB	2.47	0.44
2:I:52:GLY:HA3	2:I:65:TYR:CD2	2.51	0.44
1:C:92:GLU:HG3	1:C:207:LYS:HE3	1.99	0.44
1:E:136:LEU:HA	1:E:139:LYS:HE3	1.99	0.44
1:A:87:ALA:HA	1:A:92:GLU:OE2	2.17	0.44
1:C:48:PRO:O	1:C:52:THR:HG23	2.18	0.44
1:D:236:ASP:O	1:D:239:VAL:HG22	2.17	0.44
1:F:226:TYR:OH	1:F:230:LEU:HD22	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:92:THR:HG23	2:G:118:GLU:OE2	2.17	0.44
1:A:84:ILE:N	1:A:85:PRO:HD2	2.33	0.43
1:D:139:LYS:HD3	1:D:166:LEU:HD22	2.00	0.43
1:F:289:SER:HA	1:F:293:PRO:HD2	2.00	0.43
1:F:50:TRP:O	1:F:58:LYS:HE3	2.18	0.43
2:G:47:ILE:HA	2:G:87:ILE:O	2.17	0.43
1:F:153:LEU:CD1	1:F:223:LEU:HD11	2.48	0.43
1:A:94:ALA:O	1:A:97:THR:OG1	2.32	0.43
1:A:173:LEU:HB3	1:A:174:PRO:HD3	2.01	0.43
1:E:43:VAL:HG12	1:E:117:LEU:HD13	2.01	0.43
1:D:86:ASP:OD1	1:D:155:ARG:NH1	2.52	0.43
1:B:24:ASP:OD2	1:B:89:THR:CG2	2.64	0.42
1:C:41:VAL:HG11	1:C:189:MET:HB2	2.01	0.42
1:F:27:VAL:HG21	1:F:203:TYR:CD1	2.54	0.42
1:A:11:VAL:HG23	1:C:144:LEU:CD1	2.48	0.42
1:A:54:THR:HG22	1:A:55:ALA:H	1.83	0.42
1:B:50:TRP:HE3	1:B:183:LEU:HD11	1.84	0.42
1:C:91:HIS:O	1:C:95:VAL:HG23	2.19	0.42
1:C:260:ARG:HD3	1:C:276:PHE:CD1	2.54	0.42
2:G:25:LEU:O	2:G:130:ARG:NH1	2.51	0.42
1:D:130:SER:O	1:D:137:GLN:NE2	2.49	0.42
1:D:144:LEU:HD11	1:F:11:VAL:HG13	2.00	0.42
1:E:161:LEU:O	1:E:165:PHE:HB3	2.18	0.42
1:A:63:ARG:HD2	1:A:129:TRP:CE3	2.54	0.42
1:A:216:ASP:HA	1:D:20:GLN:HA	2.02	0.42
1:A:236:ASP:O	1:A:239:VAL:HG22	2.18	0.42
1:D:138:ARG:NH2	1:D:233:GLU:OE2	2.52	0.42
1:D:243:GLN:O	1:D:247:ASP:HB2	2.19	0.42
1:A:74:ILE:HD11	1:A:140:ALA:HB1	2.01	0.42
1:C:152:PRO:HA	1:C:155:ARG:NH1	2.34	0.42
1:E:74:ILE:HD11	1:E:140:ALA:HB1	2.02	0.42
2:G:8:LEU:HD23	2:G:8:LEU:HA	1.92	0.42
1:A:283:VAL:HG13	1:A:288:LEU:HG	2.00	0.42
1:D:249:VAL:CG2	1:D:251:LEU:HD13	2.50	0.42
1:E:200:HIS:O	1:E:204:ILE:HG12	2.20	0.42
2:I:47:ILE:HA	2:I:87:ILE:O	2.19	0.42
1:D:39:GLU:OE1	1:D:39:GLU:N	2.49	0.41
1:F:84:ILE:HG23	1:F:93:GLU:HG2	2.02	0.41
1:F:114:PHE:HB3	1:F:123:ILE:CD1	2.50	0.41
1:B:63:ARG:HG2	1:B:129:TRP:CE3	2.54	0.41
1:D:162:LEU:HA	1:D:166:LEU:HB2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:235:TYR:O	1:F:239:VAL:HG23	2.19	0.41
1:E:11:VAL:HG12	1:E:12:SER:N	2.34	0.41
1:E:175:MET:HG3	1:E:291:LEU:HD21	2.02	0.41
2:G:34:LEU:HD12	2:G:34:LEU:H	1.85	0.41
2:I:8:LEU:HA	2:I:8:LEU:HD23	1.84	0.41
1:F:212:LEU:HD23	1:F:212:LEU:HA	1.92	0.41
1:A:81:VAL:HB	1:C:81:VAL:HG13	2.02	0.41
1:B:251:LEU:O	1:B:255:VAL:HG23	2.20	0.41
1:B:193:ILE:HG21	5:B:403:OH:O	2.20	0.41
1:E:24:ASP:OD1	1:E:203:TYR:OH	2.29	0.41
2:G:91:ASN:HB3	2:G:94:PHE:HD2	1.86	0.41
1:C:47:ILE:N	1:C:48:PRO:HD2	2.35	0.41
2:I:21:PHE:HZ	2:I:129:VAL:HG21	1.85	0.41
1:A:23:LYS:HE3	1:A:202:TYR:OH	2.20	0.40
1:B:167:PHE:HB3	1:B:171:PHE:CE2	2.56	0.40
2:I:137:TRP:HA	2:I:137:TRP:CE3	2.56	0.40
1:C:212:LEU:HD23	1:C:212:LEU:HA	1.89	0.40
1:E:173:LEU:N	1:E:174:PRO:HD2	2.36	0.40
1:E:284:ASN:OD1	1:E:285:PRO:HD2	2.20	0.40
1:F:19:LEU:HD23	1:F:91:HIS:CE1	2.56	0.40
2:G:129:VAL:O	2:G:133:LEU:HB2	2.21	0.40
1:D:12:SER:HA	1:F:131:GLU:OE1	2.21	0.40
1:E:106:HIS:CG	1:E:193:ILE:HG23	2.57	0.40
2:I:9:VAL:O	2:I:46:LEU:HA	2.22	0.40
2:I:10:TYR:CZ	2:I:31:ARG:HB2	2.56	0.40
1:A:23:LYS:HE2	1:A:23:LYS:HB2	1.91	0.40
1:E:74:ILE:CD1	1:E:140:ALA:HB1	2.50	0.40
1:F:172:TYR:CD2	1:F:255:VAL:HG22	2.57	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	281/324 (87%)	274 (98%)	7 (2%)	0	100	100
1	B	282/324 (87%)	276 (98%)	6 (2%)	0	100	100
1	C	281/324 (87%)	275 (98%)	6 (2%)	0	100	100
1	D	280/324 (86%)	275 (98%)	5 (2%)	0	100	100
1	E	281/324 (87%)	274 (98%)	6 (2%)	1 (0%)	30	64
1	F	283/324 (87%)	274 (97%)	8 (3%)	1 (0%)	30	64
2	G	125/150 (83%)	118 (94%)	7 (6%)	0	100	100
2	I	131/150 (87%)	123 (94%)	7 (5%)	1 (1%)	16	49
All	All	1944/2244 (87%)	1889 (97%)	52 (3%)	3 (0%)	44	76

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	11	VAL
1	F	292	SER
2	I	58	PRO

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	248/282 (88%)	247 (100%)	1 (0%)	89	95
1	B	249/282 (88%)	244 (98%)	5 (2%)	50	77
1	C	248/282 (88%)	247 (100%)	1 (0%)	89	95
1	D	247/282 (88%)	246 (100%)	1 (0%)	89	95
1	E	248/282 (88%)	246 (99%)	2 (1%)	79	90
1	F	250/282 (89%)	249 (100%)	1 (0%)	89	95
2	G	105/122 (86%)	105 (100%)	0	100	100
2	I	110/122 (90%)	109 (99%)	1 (1%)	75	89
All	All	1705/1936 (88%)	1693 (99%)	12 (1%)	81	91

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	244	ASP
1	B	10	ARG
1	B	30	ARG
1	B	236	ASP
1	B	254	ASP
1	B	273	GLU
1	C	217	ASP
1	D	151	GLU
1	E	18	ARG
1	E	125	ASP
1	F	30	ARG
2	I	103	ASP

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

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

Of 21 ligands modelled in this entry, 12 are monoatomic and 4 are modelled with single atom - leaving 5 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	PER	F	403	-	0,1,1	-	-	-		
4	PER	D	403	-	0,1,1	-	-	-		
6	FMN	G	201	-	33,33,33	1.08	2 (6%)	48,50,50	1.21	7 (14%)
4	PER	A	403	-	0,1,1	-	-	-		
6	FMN	I	201	-	33,33,33	1.07	2 (6%)	48,50,50	1.24	8 (16%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	FMN	G	201	-	-	1/18/18/18	0/3/3/3
6	FMN	I	201	-	-	0/18/18/18	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	G	201	FMN	C4A-N5	3.94	1.38	1.30
6	I	201	FMN	C4A-N5	3.90	1.38	1.30
6	I	201	FMN	C10-N1	2.58	1.38	1.33
6	G	201	FMN	C10-N1	2.49	1.38	1.33

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	I	201	FMN	C4-N3-C2	-3.12	119.87	125.64
6	G	201	FMN	C4-N3-C2	-2.94	120.21	125.64
6	I	201	FMN	C4A-C4-N3	2.72	120.09	113.19
6	I	201	FMN	O4-C4-C4A	-2.61	119.68	126.60
6	I	201	FMN	C9A-C5A-N5	-2.59	119.62	122.43
6	G	201	FMN	C4A-C4-N3	2.54	119.65	113.19
6	G	201	FMN	C4A-C10-N10	2.44	120.05	116.48
6	G	201	FMN	O4-C4-C4A	-2.44	120.14	126.60
6	G	201	FMN	C10-C4A-N5	-2.29	120.01	124.86
6	G	201	FMN	C9A-C5A-N5	-2.28	119.96	122.43
6	I	201	FMN	C4A-C10-N1	-2.27	119.45	124.73
6	I	201	FMN	C5A-C9A-N10	2.26	120.29	117.95
6	I	201	FMN	C4A-C10-N10	2.26	119.78	116.48
6	I	201	FMN	C10-C4A-N5	-2.08	120.44	124.86
6	G	201	FMN	C4A-C10-N1	-2.06	119.94	124.73

There are no chirality outliers.

All (1) torsion outliers are listed below:

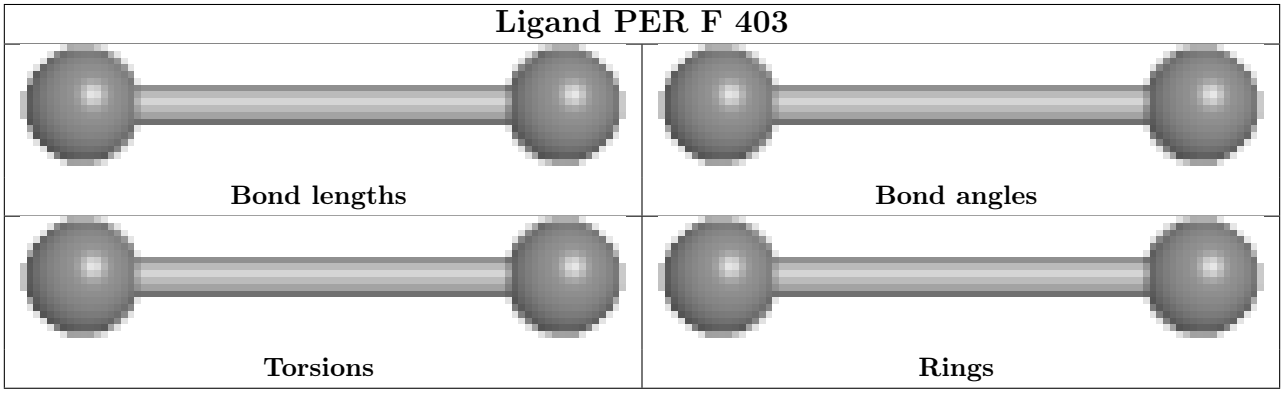
Mol	Chain	Res	Type	Atoms
6	G	201	FMN	C5'-O5'-P-O2P

There are no ring outliers.

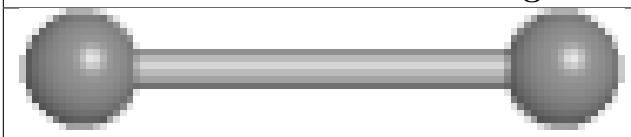
3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	F	403	PER	1	0
6	G	201	FMN	1	0
4	A	403	PER	1	0

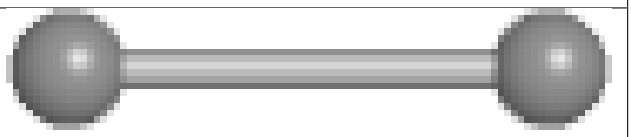
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



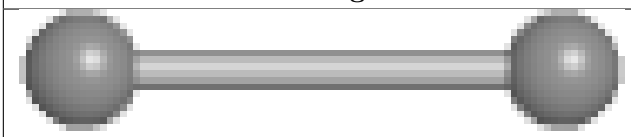
Ligand PER D 403



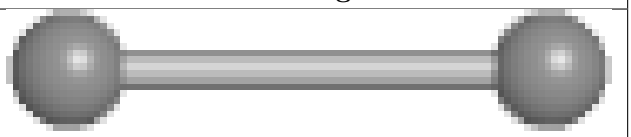
Bond lengths



Bond angles

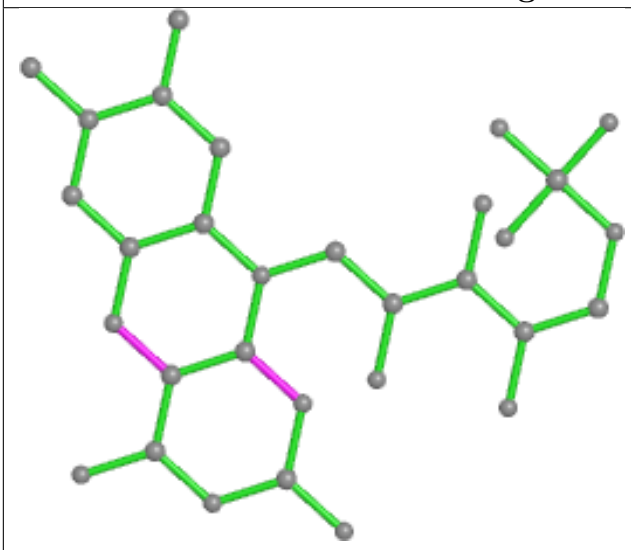


Torsions

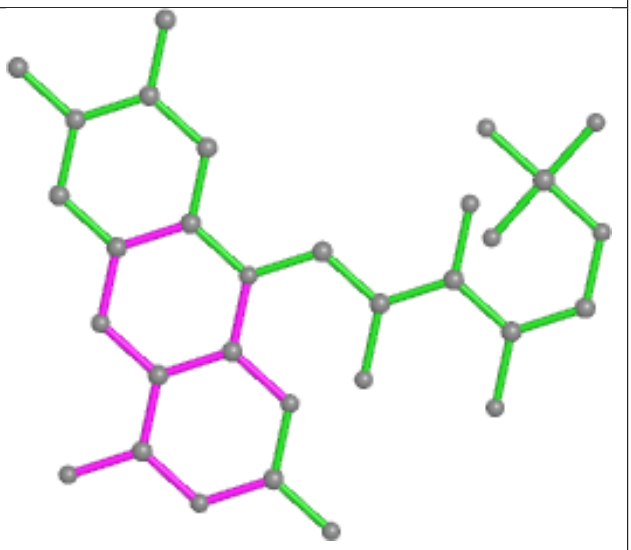


Rings

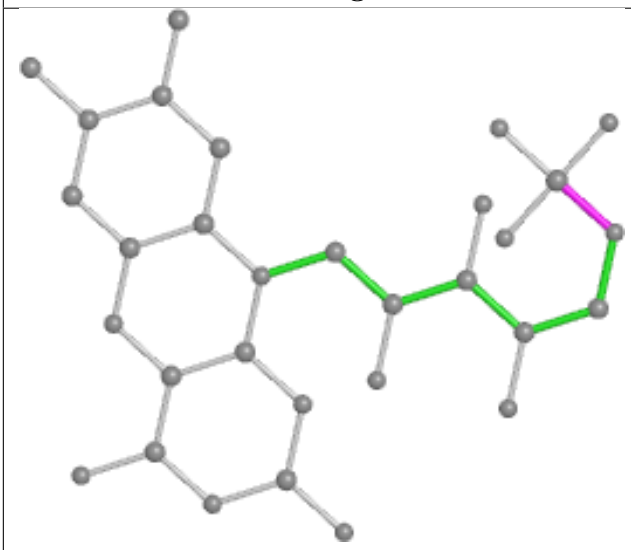
Ligand FMN G 201



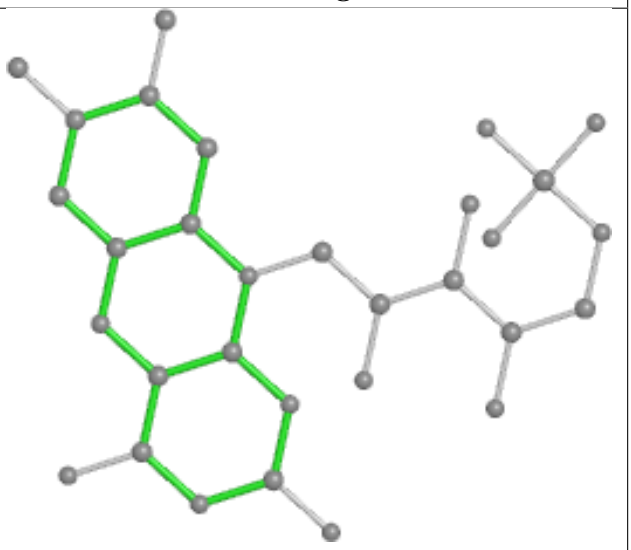
Bond lengths



Bond angles

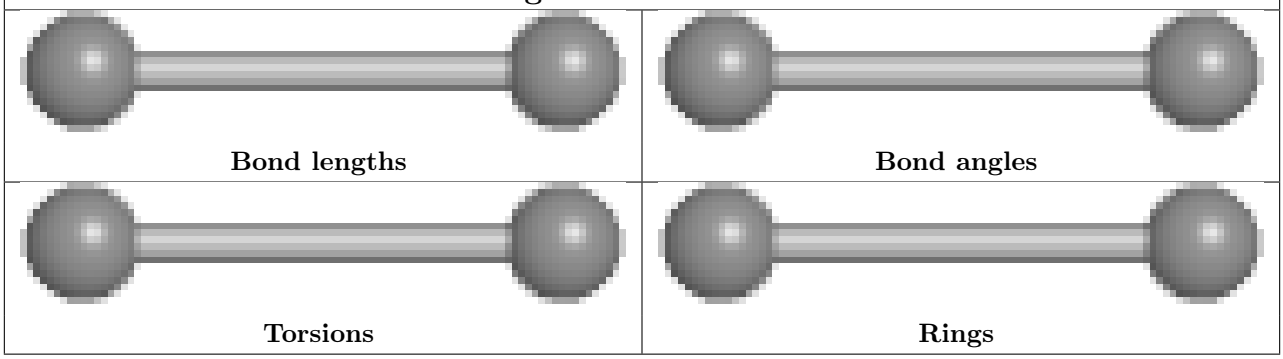


Torsions

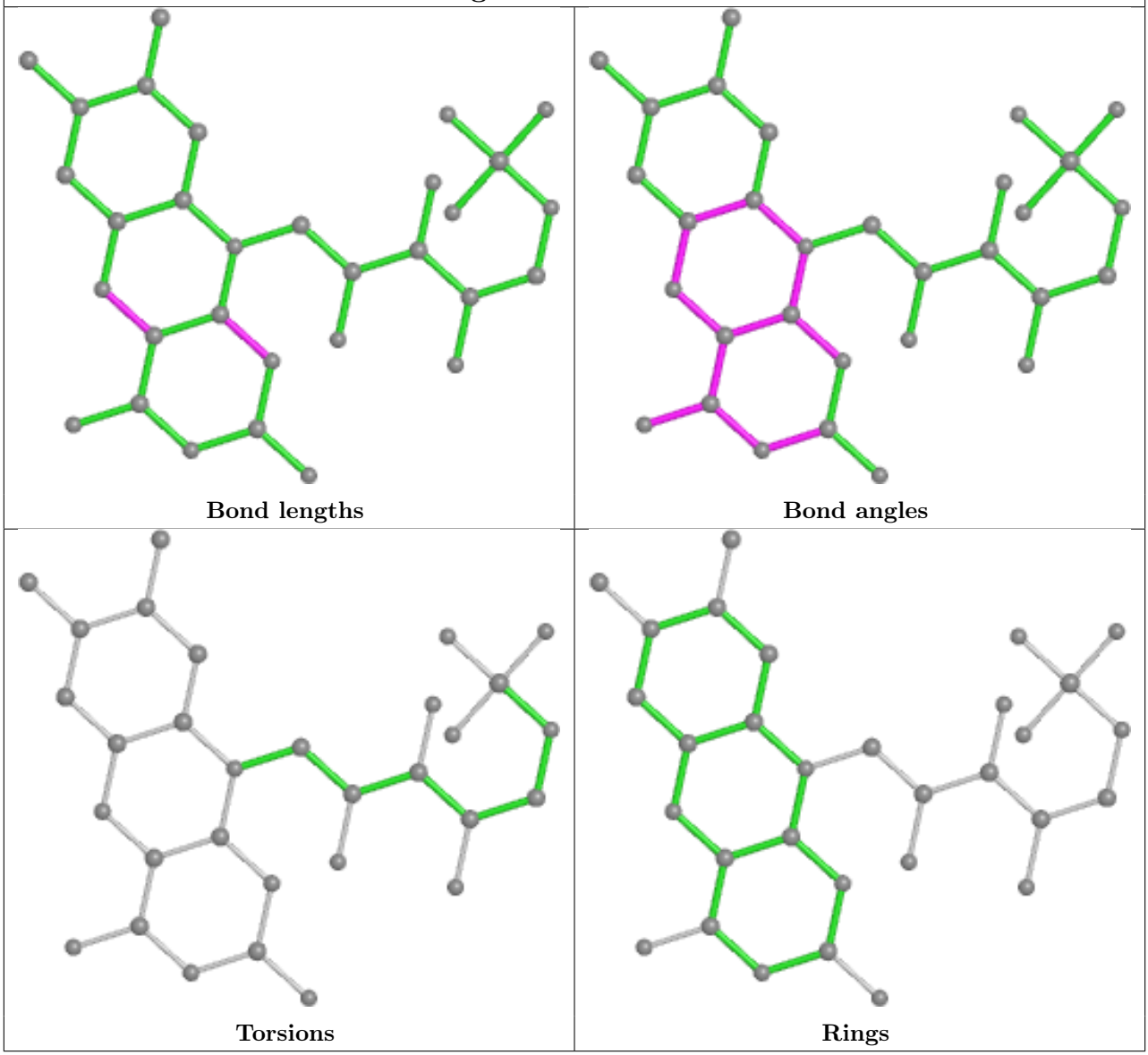


Rings

Ligand PER A 403



Ligand FMN I 201



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	283/324 (87%)	-0.13	3 (1%)	77	58	26, 59, 94, 116	4 (1%)
1	B	284/324 (87%)	-0.42	5 (1%)	67	45	25, 47, 71, 109	5 (1%)
1	C	283/324 (87%)	-0.22	3 (1%)	77	58	32, 55, 78, 106	9 (3%)
1	D	282/324 (87%)	-0.48	2 (0%)	84	68	27, 44, 67, 92	1 (0%)
1	E	283/324 (87%)	0.30	7 (2%)	58	36	30, 76, 111, 126	14 (4%)
1	F	285/324 (87%)	-0.54	3 (1%)	77	58	25, 42, 65, 110	2 (0%)
2	G	129/150 (86%)	0.54	10 (7%)	20	11	38, 81, 109, 126	12 (9%)
2	I	135/150 (90%)	0.46	13 (9%)	15	9	43, 77, 115, 139	10 (7%)
All	All	1964/2244 (87%)	-0.15	46 (2%)	61	39	25, 55, 101, 139	57 (2%)

All (46) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	293	PRO	5.5
2	G	62	ALA	4.7
1	B	293	PRO	4.5
2	G	63	GLY	4.1
1	B	11	VAL	3.8
2	I	41	ASP	3.7
2	I	62	ALA	3.6
1	E	120	THR	3.5
1	E	46	ASP	3.5
2	G	64	GLY	3.3
2	I	55	ARG	3.2
1	F	11	VAL	3.1
1	E	292	SER	3.1
1	E	289	SER	3.0
2	I	63	GLY	3.0
2	G	54	GLY	2.9

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Mol	Chain	Res	Type	RSRZ
1	D	292	SER	2.8
2	G	55	ARG	2.8
2	G	53	GLY	2.8
2	I	141	THR	2.7
1	A	292	SER	2.7
1	D	11	VAL	2.7
1	B	292	SER	2.7
1	C	292	SER	2.6
1	C	39	GLU	2.6
2	I	54	GLY	2.5
1	E	184	THR	2.5
1	A	118	CYS	2.5
1	C	10	ARG	2.4
1	F	292	SER	2.3
2	I	138	LYS	2.3
2	I	53	GLY	2.3
2	I	23	GLN	2.3
2	I	57	ASN	2.2
2	I	43	PRO	2.2
2	G	24	LYS	2.2
1	A	56	GLY	2.2
1	E	248	GLU	2.2
1	E	48	PRO	2.2
2	G	41	ASP	2.2
1	B	10	ARG	2.1
2	G	141	THR	2.1
2	I	64	GLY	2.1
1	B	72	ASP	2.1
2	I	26	GLY	2.1
2	G	135	GLU	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 monosaccharides in this entry.

6.4 Ligands (i)

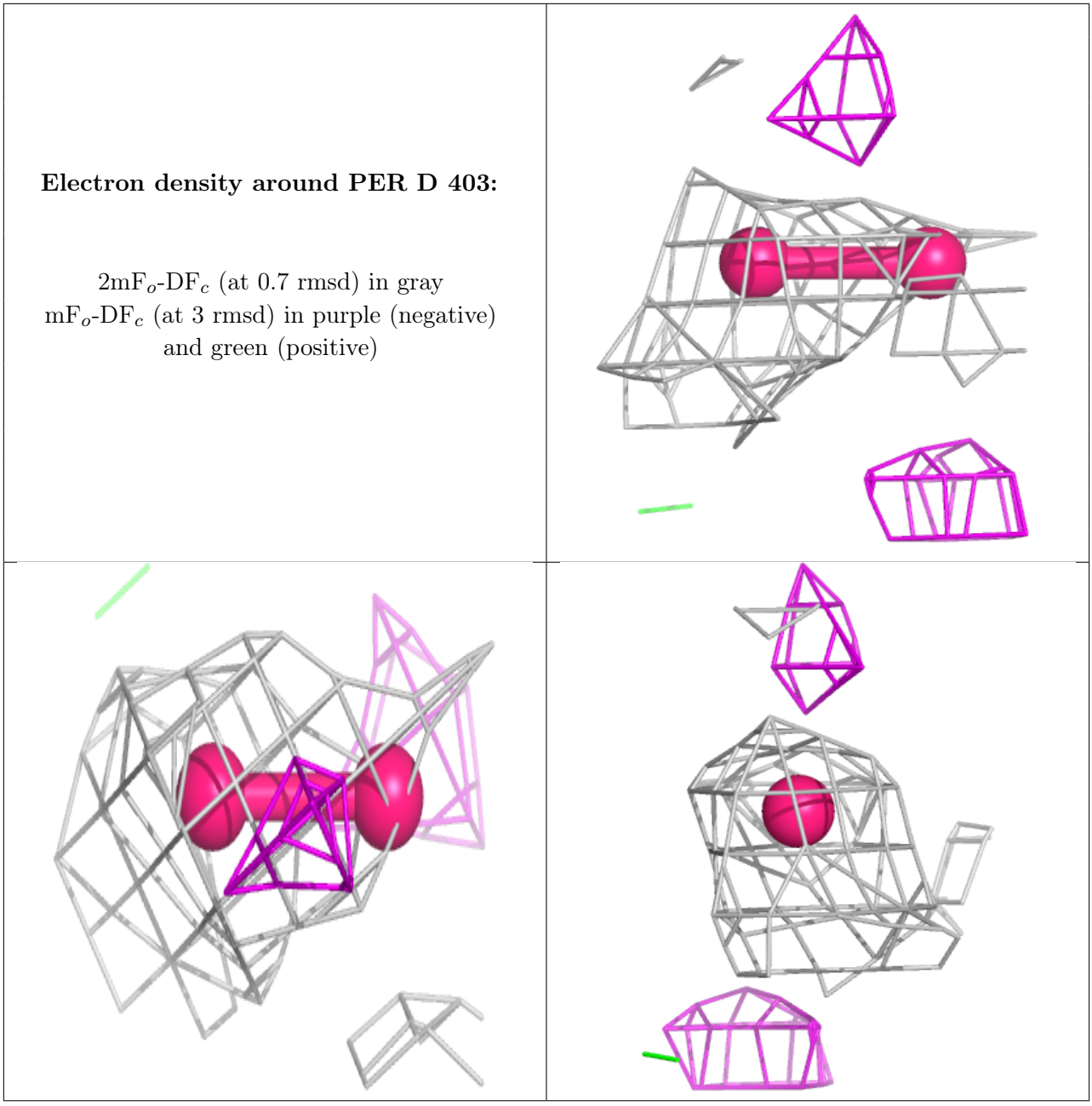
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
4	PER	D	403	2/2	0.80	0.27	44,44,44,48	0
5	OH	F	404	1/1	0.89	0.39	42,42,42,51	0
4	PER	F	403	2/2	0.90	0.18	45,45,45,47	0
4	PER	A	403	2/2	0.90	0.29	55,55,55,62	0
5	OH	B	403	1/1	0.93	0.17	46,46,46,55	0
3	MN	E	402	1/1	0.96	0.11	96,96,96,96	0
3	MN	B	402	1/1	0.97	0.10	79,79,79,79	0
5	OH	C	403	1/1	0.97	0.14	51,51,51,62	0
3	MN	C	402	1/1	0.97	0.08	82,82,82,82	0
6	FMN	G	201	31/31	0.97	0.09	36,63,76,85	0
6	FMN	I	201	31/31	0.97	0.08	23,51,60,64	0
5	OH	D	404	1/1	0.98	0.07	25,25,25,30	0
3	MN	F	402	1/1	0.98	0.12	70,70,70,70	0
3	MN	E	401	1/1	0.98	0.06	84,84,84,84	0
3	MN	A	402	1/1	0.98	0.07	94,94,94,94	0
3	MN	C	401	1/1	0.99	0.03	63,63,63,63	0
3	MN	F	401	1/1	0.99	0.05	50,50,50,50	0
3	MN	B	401	1/1	0.99	0.04	55,55,55,55	0
3	MN	D	401	1/1	0.99	0.08	52,52,52,52	0
3	MN	D	402	1/1	0.99	0.09	69,69,69,69	0
3	MN	A	401	1/1	0.99	0.06	68,68,68,68	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.

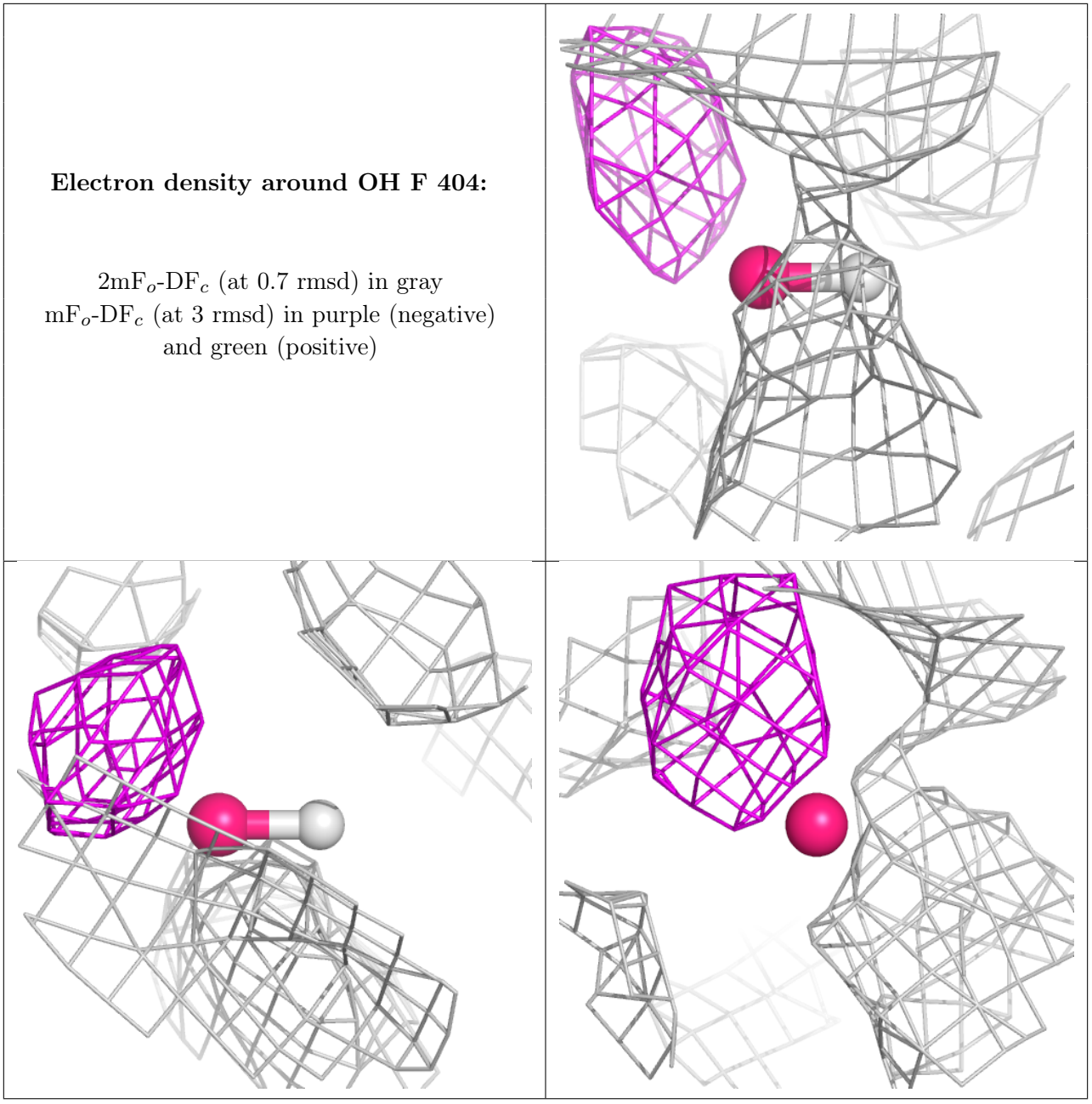
Electron density around PER D 403:

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



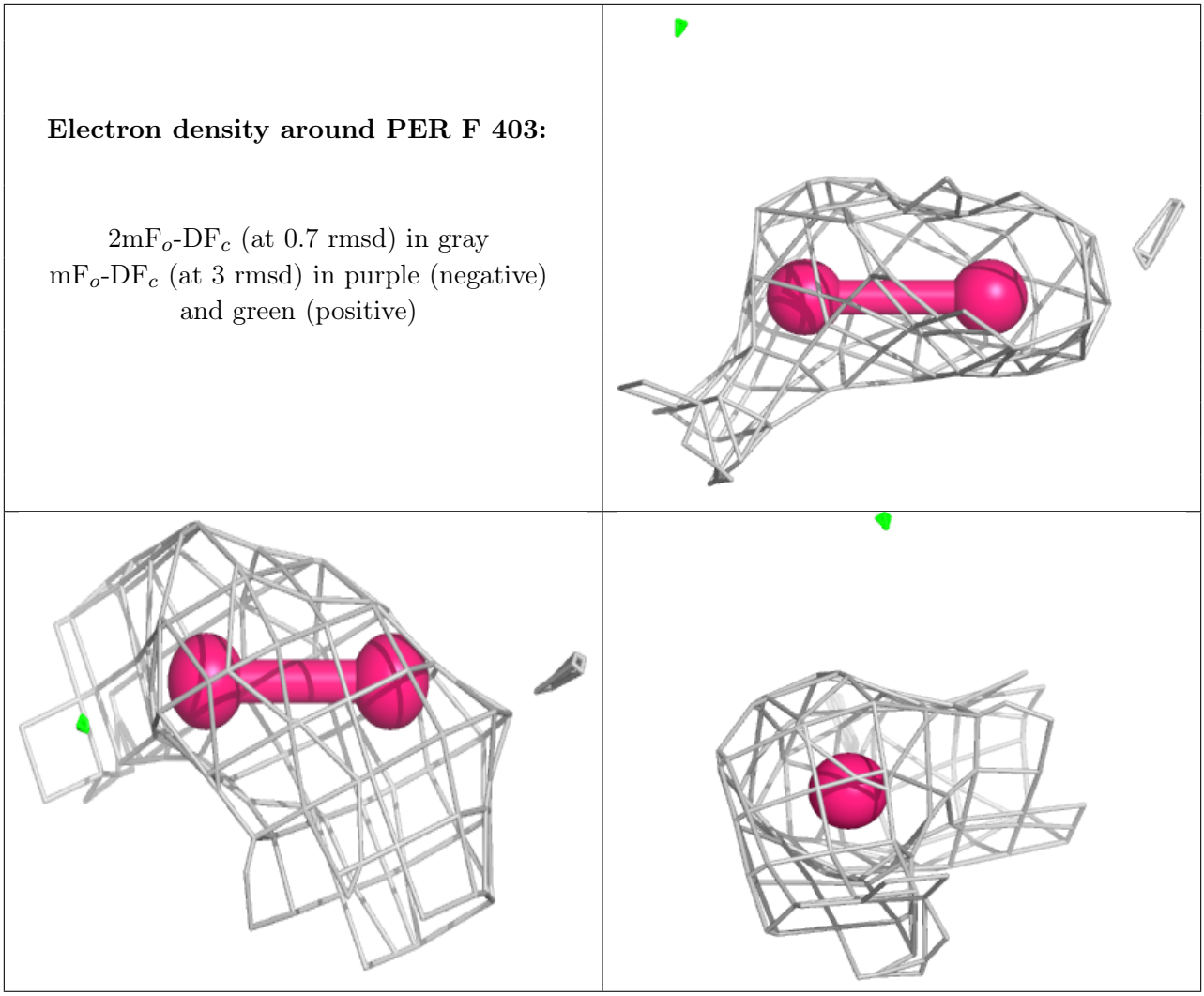
Electron density around OH F 404:

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



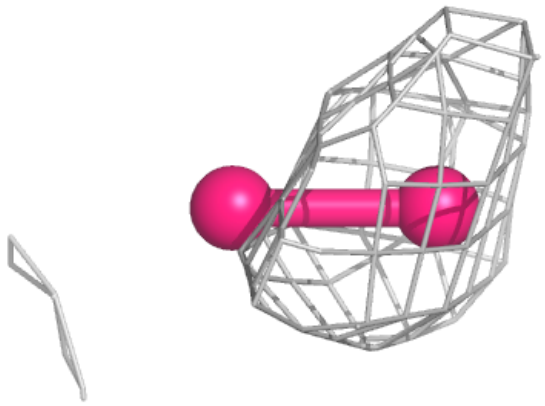
Electron density around PER F 403:

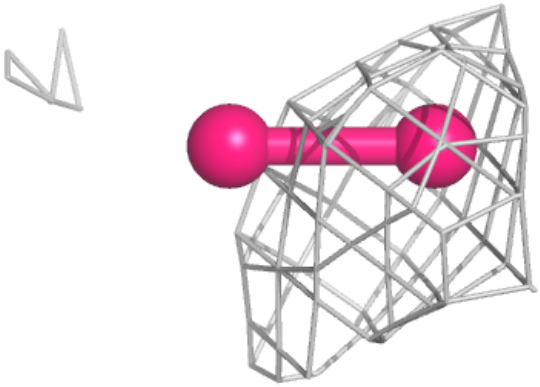
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

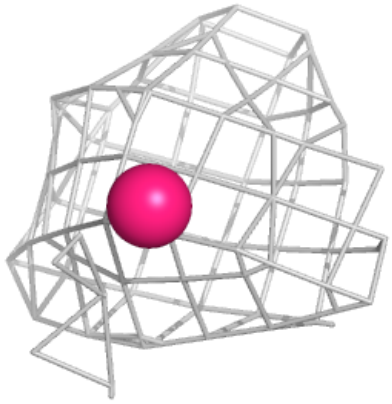


Electron density around PER A 403:

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

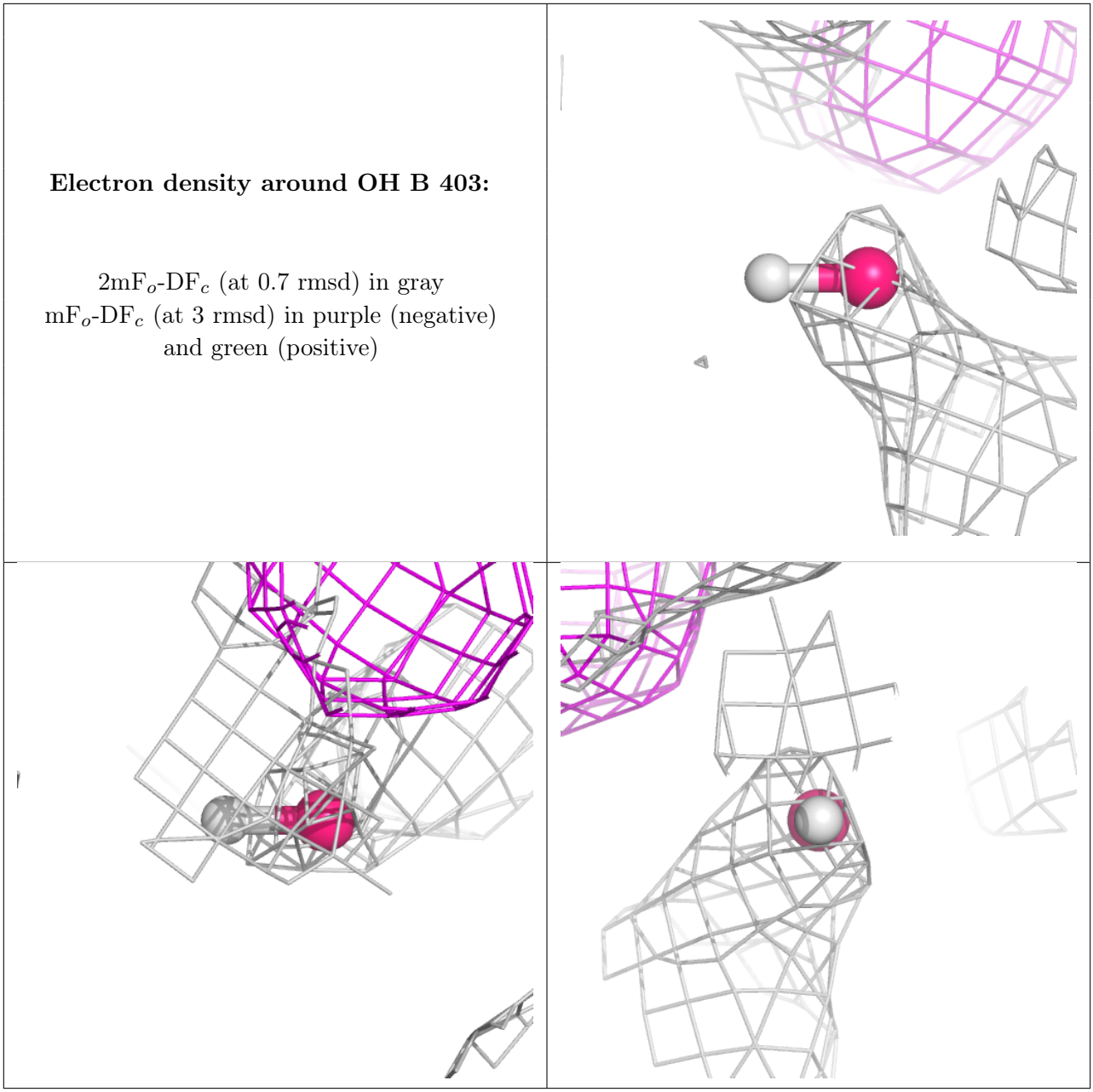






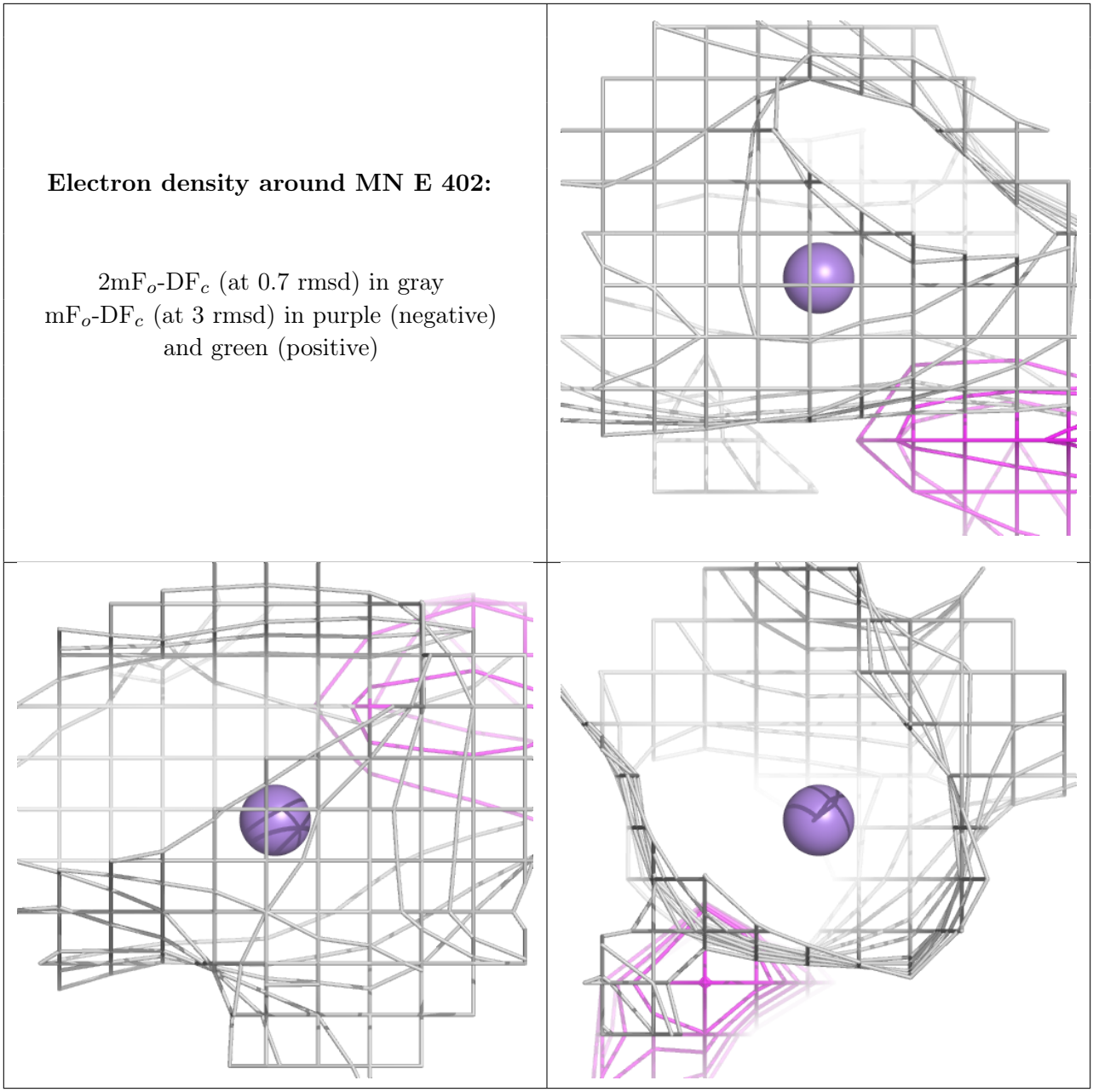
Electron density around OH B 403:

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



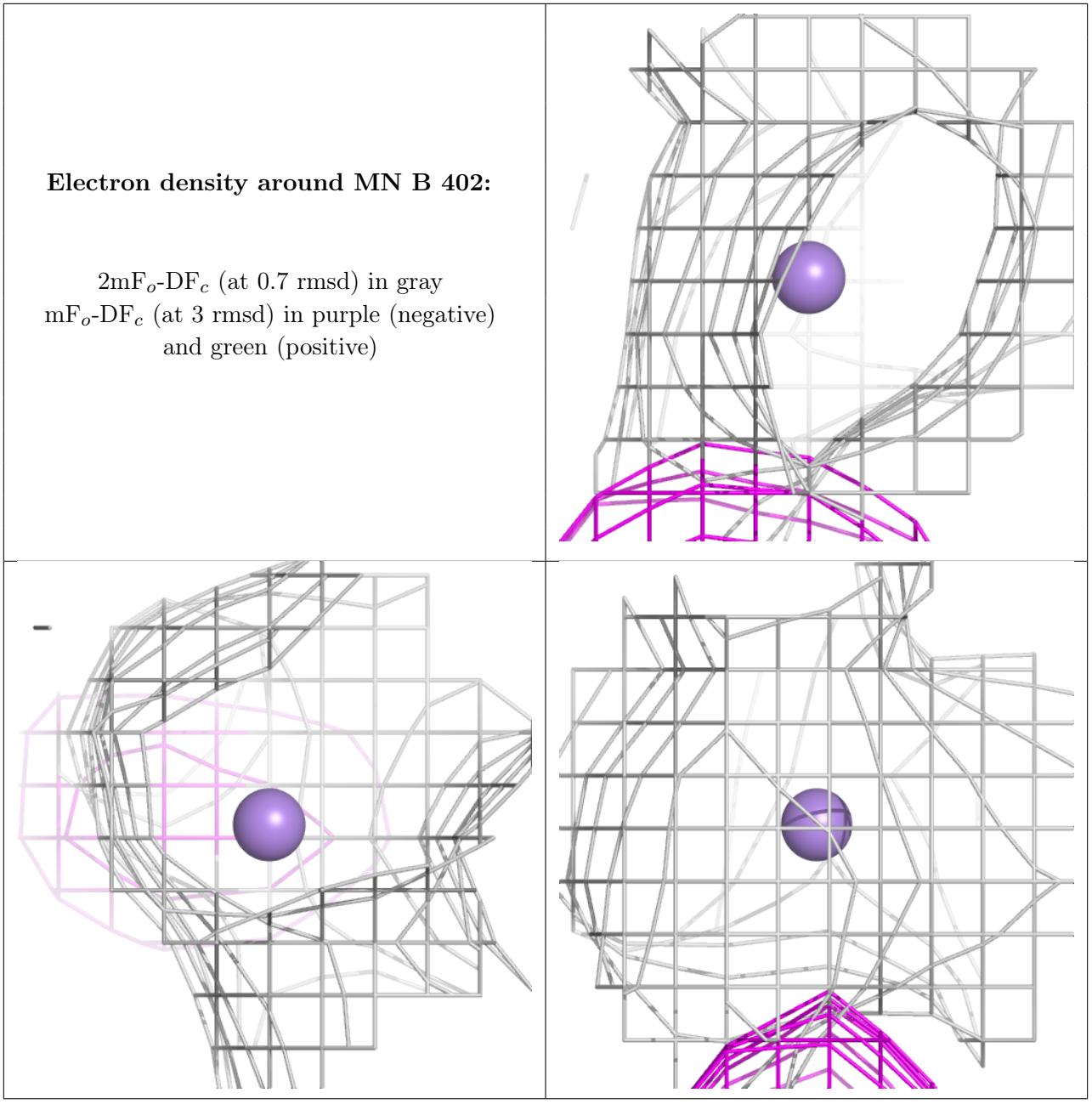
Electron density around MN E 402:

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



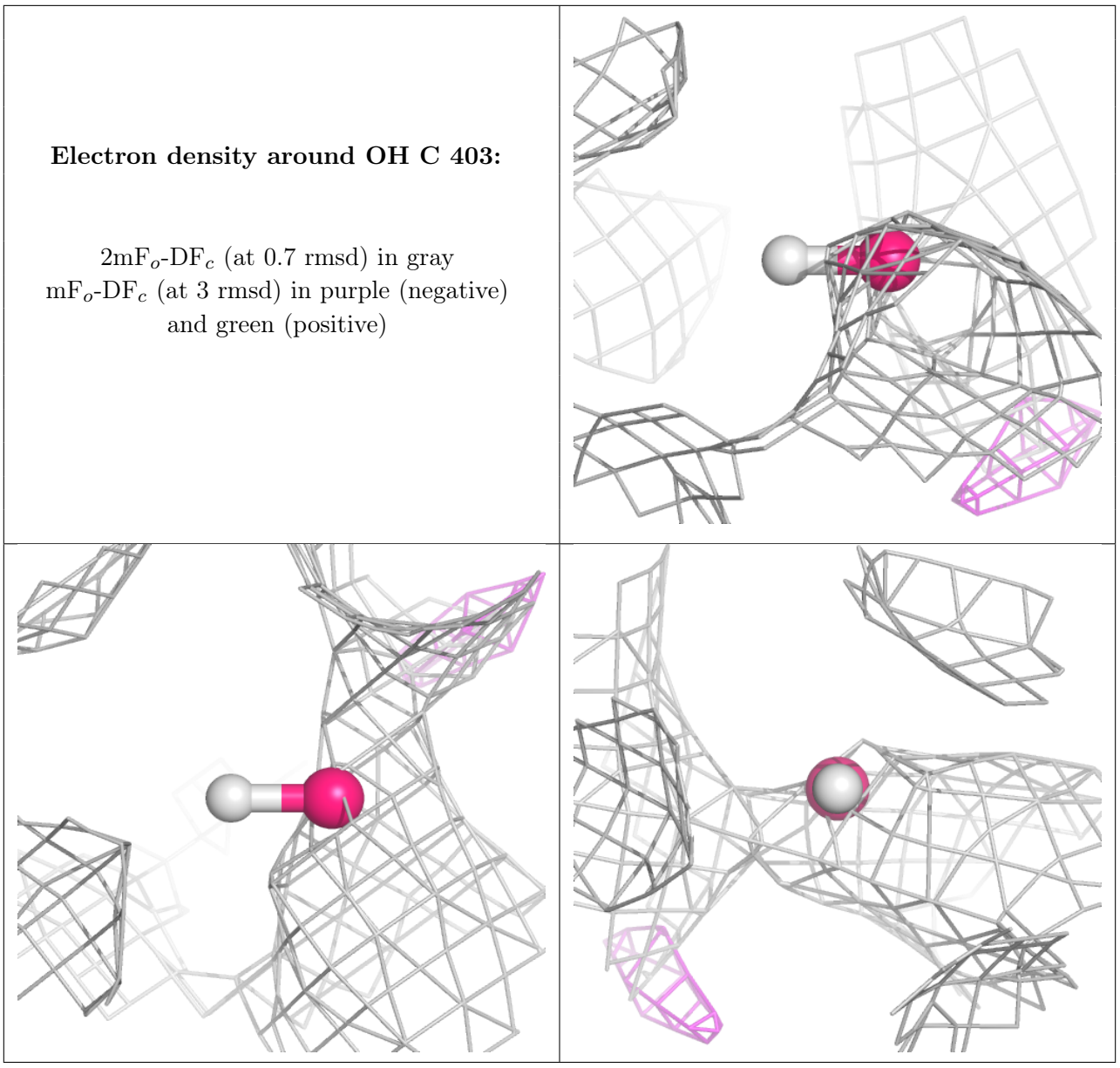
Electron density around MN B 402:

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



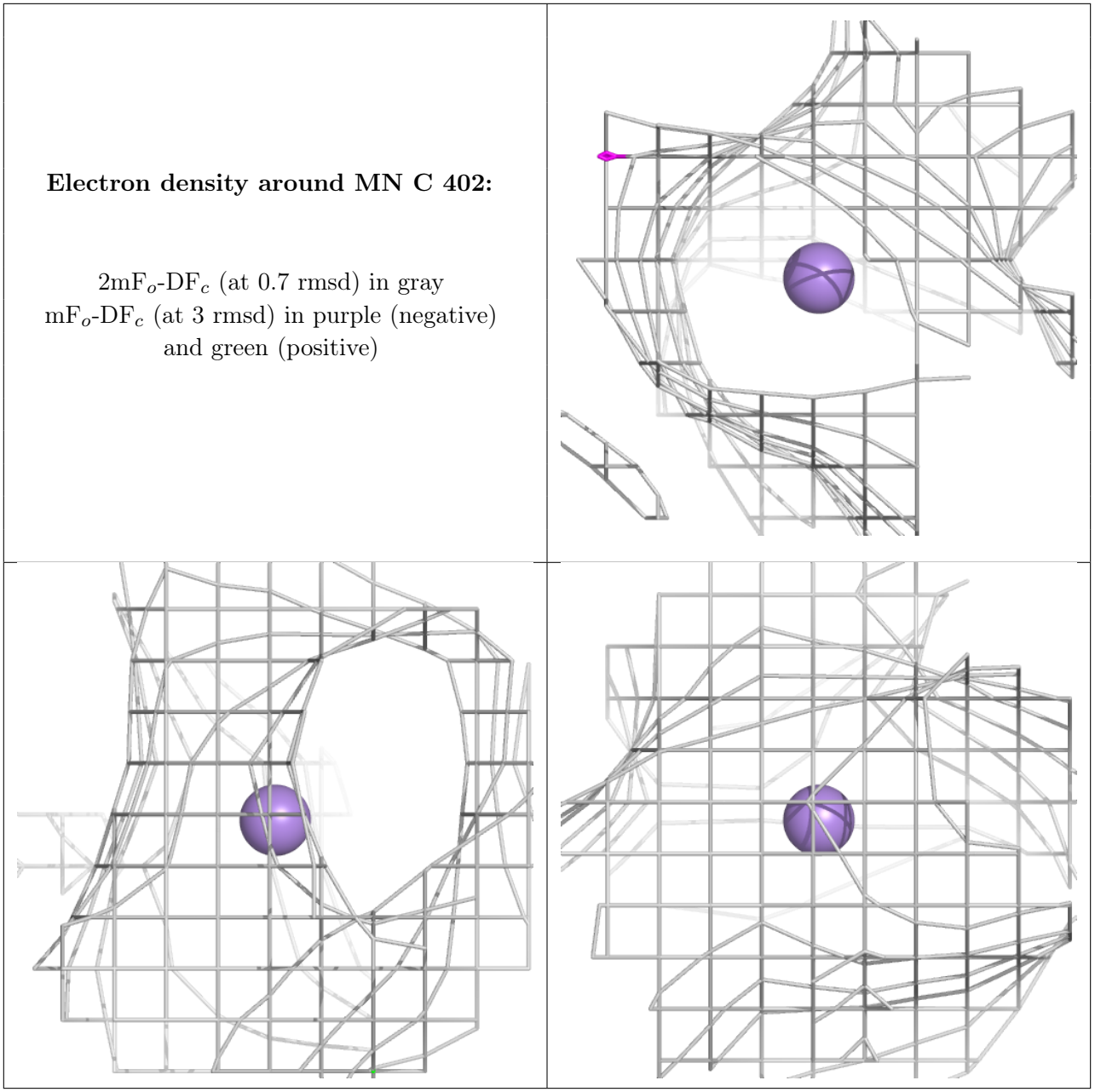
Electron density around OH C 403:

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



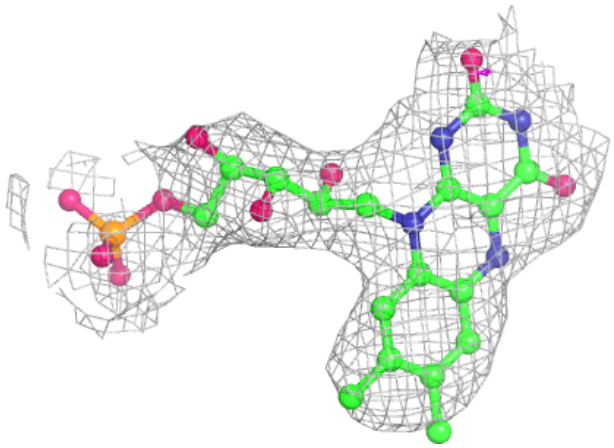
Electron density around MN C 402:

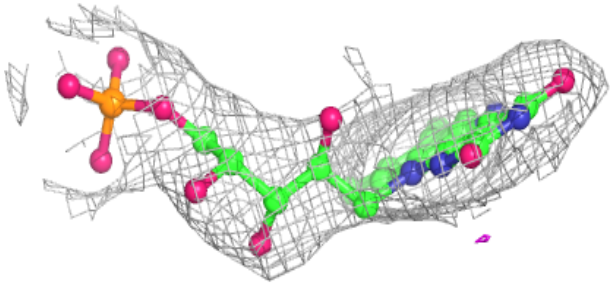
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

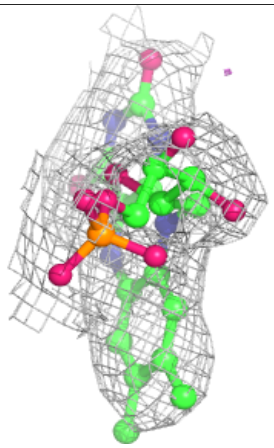


Electron density around FMN G 201:

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

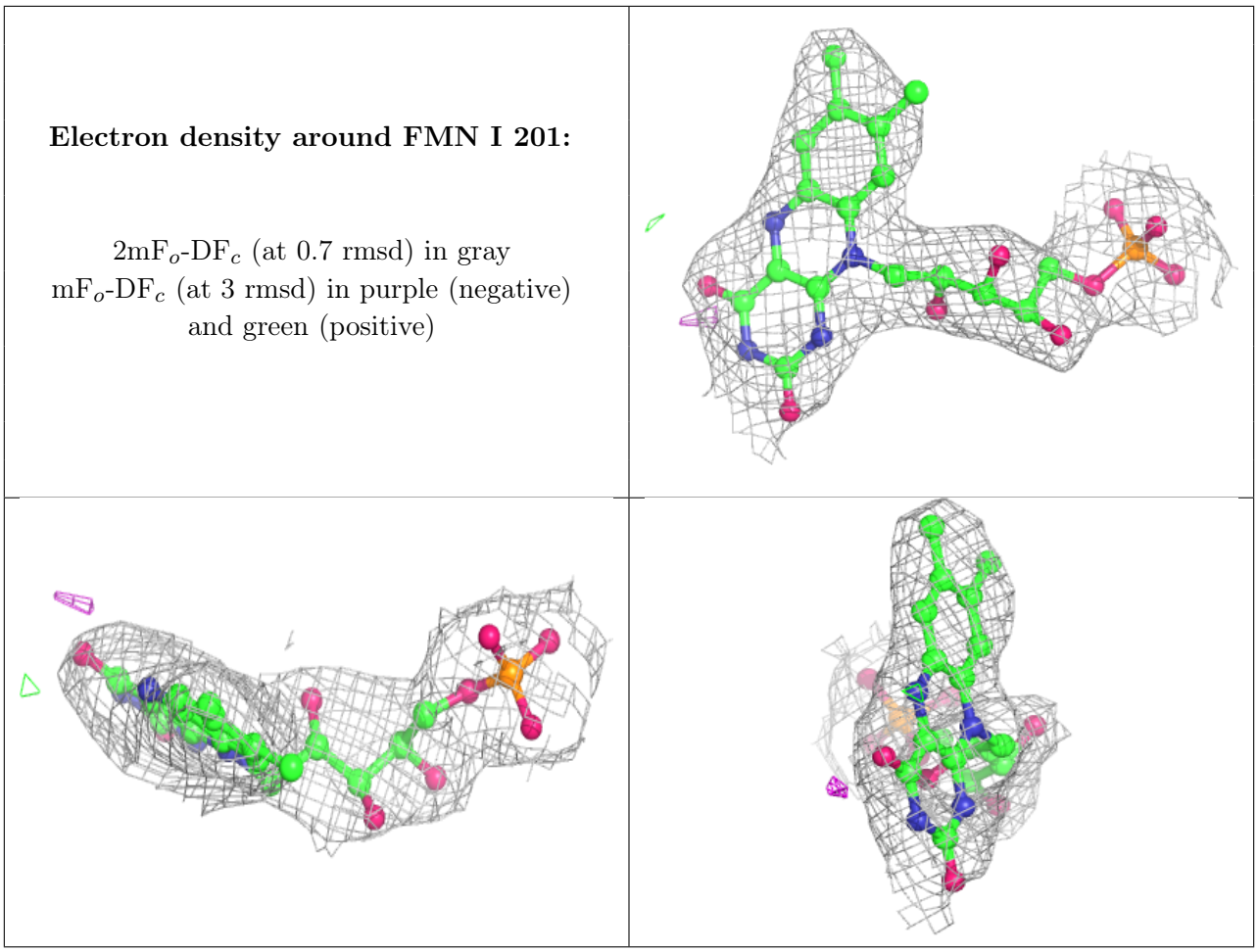






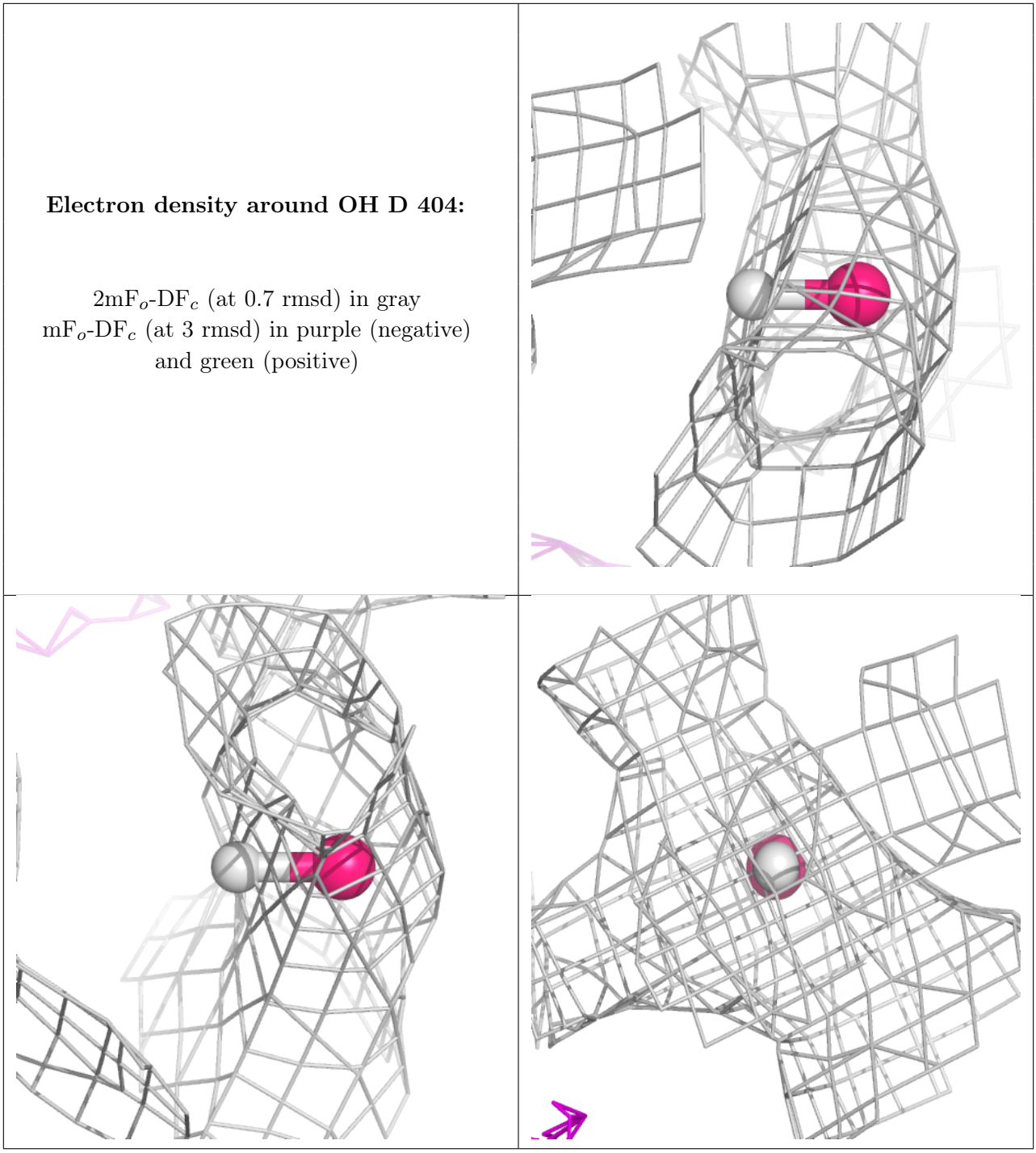
Electron density around FMN I 201:

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



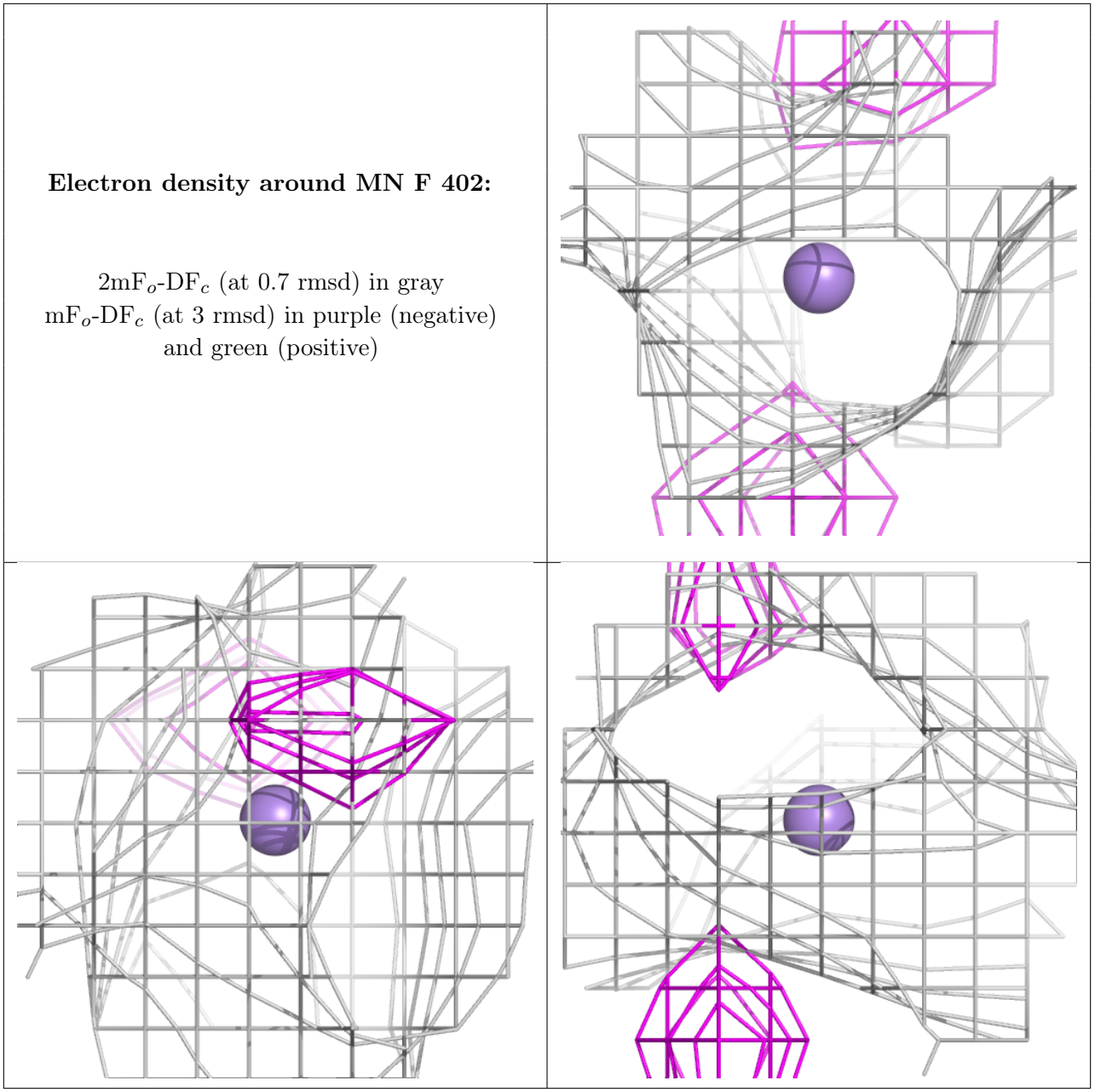
Electron density around OH D 404:

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



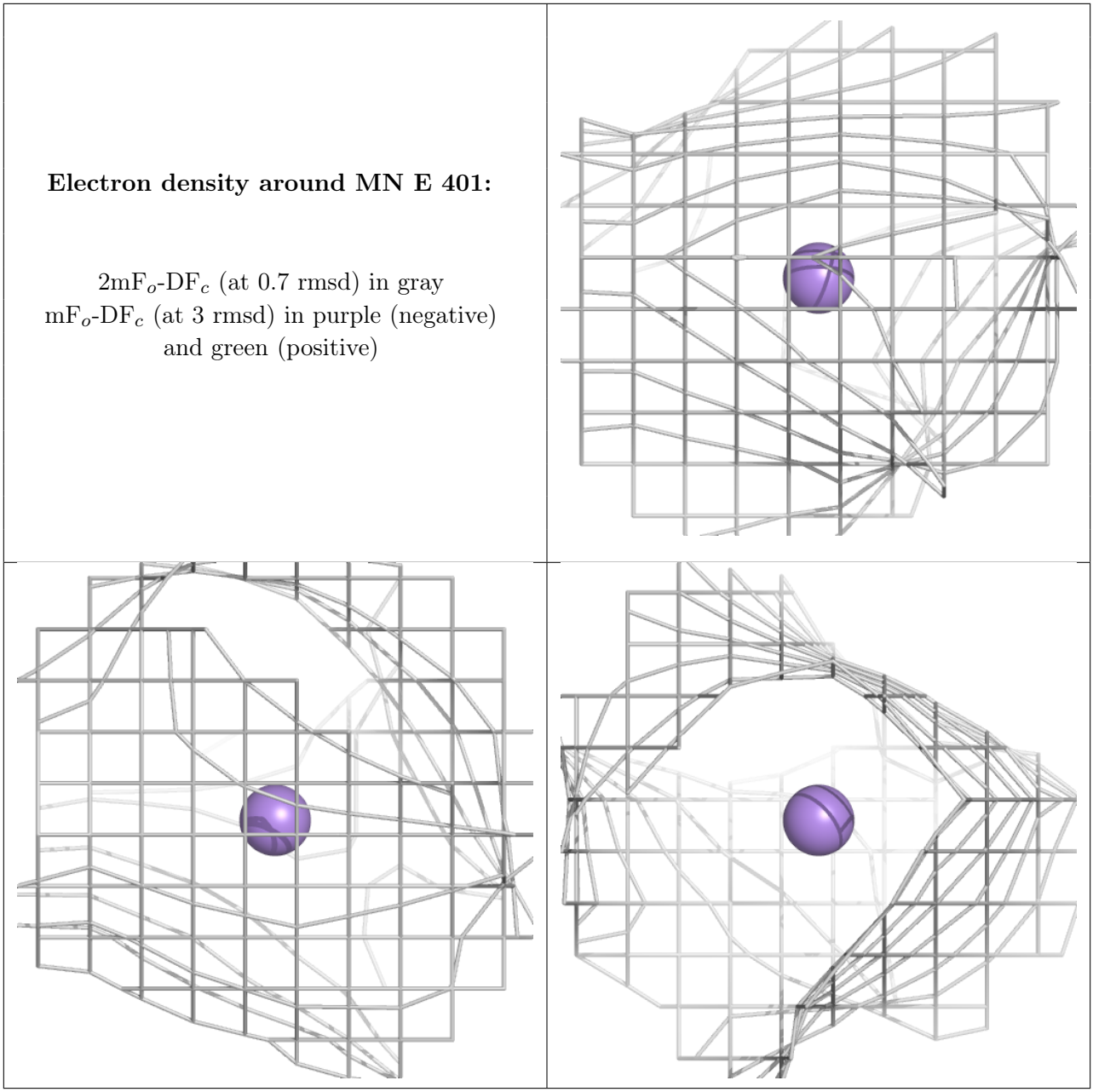
Electron density around MN F 402:

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



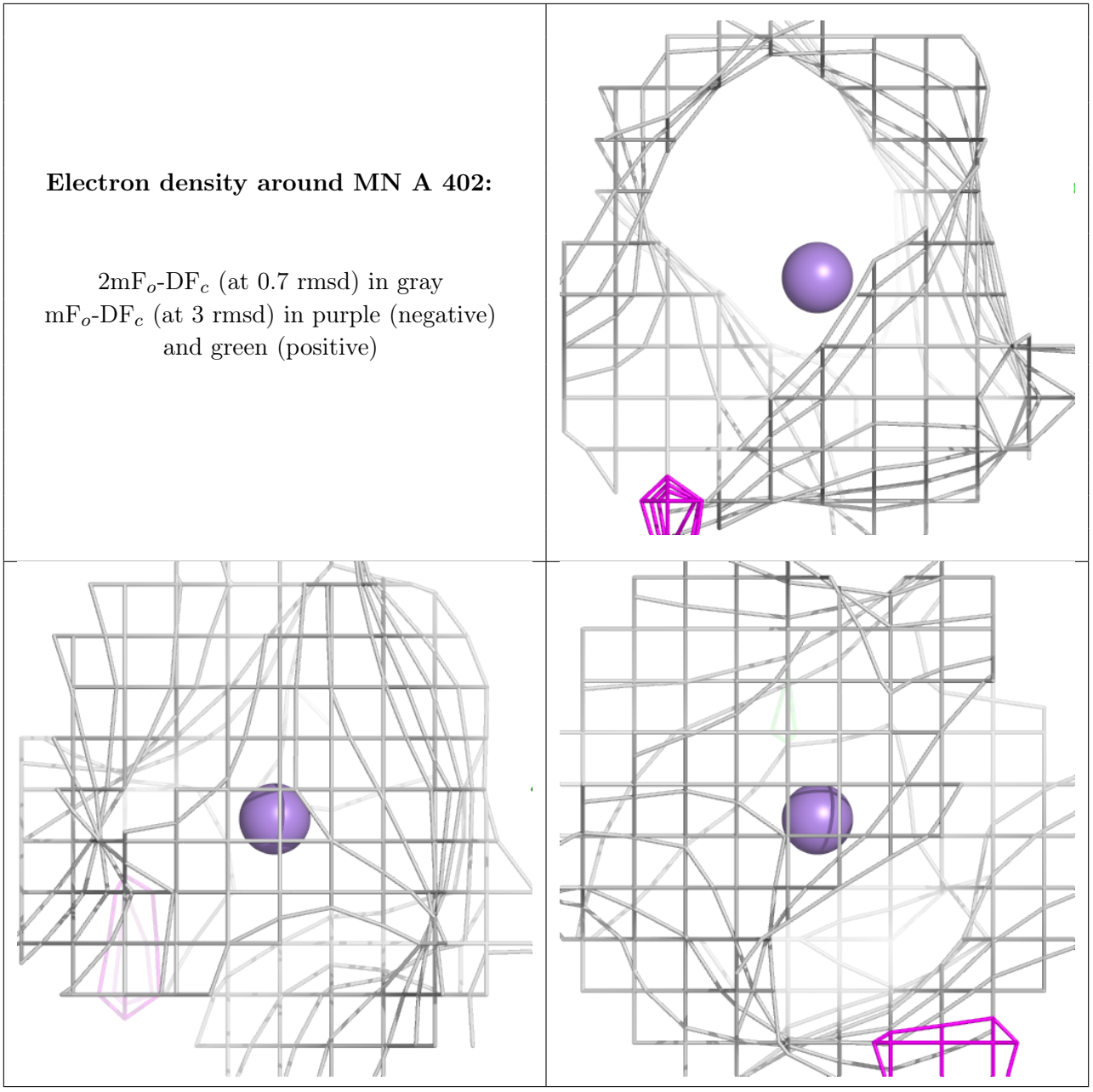
Electron density around MN E 401:

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



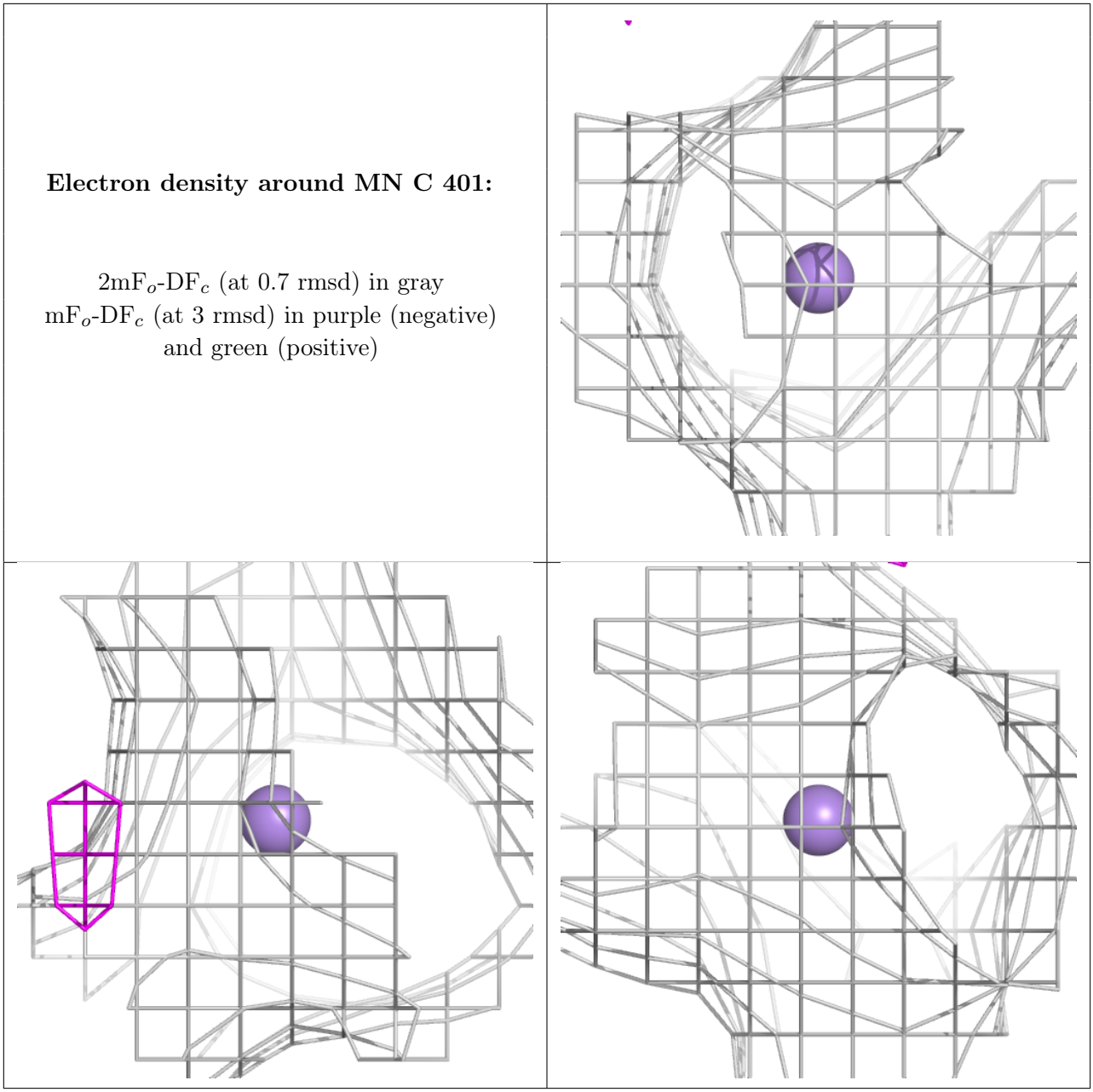
Electron density around MN A 402:

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



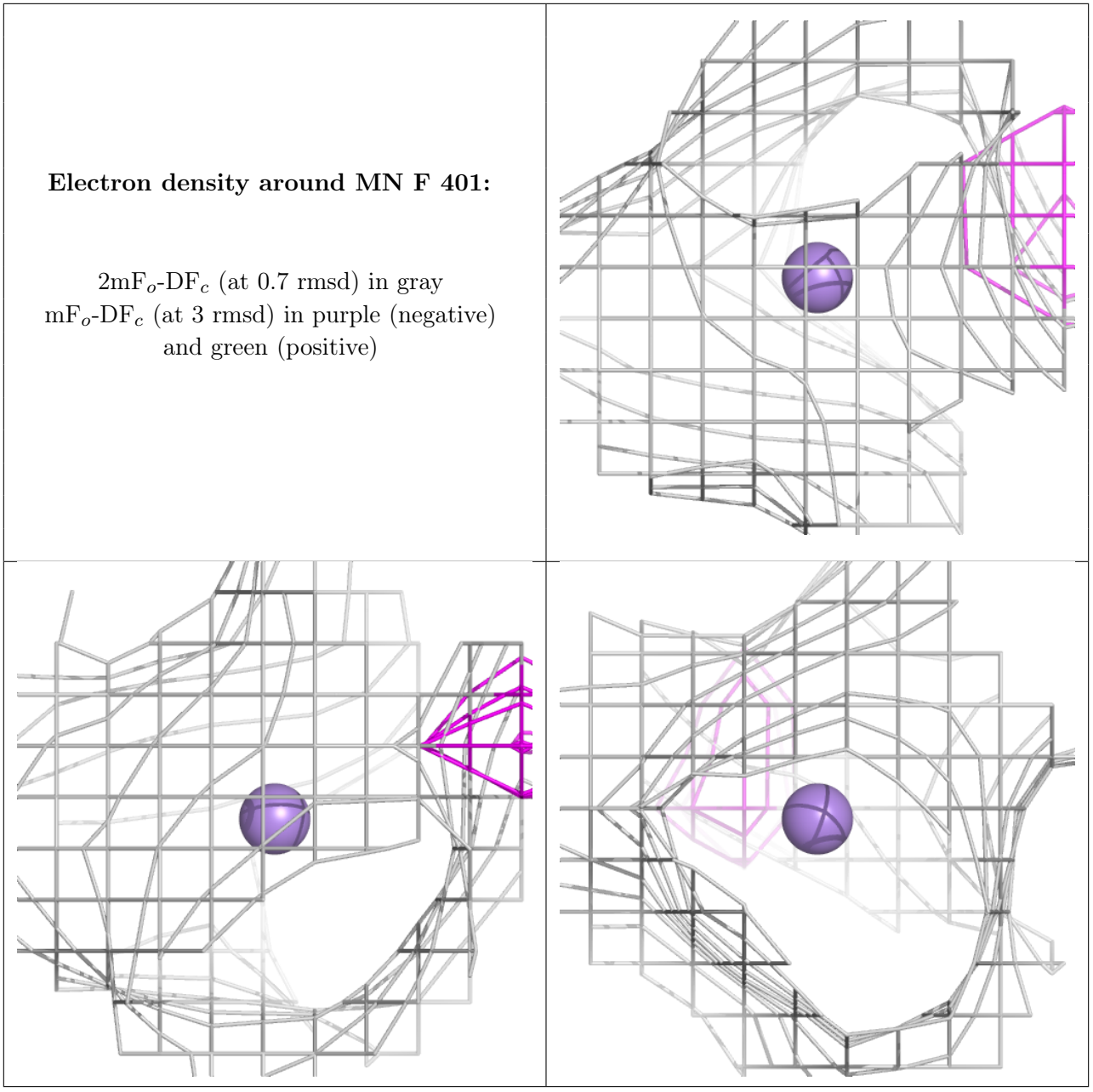
Electron density around MN C 401:

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



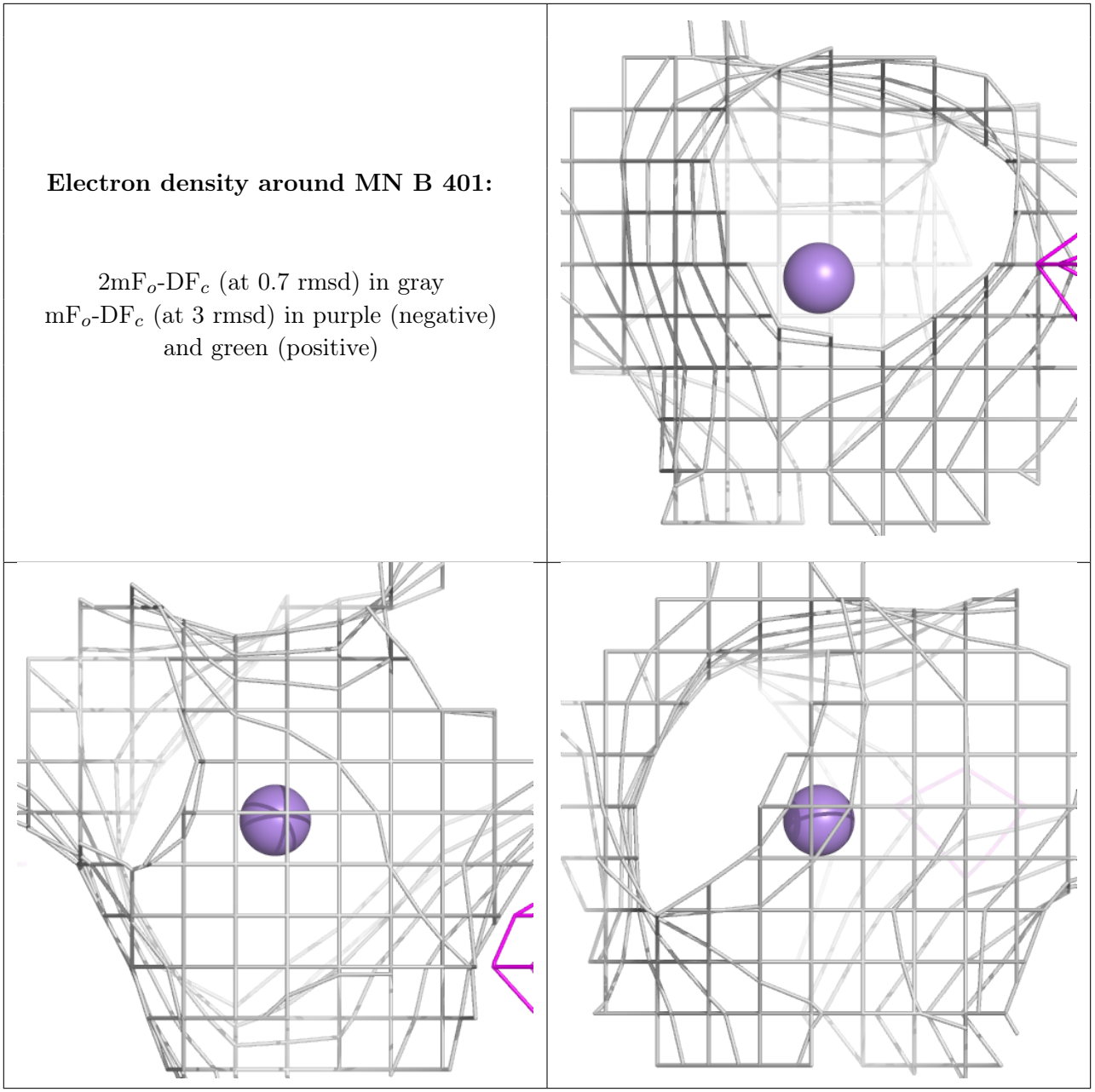
Electron density around MN F 401:

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



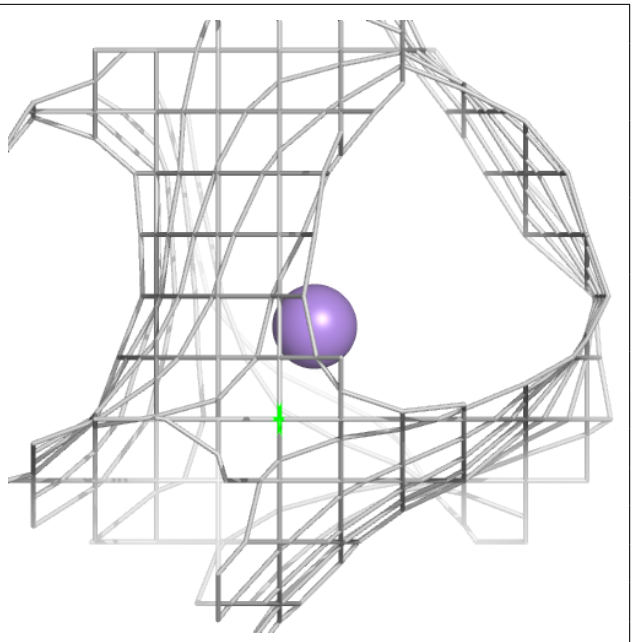
Electron density around MN B 401:

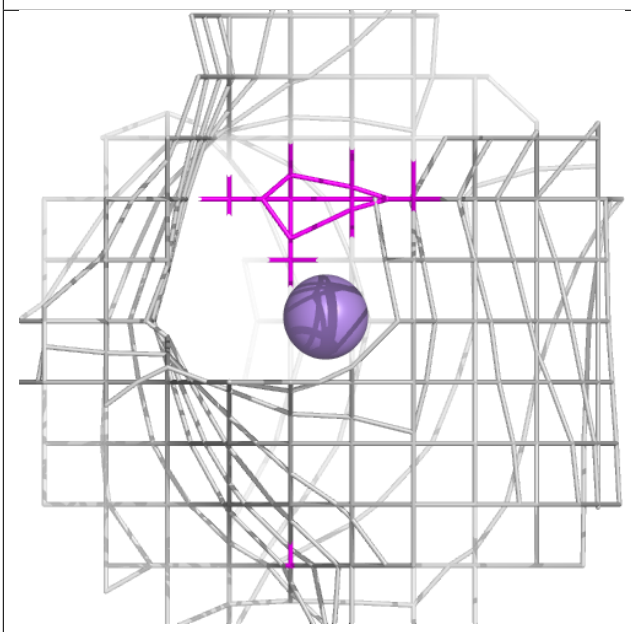
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

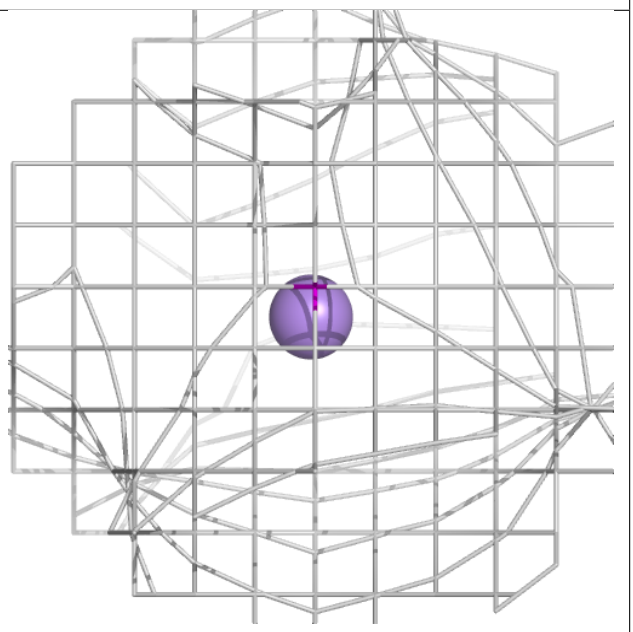


Electron density around MN D 401:

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

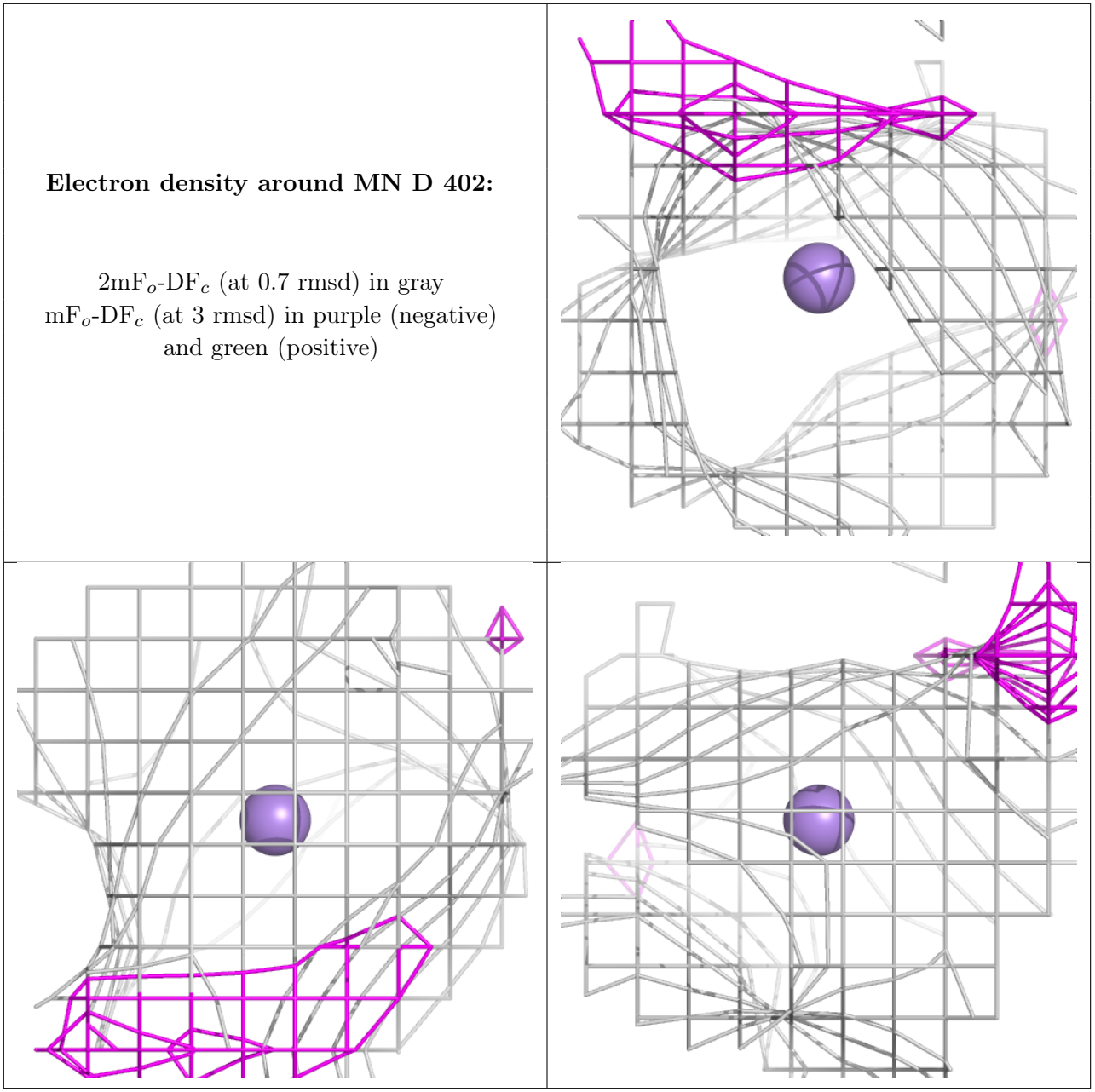






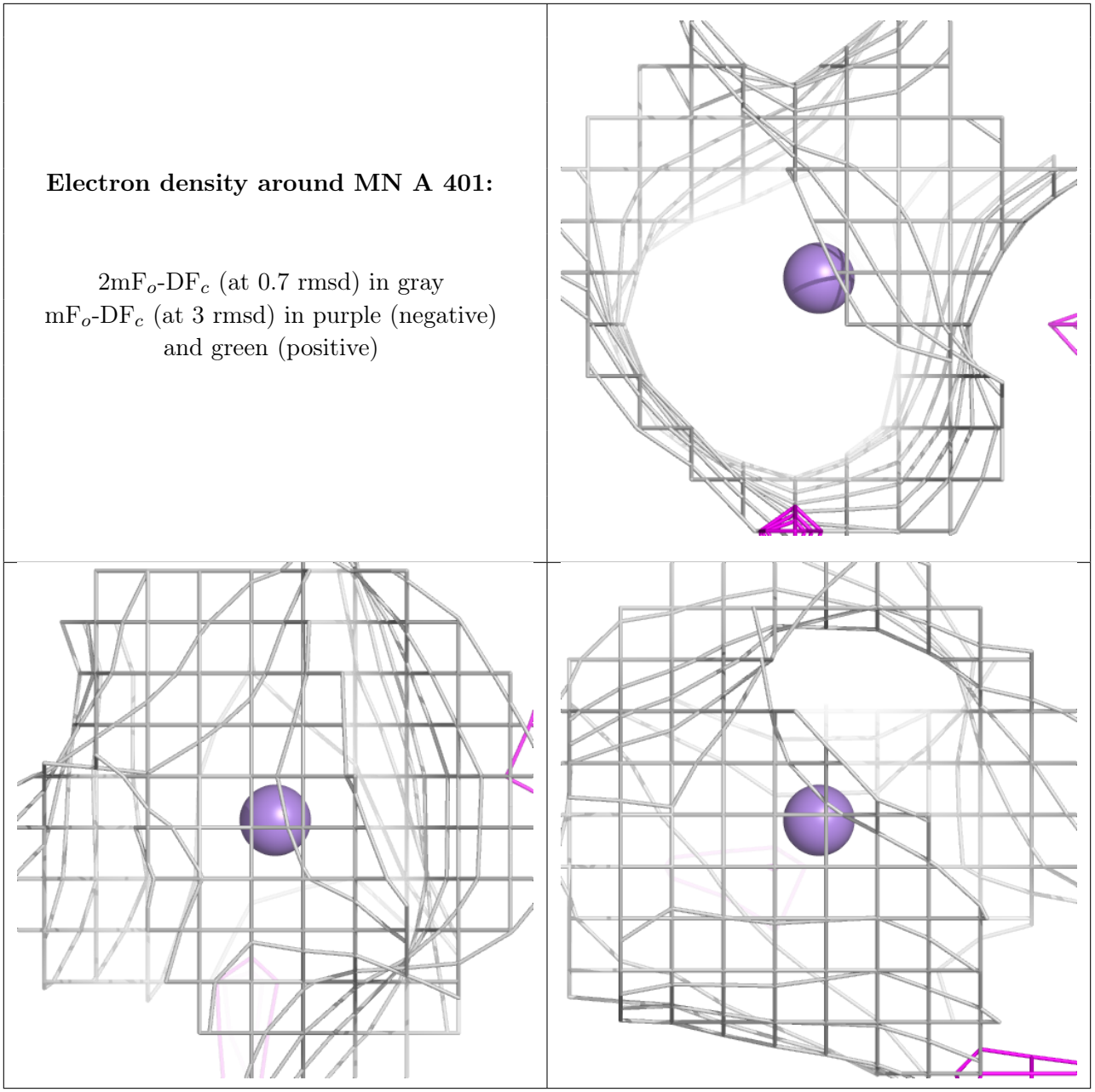
Electron density around MN D 402:

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



Electron density around MN A 401:

$2mF_o$-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 (i)

There are no such residues in this entry.