WORLDWIDE PDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Jul 22, 2024 – 01:08 am BST

PDB ID	:	8C61
Title	:	Structure of USP54 in complex with Lys63-linked diUbiquitin-PA
Authors	:	Wendrich, K.; Gersch, M.
Deposited on	:	2023-01-11
Resolution	:	2.50 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:

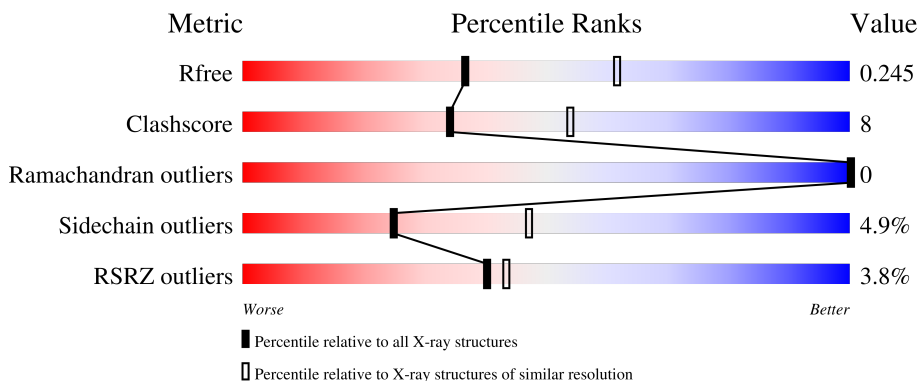|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.50 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	Percentile Ranks	Value
Rfree		0.245
Clashscore		8
Ramachandran outliers		0
Sidechain outliers		4.9%
RSRZ outliers		3.8%

Worse *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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	350	75% 16% · 8%
1	D	350	7% / 67% 23% · 9%
1	G	350	2% / 79% 14% · 6%
1	J	350	5% / 75% 19% 6%
2	B	75	80% 17% ·

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Mol	Chain	Length	Quality of chain
2	E	75	7% 77% 21%
2	H	75	76% 24%
2	K	75	8% 68% 29%
3	C	76	84% 14%
3	F	76	4% 63% 34%
3	I	76	78% 21%
3	L	76	14% 68% 25%

2 Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 14892 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 Inactive ubiquitin carboxyl-terminal hydrolase 54.

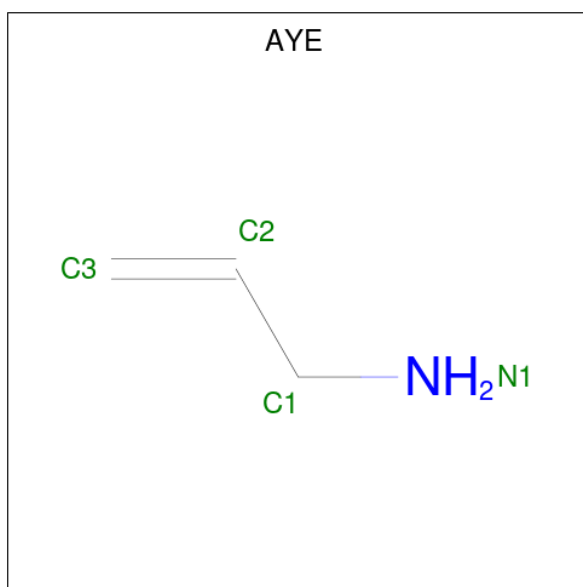| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	323	Total	C	N	O	S	0	0	0
			2527	1604	430	465	28			
1	D	320	Total	C	N	O	S	0	0	0
			2416	1533	412	444	27			
1	G	329	Total	C	N	O	S	0	1	0
			2548	1616	431	474	27			
1	J	330	Total	C	N	O	S	0	0	0
			2517	1596	434	458	29			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	20	GLY	-	expression tag	UNP Q70EL1
D	20	GLY	-	expression tag	UNP Q70EL1
G	20	GLY	-	expression tag	UNP Q70EL1
J	20	GLY	-	expression tag	UNP Q70EL1

- Molecule 2 is a protein called Polyubiquitin-B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	75	Total	C	N	O	S	0	0	0
			590	372	103	114	1			
2	E	75	Total	C	N	O	S	0	0	0
			581	366	102	112	1			
2	H	75	Total	C	N	O	S	0	0	0
			593	373	103	116	1			
2	K	75	Total	C	N	O	S	0	0	0
			579	365	101	112	1			

- Molecule 3 is a protein called Ubiquitin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	76	Total 597	C 375	N 104	O 117	S 1	0	0	0
3	F	76	Total 588	C 369	N 102	O 116	S 1	0	0	0
3	I	76	Total 593	C 372	N 103	O 117	S 1	0	0	0
3	L	74	Total 518	C 325	N 92	O 101		0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	63	ARG	LYS	engineered mutation	UNP P0CG47
F	63	ARG	LYS	engineered mutation	UNP P0CG47
I	63	ARG	LYS	engineered mutation	UNP P0CG47
L	63	ARG	LYS	engineered mutation	UNP P0CG47

- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	3	Total 3	Zn 3	0	0
4	D	3	Total 3	Zn 3	0	0
4	G	3	Total 3	Zn 3	0	0
4	J	3	Total 3	Zn 3	0	0

- Molecule 5 is prop-2-en-1-amine (three-letter code: AYE) (formula: C_3H_7N) (labeled as "Ligand of Interest" by depositor).

AYE

C2

C3

NH_2 N1

C1

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total 4	C 3	N 1	0	0
5	D	1	Total 4	C 3	N 1	0	0
5	G	1	Total 4	C 3	N 1	0	0
5	J	1	Total 4	C 3	N 1	0	0

- Molecule 6 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	2	Total 2	Cl 2	0	0

- Molecule 7 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	C	1	Total 1	Na 1	0	0
7	G	1	Total 1	Na 1	0	0

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	56	Total 56	O 56	0	0
8	B	19	Total 19	O 19	0	0
8	C	11	Total 11	O 11	0	0
8	D	12	Total 12	O 12	0	0
8	E	5	Total 5	O 5	0	0
8	F	4	Total 4	O 4	0	0
8	G	47	Total 47	O 47	0	0
8	H	21	Total 21	O 21	0	0
8	I	21	Total 21	O 21	0	0
8	J	12	Total 12	O 12	0	0
8	K	4	Total 4	O 4	0	0
8	L	1	Total 1	O 1	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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: Inactive ubiquitin carboxyl-terminal hydrolase 54

Chain A:

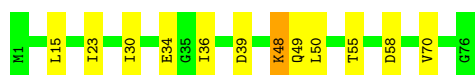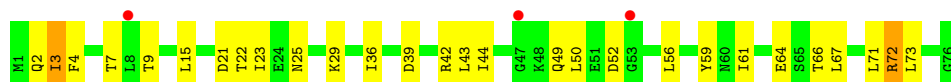• Molecule 1: Inactive ubiquitin carboxyl-terminal hydrolase 54

Chain D:

• Molecule 1: Inactive ubiquitin carboxyl-terminal hydrolase 54

Chain G:

ARG GLU LYS PRO S205 D221 I233 R234 I235 R236 R237 V238 L239 M240 I248 V251 W252 D253 E261 L271 L276 D282 K286 F306 F307 F308 Q309 I312 R313 I326 V333 I338 L347 L348 G354 V357 S358 T359 Q360 ASP LEU PRO PRO

GLN ALA GLU PHE GLN

• Molecule 1: Inactive ubiquitin carboxyl-terminal hydrolase 54

Chain J:

| 5% | 75% | 19% | 6% |

GLY PRO ARG SER THR SER ILE ALA PRO S30 L33 S34 N40 S41 C42 L48 W52 H53 L54 M70 C74 A78 L79 K80 G81 I82 F83 N84 Q85 F86 S90 L99 L103 D109 R112 F113 Q114 L115 D119 E123 C124 L128 I132

I136 F156 T159 Q163 C164 V165 S168 T172 S173 D174 P175 L176 I179 T187 C191 N192 I195 C196 M197 E202 K203 P204 S205 E211 L212 L213 Q214 T218 D221 L222 R223 C229 R234 I235 V238 L239 M240 Q244 L250 V251 W252

L259 D275 L276 F277 V280 T281 D282 D283 R284 A285 S288 Y291 L292 V293 Y299 G300 K301 T310 K336 C337 I338 L346 G354 S358 T359 GLN ASP LEU PRO PRO GLN ALA GLU PHE GLN

• Molecule 2: Polyubiquitin-B

Chain B:

| 80% | 17% | • |

M1 T9 E16 T22 I23 E24 N25 E34 G35 I36 P37 E51 R54 T55 L56 I61 Q62 K63 E64 G75

• Molecule 2: Polyubiquitin-B

Chain E:

| 7% | 77% | 21% | • |

M1 Q2 I3 F4 V5 T9 L15 T22 I23 E24 N25 V26 K27 I36 P37 P38 Q41 E51 D52 T55 L56 S57 D58 I61 V70 G75

• Molecule 2: Polyubiquitin-B

Chain H:

| 76% | 24% |

M1 Q2 I3 F4 V5 T14 V17 E18 P19 S20 D21 T22 K33 R42 Q49 L50 E51 D52 Q53 R54 T55 L56 I61 L67 R74 G75

• Molecule 2: Polyubiquitin-B

Chain K:

| 8% | 68% | 29% | • |

M1 Q2 I3 K6 T12 L15 E18 D21 T22 V26 K27 I30 P37 P38 D39 Q40 Q41 R42 F45 L50 E51 D52 T55 L56 S57 D58 I61 T66 L67 L71 R72 L73 R74 G75

• Molecule 3: Ubiquitin

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Chain C:

84% 14%

M1 L15 I23 I30 E34 G35 I36 D39 K48 Q49 L50 T55 D58 V70 G76

• Molecule 3: Ubiquitin

4%

Chain F:

63% 34%

M1 Q2 I3 F4 T7 L8 T9 L15 D21 T22 I23 E24 N25 K29 I36 D39 R42 L43 I44 G47 K48 Q49 L50 E51 D52 G53 L56 Y59 N60 I61 E64 S65 T66 L67 L71 R72 L73 G76

• Molecule 3: Ubiquitin

Chain I:

78% 21%

M1 T9 G10 L15 E24 I30 Q31 I36 Q40 Q41 R54 I61 Q62 R63 L67 H68 L69 V70 L71 R72 G76

• Molecule 3: Ubiquitin

14%

Chain L:

68% 25%

MET GLN I3 F4 T7 K11 T12 I13 P19 E24 A28 K29 I30 Q31 Q41 R42 L43 L50 E51 D52 T55 T66 L67 H68 L69 V70 L71 R72 L73 R74 G75 G76
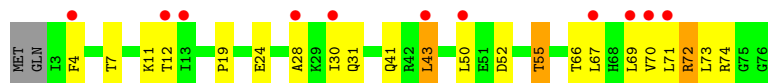
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	122.74Å 126.56Å 144.17Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	63.28 – 2.50 88.11 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.9 (63.28-2.50) 100.0 (88.11-2.50)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.08 (at 2.51Å)	Xtriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.200 , 0.243 0.203 , 0.245	Depositor DCC
R_{free} test set	3848 reflections (4.92%)	wwPDB-VP
Wilson B-factor (Å^2)	74.8	Xtriage
Anisotropy	0.069	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 65.8	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.000 for k,h,-l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	14892	wwPDB-VP
Average B, all atoms (Å^2)	95.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.59% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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: AYE, CL, NA, ZN

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	0.27	0/2585	0.46	0/3499
1	D	0.29	0/2471	0.50	0/3359
1	G	0.28	0/2606	0.47	0/3536
1	J	0.28	0/2575	0.48	0/3496
2	B	0.33	0/596	0.55	0/803
2	E	0.25	0/587	0.51	0/793
2	H	0.34	0/599	0.52	0/807
2	K	0.41	0/585	0.58	0/789
3	C	0.28	0/603	0.52	0/812
3	F	0.33	0/594	0.53	0/803
3	I	0.31	0/599	0.51	0/808
3	L	0.31	0/523	0.48	0/714
All	All	0.29	0/14923	0.49	0/20219

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	2527	0	2428	31	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	2416	0	2226	59	0
1	G	2548	0	2394	28	0
1	J	2517	0	2371	47	0
2	B	590	0	610	12	0
2	E	581	0	594	13	0
2	H	593	0	613	8	0
2	K	579	0	590	19	0
3	C	597	0	618	6	0
3	F	588	0	593	19	0
3	I	593	0	607	11	0
3	L	518	0	466	15	0
4	A	3	0	0	0	0
4	D	3	0	0	0	0
4	G	3	0	0	0	0
4	J	3	0	0	0	0
5	A	4	0	4	1	0
5	D	4	0	4	2	0
5	G	4	0	4	1	0
5	J	4	0	4	2	0
6	A	2	0	0	0	0
7	C	1	0	0	0	0
7	G	1	0	0	0	0
8	A	56	0	0	1	0
8	B	19	0	0	0	0
8	C	11	0	0	0	0
8	D	12	0	0	0	0
8	E	5	0	0	0	0
8	F	4	0	0	0	0
8	G	47	0	0	1	0
8	H	21	0	0	1	0
8	I	21	0	0	0	0
8	J	12	0	0	2	0
8	K	4	0	0	0	0
8	L	1	0	0	0	0
All	All	14892	0	14126	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)
3:I:41:GLN:HG2	3:I:69:LEU:HD11	1.69	0.74
2:K:39:ASP:HB3	2:K:74:ARG:HH21	1.58	0.68
1:J:124:CYS:O	1:J:128:LEU:HD23	1.94	0.68
1:D:182:VAL:HG12	1:D:247:THR:OG1	1.95	0.67
1:D:174:ASP:HA	3:F:72:ARG:HG3	1.77	0.66
3:F:23:ILE:HG23	3:F:43:LEU:HD12	1.77	0.66
1:D:264:ILE:HD13	1:D:337:CYS:HB3	1.78	0.66
3:F:36:ILE:HD13	3:F:71:LEU:HD21	1.79	0.65
1:A:188:THR:HG21	2:B:9:THR:HG22	1.78	0.64
2:K:38:PRO:HD2	2:K:39:ASP:H	1.63	0.64
1:D:331:LYS:O	1:D:335:THR:HG23	1.99	0.62
1:D:184:TYR:HD2	2:E:70:VAL:HG21	1.65	0.62
1:J:136:ILE:HG13	1:J:136:ILE:O	1.98	0.62
1:A:54:LEU:HD11	1:A:348:LEU:HD22	1.82	0.61
2:B:54:ARG:HG2	2:B:54:ARG:HH11	1.65	0.61
1:G:162:GLU:HG2	1:G:237:ARG:HG3	1.83	0.61
3:L:41:GLN:HG2	3:L:69:LEU:HD11	1.83	0.61
2:K:55:THR:HG23	2:K:57:SER:H	1.66	0.61
3:F:59:TYR:HB2	3:F:61:ILE:HG13	1.82	0.60
1:J:132:ILE:O	1:J:136:ILE:HG22	2.01	0.60
1:A:144:ILE:HG12	3:C:48:LYS:HE3	1.84	0.60
1:J:164:CYS:HB2	1:J:173:SER:HB3	1.84	0.60
2:K:55:THR:N	2:K:58:ASP:OD1	2.31	0.59
3:I:15:LEU:HD11	3:I:30:ILE:HG13	1.85	0.59
1:A:186:SER:HA	1:A:251:VAL:HB	1.85	0.58
1:J:99:LEU:HD21	1:J:128:LEU:HD11	1.85	0.58
1:G:54:LEU:HD11	1:G:348:LEU:HD22	1.84	0.58
1:D:177:PRO:HG3	3:F:44:ILE:HD13	1.87	0.57
3:F:22:THR:OG1	3:F:25:ASN:ND2	2.37	0.57
1:D:335:THR:HA	1:D:338:ILE:HD11	1.86	0.57
1:A:221:ASP:HB3	1:A:235:ILE:HB	1.87	0.57
1:J:159:THR:HG22	1:J:240:MET:HE2	1.85	0.57
2:K:18:GLU:N	2:K:21:ASP:OD1	2.37	0.57
2:E:5:VAL:HG21	2:E:15:LEU:HD22	1.87	0.57
1:G:166:CYS:HA	1:G:233:ILE:HG21	1.87	0.56
1:G:326:ILE:HG21	1:G:333:VAL:HG12	1.87	0.56
1:J:40:ASN:HB3	5:J:804:AYE:H1	1.87	0.56
1:A:140:THR:HG22	1:A:142:GLU:H	1.71	0.56
1:D:334:VAL:O	1:D:338:ILE:HG13	2.05	0.56
1:D:260:ALA:O	1:D:264:ILE:HG13	2.05	0.56
1:J:223:ARG:HH21	2:K:66:THR:CG2	2.19	0.56
2:B:22:THR:OG1	2:B:24:GLU:HG2	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:36:ILE:O	2:E:41:GLN:NE2	2.38	0.55
1:A:316:MET:HE2	1:A:325:GLU:HA	1.89	0.55
1:A:85:GLN:HB3	1:A:94:LEU:HD22	1.89	0.54
1:J:163:GLN:HG2	1:J:165:VAL:HG23	1.89	0.54
2:B:23:ILE:HD11	2:B:51:GLU:O	2.08	0.54
2:K:38:PRO:CD	2:K:39:ASP:H	2.21	0.54
1:A:309:GLN:HB3	1:A:312:ILE:HG22	1.89	0.54
2:K:45:PHE:HB3	2:K:50:LEU:HD21	1.90	0.54
2:B:37:PRO:HB2	3:I:10:GLY:HA3	1.91	0.53
3:L:71:LEU:HB3	3:L:73:LEU:HD21	1.91	0.53
1:J:33:LEU:HD21	1:J:86:PHE:HZ	1.72	0.53
1:J:223:ARG:HH21	2:K:66:THR:HG21	1.73	0.53
1:J:172:THR:O	3:L:72:ARG:HD3	2.08	0.53
1:A:261:GLU:HA	1:A:264:ILE:HD12	1.91	0.53
1:D:134:PHE:HD2	1:D:135:HIS:CD2	2.25	0.53
1:D:159:THR:OG1	1:D:241:ASN:ND2	2.42	0.53
1:D:290:LEU:HD22	1:D:351:ASP:HA	1.91	0.53
1:G:30:SER:OG	1:G:309:GLN:OE1	2.26	0.53
2:E:55:THR:OG1	2:E:58:ASP:OD1	2.26	0.53
1:J:301:LYS:NZ	8:J:902:HOH:O	2.39	0.53
1:D:61:PHE:CE2	1:D:79:LEU:HD22	2.44	0.52
2:B:56:LEU:HB3	2:B:61:ILE:HB	1.91	0.52
1:J:192:ASN:O	1:J:195:ILE:HG12	2.10	0.52
1:G:56:ILE:HD11	1:G:354:GLY:HA3	1.90	0.52
1:A:55:ASP:HB3	1:A:59:ARG:HH21	1.75	0.52
3:C:15:LEU:HD11	3:C:30:ILE:HG13	1.91	0.52
2:B:63:LYS:HG2	2:B:64:GLU:CG	2.40	0.52
1:A:223:ARG:HB2	1:A:233:ILE:HD11	1.92	0.51
2:E:27:LYS:HB3	2:E:38:PRO:HB3	1.92	0.51
3:L:4:PHE:HB3	3:L:12:THR:CG2	2.40	0.51
2:H:51:GLU:OE1	2:H:54:ARG:NH1	2.43	0.51
3:L:43:LEU:HD22	3:L:67:LEU:HD23	1.91	0.51
2:K:37:PRO:O	2:K:41:GLN:HG2	2.10	0.51
1:D:166:CYS:HA	1:D:233:ILE:HG21	1.92	0.51
1:A:295:MET:HE2	1:A:347:LEU:HD22	1.93	0.51
1:G:240:MET:HG2	3:I:68:HIS:CE1	2.46	0.50
1:D:290:LEU:HD22	1:D:351:ASP:CA	2.42	0.50
1:A:334:VAL:O	1:A:338:ILE:HG13	2.11	0.50
1:D:250:LEU:HD11	1:D:347:LEU:HD21	1.94	0.50
3:F:42:ARG:HD2	3:F:49:GLN:OE1	2.11	0.50
3:L:4:PHE:HB3	3:L:12:THR:HG22	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:123:GLU:OE2	2:K:72:ARG:NH1	2.45	0.50
3:L:7:THR:HG22	3:L:11:LYS:O	2.12	0.50
2:B:23:ILE:HD11	2:B:51:GLU:C	2.33	0.50
1:D:134:PHE:HD2	1:D:135:HIS:HD2	1.60	0.50
1:D:338:ILE:HD12	1:D:339:LYS:N	2.27	0.49
1:G:55:ASP:O	1:G:59:ARG:HB2	2.12	0.49
1:J:175:PRO:HB3	3:L:70:VAL:HG11	1.94	0.49
1:J:223:ARG:HH22	2:K:12:THR:HG21	1.77	0.49
1:D:272:LYS:NZ	1:D:287:GLN:HA	2.26	0.49
1:D:44:LEU:HD11	1:D:99:LEU:HG	1.93	0.49
1:D:110:GLU:N	1:D:110:GLU:OE1	2.45	0.49
1:G:61:PHE:O	1:G:80:LYS:NZ	2.44	0.49
3:L:19:PRO:O	3:L:55:THR:HG22	2.12	0.49
1:J:159:THR:HG23	1:J:179:ILE:HD11	1.95	0.49
1:D:44:LEU:HD21	1:D:99:LEU:HD23	1.95	0.49
1:A:42:CYS:HB3	5:A:804:AYE:H3A	1.64	0.49
1:D:61:PHE:HA	1:D:64:LEU:HD23	1.94	0.48
1:D:80:LYS:O	1:D:84:ASN:OD1	2.30	0.48
1:D:134:PHE:CD2	1:D:135:HIS:HD2	2.30	0.48
2:B:63:LYS:HG2	2:B:64:GLU:HG3	1.95	0.48
1:D:250:LEU:HD12	1:D:344:PRO:O	2.14	0.48
1:J:112:ARG:NH1	1:J:123:GLU:OE1	2.46	0.48
2:K:22:THR:O	2:K:26:VAL:HG23	2.12	0.48
1:J:123:GLU:OE2	2:K:42:ARG:HD3	2.13	0.48
1:D:99:LEU:O	1:D:99:LEU:HD12	2.14	0.48
1:G:221:ASP:HB3	1:G:235:ILE:HB	1.95	0.48
1:J:197:MET:HG2	1:J:202:GLU:O	2.13	0.48
1:D:70:MET:HB2	1:D:74:CYS:HA	1.94	0.48
2:E:23:ILE:HD11	2:E:51:GLU:O	2.13	0.48
1:J:211:GLU:OE1	1:J:214:GLN:NE2	2.45	0.48
1:D:118:MET:HG2	2:E:75:GLY:C	2.33	0.48
1:A:42:CYS:O	1:A:46:SER:OG	2.28	0.48
2:B:54:ARG:HH11	2:B:54:ARG:CG	2.27	0.48
1:D:184:TYR:CD2	2:E:70:VAL:HG21	2.47	0.48
2:K:52:ASP:OD1	2:K:52:ASP:N	2.46	0.47
1:J:239:LEU:HB2	1:J:277:PHE:CD2	2.49	0.47
3:F:4:PHE:CE2	3:F:64:GLU:HA	2.49	0.47
2:K:55:THR:HG22	2:K:58:ASP:OD1	2.14	0.47
1:D:120:ASP:HB3	1:D:123:GLU:HB2	1.96	0.47
1:G:172:THR:HG21	3:I:71:LEU:O	2.15	0.47
3:I:24:GLU:OE2	3:L:24:GLU:HG3	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:3:ILE:HD13	2:H:17:VAL:HG21	1.96	0.47
1:D:48:LEU:HD21	1:D:82:ILE:HG21	1.97	0.47
1:G:282:ASP:O	1:G:286:LYS:HG3	2.15	0.47
3:C:23:ILE:HG13	3:C:50:LEU:HB3	1.97	0.47
1:D:52:TRP:CZ2	1:D:86:PHE:HB3	2.50	0.47
2:H:14:THR:O	2:H:33:LYS:HE2	2.14	0.47
1:J:70:MET:H	1:J:74:CYS:HB2	1.79	0.47
1:J:221:ASP:HB3	1:J:235:ILE:HB	1.96	0.47
1:G:164:CYS:HB2	1:G:173:SER:HB3	1.97	0.46
1:J:191:CYS:O	1:J:195:ILE:HD13	2.15	0.46
1:G:42:CYS:HB3	5:G:804:AYE:H3A	1.55	0.46
1:G:186:SER:HA	1:G:251:VAL:HB	1.96	0.46
1:D:122:ALA:HA	1:D:346:LEU:HD11	1.96	0.46
1:D:246:ILE:HB	1:D:290:LEU:HD12	1.97	0.46
1:D:56:ILE:HD12	1:D:56:ILE:H	1.79	0.46
1:D:76:PHE:HB2	1:D:135:HIS:ND1	2.31	0.46
1:J:172:THR:HB	3:L:73:LEU:H	1.80	0.46
3:I:61:ILE:HD12	3:I:67:LEU:HD21	1.96	0.46
1:J:275:ASP:OD1	8:J:901:HOH:O	2.20	0.46
3:L:30:ILE:HB	3:L:41:GLN:NE2	2.30	0.46
1:D:188:THR:HG21	2:E:9:THR:HG23	1.98	0.46
1:J:80:LYS:HA	1:J:80:LYS:HD3	1.71	0.46
1:D:264:ILE:HD12	1:D:338:ILE:HG23	1.97	0.45
1:J:52:TRP:CZ2	1:J:86:PHE:HB3	2.51	0.45
3:L:4:PHE:HB2	3:L:66:THR:HG23	1.97	0.45
1:J:218:THR:O	1:J:234:ARG:NH1	2.49	0.45
1:G:52:TRP:CZ2	1:G:86:PHE:HB3	2.51	0.45
1:G:253:ASP:OD1	1:G:253:ASP:N	2.42	0.45
1:D:75:ILE:HD13	1:D:131:ARG:HG3	1.99	0.45
1:D:351:ASP:OD1	1:D:353:GLN:OE1	2.35	0.45
3:F:21:ASP:OD2	3:F:29:LYS:NZ	2.50	0.45
1:A:52:TRP:CZ2	1:A:86:PHE:HB3	2.51	0.45
1:J:42:CYS:HB3	5:J:804:AYE:H3A	1.61	0.45
3:F:56:LEU:HD23	3:F:61:ILE:HD12	1.99	0.45
1:D:160:LEU:HD11	1:D:178:PHE:CZ	2.51	0.45
2:K:27:LYS:NZ	2:K:52:ASP:OD1	2.51	0.44
1:G:261:GLU:HG2	1:G:338:ILE:HD12	1.98	0.44
1:A:162:GLU:HG2	1:A:237:ARG:HG3	1.99	0.44
1:A:313:ARG:HD2	1:A:313:ARG:HA	1.74	0.44
2:H:42:ARG:HD2	2:H:49:GLN:OE1	2.18	0.44
3:L:28:ALA:HA	3:L:31:GLN:HB3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:285:ALA:HA	1:J:288:SER:HB2	2.00	0.44
1:A:175:PRO:HG3	3:C:70:VAL:HB	1.99	0.44
1:D:151:ILE:H	1:D:151:ILE:HG13	1.66	0.44
1:J:338:ILE:HD13	1:J:338:ILE:HA	1.68	0.44
1:J:79:LEU:HD13	1:J:99:LEU:HD11	2.00	0.43
1:J:244:GLN:OE1	1:J:354:GLY:HA2	2.17	0.43
3:F:23:ILE:HG13	3:F:50:LEU:HB3	1.99	0.43
1:D:136:ILE:HG22	1:D:136:ILE:O	2.18	0.43
1:D:289:GLU:H	1:D:289:GLU:CD	2.22	0.43
1:J:282:ASP:OD1	1:J:284:ARG:HG3	2.18	0.43
1:D:80:LYS:HA	1:D:80:LYS:HD3	1.84	0.43
1:J:78:ALA:O	1:J:82:ILE:HG13	2.18	0.43
1:A:322:HIS:HB2	8:A:943:HOH:O	2.19	0.43
1:D:36:GLU:H	1:D:39:GLN:CD	2.21	0.43
3:C:55:THR:HG22	3:C:58:ASP:CG	2.39	0.43
1:J:81:GLY:O	1:J:85:GLN:HG3	2.19	0.43
1:J:187:THR:HG21	1:J:252:TRP:CD2	2.54	0.43
2:B:34:GLU:HB3	2:B:36:ILE:HD12	2.01	0.43
1:D:42:CYS:H	5:D:804:AYE:C2	2.32	0.43
1:A:33:LEU:HA	1:A:94:LEU:O	2.19	0.43
1:G:271:LEU:HD21	1:G:276:LEU:HD22	2.01	0.43
1:D:59:ARG:HB2	1:D:356:PRO:HG3	2.00	0.42
2:H:5:VAL:HG22	2:H:67:LEU:HB2	2.00	0.42
1:D:193:GLN:HB3	1:D:212:LEU:CD1	2.49	0.42
3:C:34:GLU:HB2	3:C:36:ILE:HG13	2.01	0.42
3:F:66:THR:C	3:F:67:LEU:HD23	2.39	0.42
3:I:40:GLN:O	3:I:71:LEU:HA	2.19	0.42
1:J:54:LEU:HD23	1:J:54:LEU:HA	1.91	0.42
2:B:63:LYS:HG2	2:B:64:GLU:N	2.30	0.42
2:K:55:THR:HG23	2:K:57:SER:N	2.33	0.42
1:J:79:LEU:HD13	1:J:99:LEU:CD1	2.50	0.42
1:G:112:ARG:HH21	1:G:123:GLU:HG2	1.85	0.42
1:J:52:TRP:CH2	1:J:86:PHE:HB3	2.55	0.42
2:E:25:ASN:C	2:E:25:ASN:HD22	2.22	0.42
1:G:172:THR:HG22	3:I:72:ARG:HA	2.02	0.42
1:J:192:ASN:HA	1:J:195:ILE:HD11	2.01	0.42
3:L:24:GLU:HG2	3:L:52:ASP:HB3	2.02	0.42
1:A:62:ARG:NH1	1:A:87:GLN:HE22	2.17	0.42
1:A:336:LYS:HA	1:A:339:LYS:HG2	2.01	0.42
1:D:114:GLN:HB2	1:D:117:ILE:HG12	2.02	0.41
1:G:76:PHE:HB2	1:G:135:HIS:CD2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:42:CYS:HB3	5:D:804:AYE:H3A	1.76	0.41
2:E:3:ILE:HD13	2:E:3:ILE:HA	1.86	0.41
2:E:22:THR:HG23	2:E:25:ASN:H	1.85	0.41
3:F:3:ILE:HD12	3:F:3:ILE:HA	1.69	0.41
3:F:23:ILE:HB	3:F:52:ASP:HA	2.02	0.41
1:A:120:ASP:OD1	1:A:122:ALA:N	2.53	0.41
1:D:118:MET:HG2	2:E:75:GLY:O	2.21	0.41
1:G:248:ILE:HB	1:G:347:LEU:HB2	2.02	0.41
1:A:52:TRP:CE2	1:A:86:PHE:HB3	2.55	0.41
1:D:177:PRO:HG3	3:F:44:ILE:CD1	2.49	0.41
3:F:2:GLN:HA	3:F:15:LEU:O	2.20	0.41
2:H:18:GLU:HB2	2:H:21:ASP:OD1	2.21	0.41
1:J:240:MET:HE2	1:J:240:MET:HB2	1.91	0.41
1:A:53:HIS:HB3	1:A:307:PHE:CE1	2.54	0.41
1:A:72:ASP:OD1	1:A:72:ASP:N	2.52	0.41
1:A:82:ILE:CD1	1:A:96:SER:HA	2.51	0.41
1:A:92:LYS:HE3	1:A:92:LYS:HB2	1.92	0.41
1:D:261:GLU:HA	1:D:338:ILE:HG22	2.03	0.41
3:I:36:ILE:HD13	3:I:71:LEU:HD11	2.03	0.41
3:I:31:GLN:HG3	3:I:36:ILE:O	2.21	0.41
1:D:170:GLY:O	3:F:73:LEU:HD11	2.20	0.40
1:D:306:PHE:CD2	1:D:333:VAL:HG13	2.56	0.40
1:D:172:THR:HG21	3:F:71:LEU:O	2.22	0.40
1:D:317:TYR:CE2	1:D:319:ASP:HB2	2.55	0.40
1:J:346:LEU:HD23	1:J:346:LEU:HA	1.86	0.40
1:A:194:ALA:O	1:A:198:LEU:HG	2.21	0.40
3:F:7:THR:HG23	3:F:9:THR:H	1.85	0.40
1:G:31:LYS:HD3	1:G:94:LEU:HD21	2.04	0.40
1:G:237:ARG:HD2	8:G:901:HOH:O	2.21	0.40
1:G:312:ILE:HD12	1:G:313:ARG:N	2.36	0.40
2:H:56:LEU:HB3	2:H:61:ILE:HB	2.03	0.40
1:J:291:TYR:O	1:J:293:VAL:HG13	2.21	0.40
2:K:56:LEU:HB3	2:K:61:ILE:HB	2.02	0.40
1:G:53:HIS:HB3	1:G:307:PHE:CE1	2.56	0.40
1:G:312:ILE:HD12	1:G:312:ILE:C	2.42	0.40
2:H:74:ARG:HG3	8:H:110:HOH:O	2.21	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	319/350 (91%)	311 (98%)	8 (2%)	0	100	100
1	D	316/350 (90%)	303 (96%)	13 (4%)	0	100	100
1	G	326/350 (93%)	313 (96%)	13 (4%)	0	100	100
1	J	328/350 (94%)	315 (96%)	13 (4%)	0	100	100
2	B	73/75 (97%)	73 (100%)	0	0	100	100
2	E	73/75 (97%)	73 (100%)	0	0	100	100
2	H	73/75 (97%)	72 (99%)	1 (1%)	0	100	100
2	K	73/75 (97%)	71 (97%)	2 (3%)	0	100	100
3	C	74/76 (97%)	73 (99%)	1 (1%)	0	100	100
3	F	74/76 (97%)	73 (99%)	1 (1%)	0	100	100
3	I	74/76 (97%)	73 (99%)	1 (1%)	0	100	100
3	L	72/76 (95%)	65 (90%)	7 (10%)	0	100	100
All	All	1875/2004 (94%)	1815 (97%)	60 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	278/313 (89%)	265 (95%)	13 (5%)	26	49
1	D	250/313 (80%)	234 (94%)	16 (6%)	17	33

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	G	274/313 (88%)	266 (97%)	8 (3%)	42	69
1	J	266/313 (85%)	254 (96%)	12 (4%)	27	51
2	B	66/68 (97%)	62 (94%)	4 (6%)	18	36
2	E	64/68 (94%)	62 (97%)	2 (3%)	40	67
2	H	67/68 (98%)	64 (96%)	3 (4%)	27	51
2	K	63/68 (93%)	59 (94%)	4 (6%)	18	34
3	C	67/68 (98%)	64 (96%)	3 (4%)	27	51
3	F	64/68 (94%)	61 (95%)	3 (5%)	26	49
3	I	66/68 (97%)	62 (94%)	4 (6%)	18	36
3	L	46/68 (68%)	41 (89%)	5 (11%)	6	12
All	All	1571/1796 (88%)	1494 (95%)	77 (5%)	25	47

All (77) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	65	THR
1	A	72	ASP
1	A	73	SER
1	A	119	ASP
1	A	134	PHE
1	A	138	ASP
1	A	141	LYS
1	A	168	SER
1	A	174	ASP
1	A	188	THR
1	A	254	SER
1	A	288	SER
1	A	348	LEU
2	B	16	GLU
2	B	25	ASN
2	B	54	ARG
2	B	63	LYS
3	C	39	ASP
3	C	48	LYS
3	C	49	GLN
1	D	31	LYS
1	D	34	SER
1	D	39	GLN

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Mol	Chain	Res	Type
1	D	41	SER
1	D	84	ASN
1	D	87	GLN
1	D	131	ARG
1	D	174	ASP
1	D	209	PHE
1	D	225	CYS
1	D	234	ARG
1	D	254	SER
1	D	281	THR
1	D	289	GLU
1	D	304	SER
1	D	315	TRP
2	E	25	ASN
2	E	52	ASP
3	F	3	ILE
3	F	39	ASP
3	F	72	ARG
1	G	34	SER
1	G	72	ASP
1	G	168	SER
1	G	172	THR
1	G	238	VAL
1	G	286	LYS
1	G	309	GLN
1	G	358	SER
2	H	20	SER
2	H	22	THR
2	H	52	ASP
3	I	9	THR
3	I	54	ARG
3	I	63	ARG
3	I	72	ARG
1	J	34	SER
1	J	90	SER
1	J	109	ASP
1	J	119	ASP
1	J	168	SER
1	J	205	SER
1	J	214	GLN
1	J	229	CYS
1	J	238	VAL

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Mol	Chain	Res	Type
1	J	310	THR
1	J	336	LYS
1	J	358	SER
2	K	6	LYS
2	K	39	ASP
2	K	52	ASP
2	K	71	LEU
3	L	43	LEU
3	L	50	LEU
3	L	55	THR
3	L	72	ARG
3	L	74	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	87	GLN
2	E	25	ASN
3	F	25	ASN
1	G	84	ASN
1	J	63	GLN
1	J	114	GLN
2	K	40	GLN
3	L	31	GLN

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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 20 ligands modelled in this entry, 16 are monoatomic - leaving 4 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	$\#\|Z\| > 2$
5	AYE	D	804	2,1	3,3,3	0.92	0	1,2,2	1.45	0
5	AYE	G	804	2,1	3,3,3	1.07	0	1,2,2	1.45	0
5	AYE	J	804	2,1	3,3,3	1.04	0	1,2,2	1.52	0
5	AYE	A	804	2,1	3,3,3	1.14	0	1,2,2	1.42	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
5	AYE	D	804	2,1	-	0/1/1/1	-
5	AYE	G	804	2,1	-	0/1/1/1	-
5	AYE	J	804	2,1	-	1/1/1/1	-
5	AYE	A	804	2,1	-	0/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	J	804	AYE	N1-C1-C2-C3

There are no ring outliers.

4 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	D	804	AYE	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	G	804	AYE	1	0
5	J	804	AYE	2	0
5	A	804	AYE	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 AYE D 804

Ligand AYE G 804

Ligand AYE J 804

Bond lengths

Bond angles

Torsions

Rings

Ligand AYE A 804

Bond lengths

Bond angles

Torsions

Rings
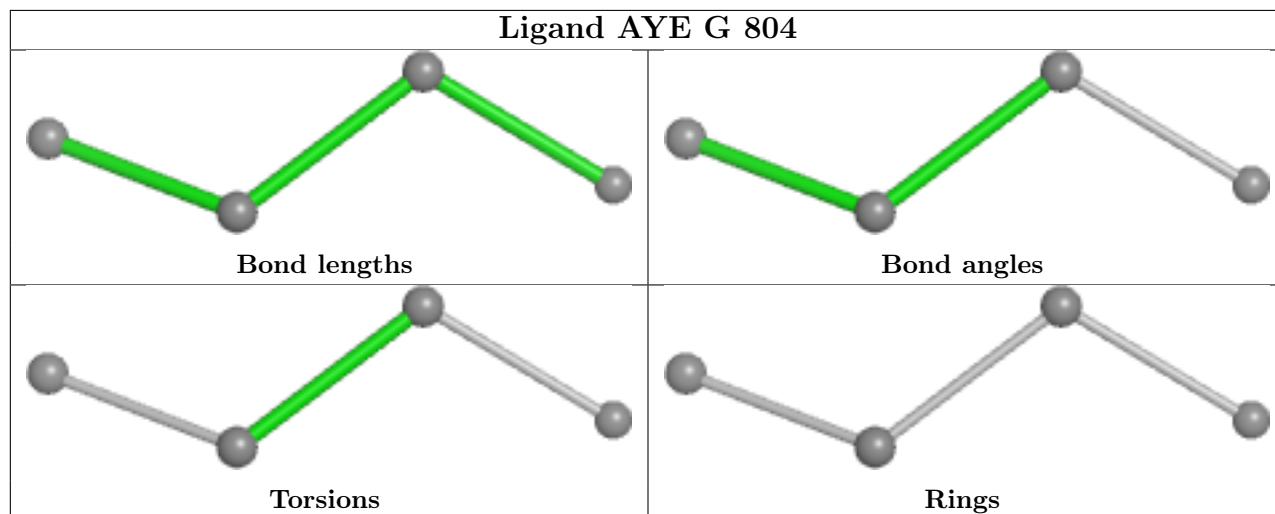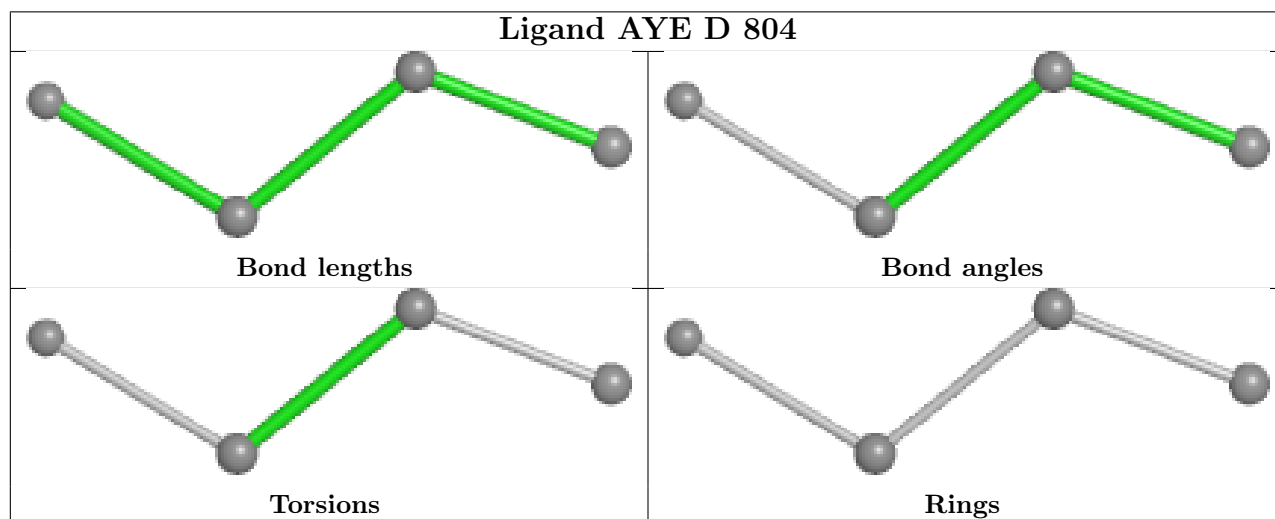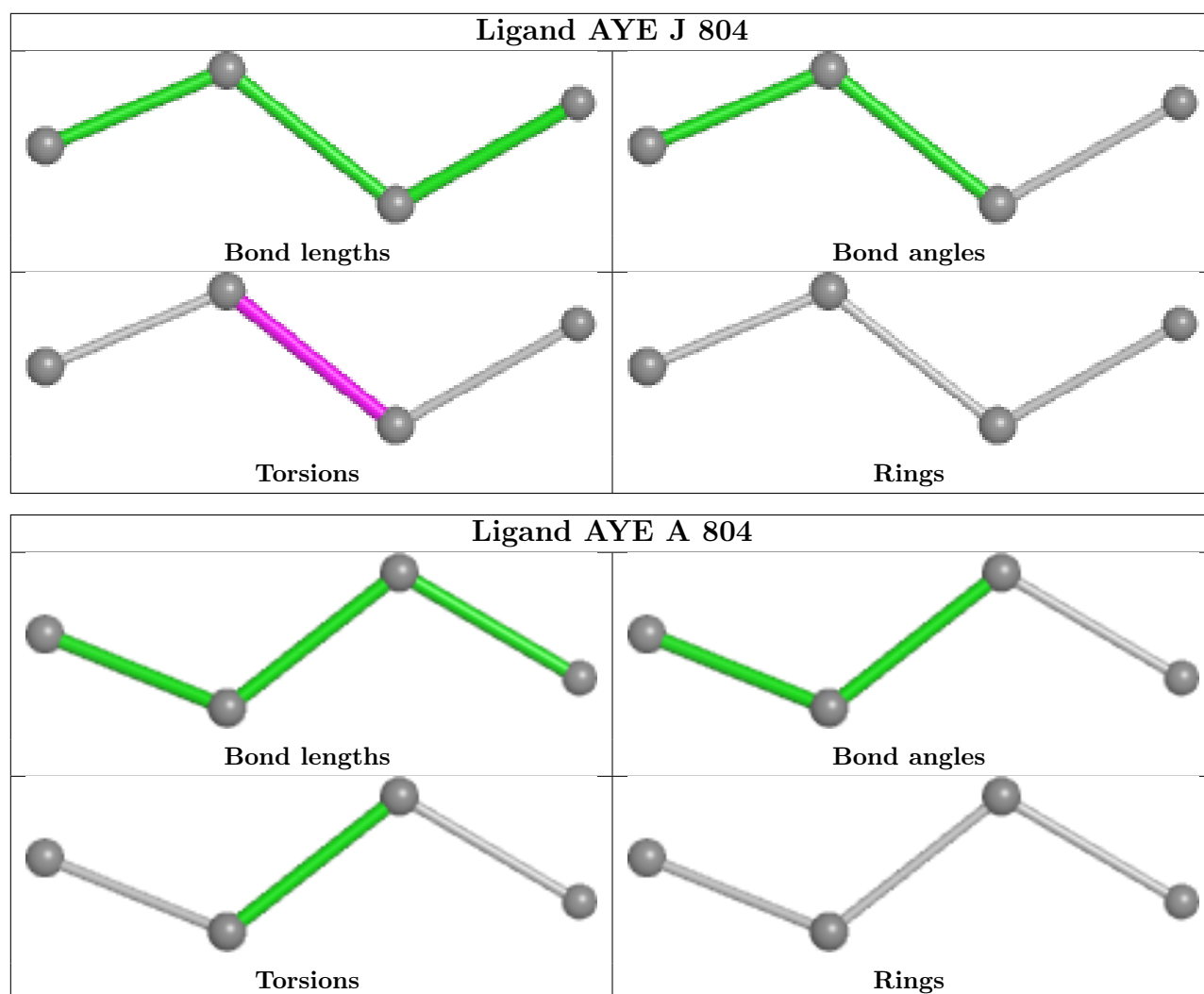
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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, 95th 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	323/350 (92%)	0.02	0	100	100	53, 76, 119, 159	0
1	D	320/350 (91%)	0.36	25 (7%)	13	13	82, 115, 156, 169	0
1	G	329/350 (94%)	0.06	6 (1%)	68	71	55, 79, 125, 165	0
1	J	330/350 (94%)	0.16	16 (4%)	30	32	75, 102, 139, 178	0
2	B	75/75 (100%)	0.06	0	100	100	55, 70, 101, 113	0
2	E	75/75 (100%)	0.10	5 (6%)	17	18	89, 109, 128, 136	0
2	H	75/75 (100%)	0.02	0	100	100	59, 73, 98, 110	0
2	K	75/75 (100%)	0.48	6 (8%)	12	12	87, 112, 138, 155	0
3	C	76/76 (100%)	0.08	0	100	100	59, 79, 99, 107	0
3	F	76/76 (100%)	0.27	3 (3%)	39	42	91, 116, 141, 157	0
3	I	76/76 (100%)	0.08	0	100	100	60, 74, 100, 127	0
3	L	74/76 (97%)	0.49	11 (14%)	2	2	108, 147, 177, 190	0
All	All	1904/2004 (95%)	0.17	72 (3%)	40	43	53, 94, 145, 190	0

All (72) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	L	43	LEU	4.6
1	D	156	PHE	4.6
2	K	3	ILE	4.2
1	D	44	LEU	4.2
3	L	4	PHE	4.1
1	D	37	PRO	4.0
1	J	136	ILE	3.9
1	D	57	PHE	3.7
1	D	115	LEU	3.7
2	K	15	LEU	3.6
1	D	61	PHE	3.5

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Mol	Chain	Res	Type	RSRZ
3	L	69	LEU	3.5
3	L	28	ALA	3.3
2	K	30	ILE	3.2
3	F	47	GLY	3.1
2	K	67	LEU	3.1
1	G	134[A]	PHE	3.0
1	D	195	ILE	3.0
1	D	48	LEU	3.0
1	J	280	VAL	3.0
1	D	82	ILE	3.0
1	J	115	LEU	2.9
3	L	30	ILE	2.8
1	J	128	LEU	2.8
3	L	67	LEU	2.8
1	D	128	LEU	2.8
2	E	15	LEU	2.8
1	D	345	LEU	2.8
1	G	205	SER	2.7
3	L	12	THR	2.7
3	L	50	LEU	2.7
2	E	61	ILE	2.7
2	K	61	ILE	2.6
1	D	64	LEU	2.6
1	D	306	PHE	2.5
1	J	113	PHE	2.5
1	J	83	PHE	2.5
1	J	156	PHE	2.5
1	J	84	ASN	2.5
3	F	8	LEU	2.4
1	D	93	VAL	2.4
1	D	245	ILE	2.4
3	L	71	LEU	2.4
1	D	209	PHE	2.4
2	E	75	GLY	2.4
1	D	246	ILE	2.4
3	L	70	VAL	2.3
1	D	276	LEU	2.3
1	J	48	LEU	2.3
2	E	56	LEU	2.3
2	K	71	LEU	2.3
1	J	250	LEU	2.3
1	G	357	VAL	2.2

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Mol	Chain	Res	Type	RSRZ
2	E	26	VAL	2.2
1	J	212	LEU	2.2
1	G	29	PRO	2.2
1	J	299	TYR	2.2
1	D	213	LEU	2.2
1	G	51	LEU	2.2
3	F	53	GLY	2.2
1	D	101	SER	2.2
1	D	151	ILE	2.2
1	G	306	PHE	2.2
1	D	50	VAL	2.1
3	L	13	ILE	2.1
1	J	176	LEU	2.1
1	J	259	LEU	2.1
1	D	184	TYR	2.1
1	J	204	PRO	2.1
1	D	79	LEU	2.1
1	D	347	LEU	2.1
1	J	103	LEU	2.0

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, 95th 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
7	NA	G	805	1/1	0.88	0.61	120,120,120,120	0
6	CL	A	806	1/1	0.94	0.40	90,90,90,90	0
5	AYE	D	804	4/4	0.94	0.21	117,118,119,121	0
4	ZN	D	801	1/1	0.95	0.14	122,122,122,122	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	ZN	J	803	1/1	0.96	0.17	101,101,101,101	0
7	NA	C	101	1/1	0.96	0.30	75,75,75,75	0
4	ZN	J	801	1/1	0.96	0.14	113,113,113,113	0
5	AYE	J	804	4/4	0.97	0.22	100,100,102,102	0
4	ZN	D	803	1/1	0.97	0.20	84,84,84,84	0
5	AYE	A	804	4/4	0.98	0.16	53,60,68,72	0
4	ZN	A	803	1/1	0.98	0.18	81,81,81,81	0
4	ZN	D	802	1/1	0.99	0.14	90,90,90,90	0
4	ZN	A	801	1/1	0.99	0.20	80,80,80,80	0
4	ZN	G	801	1/1	0.99	0.16	77,77,77,77	0
5	AYE	G	804	4/4	0.99	0.20	68,78,78,79	0
4	ZN	G	802	1/1	0.99	0.19	65,65,65,65	0
6	CL	A	805	1/1	0.99	0.07	67,67,67,67	0
4	ZN	G	803	1/1	0.99	0.18	74,74,74,74	0
4	ZN	A	802	1/1	0.99	0.17	65,65,65,65	0
4	ZN	J	802	1/1	0.99	0.12	90,90,90,90	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 AYE D 804:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative) and green (positive)
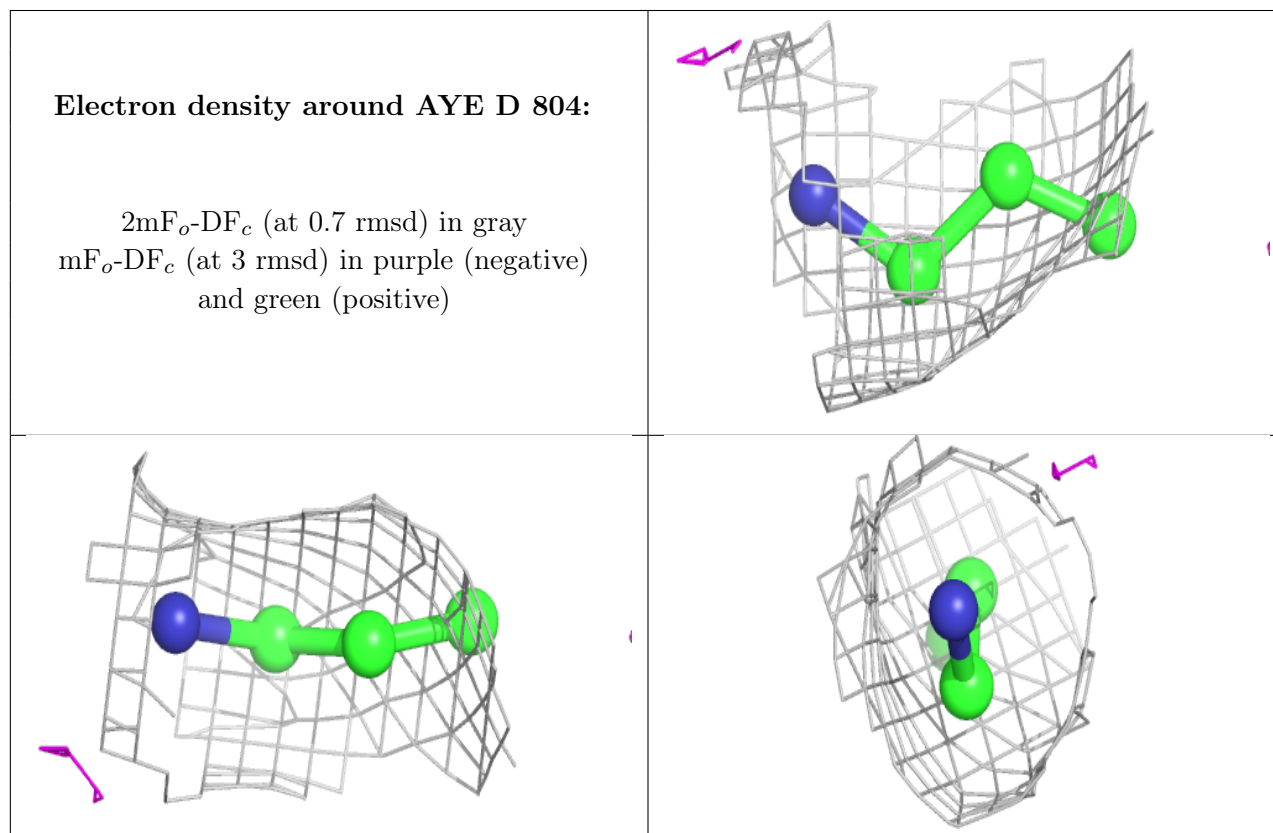
Electron density around ZN D 801:

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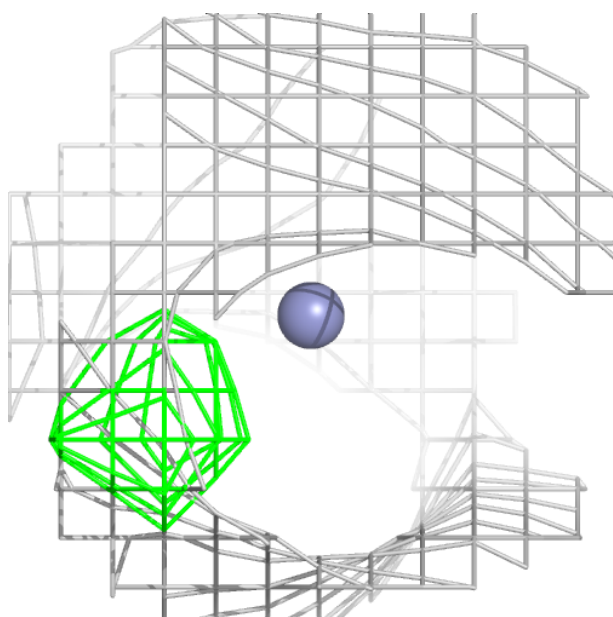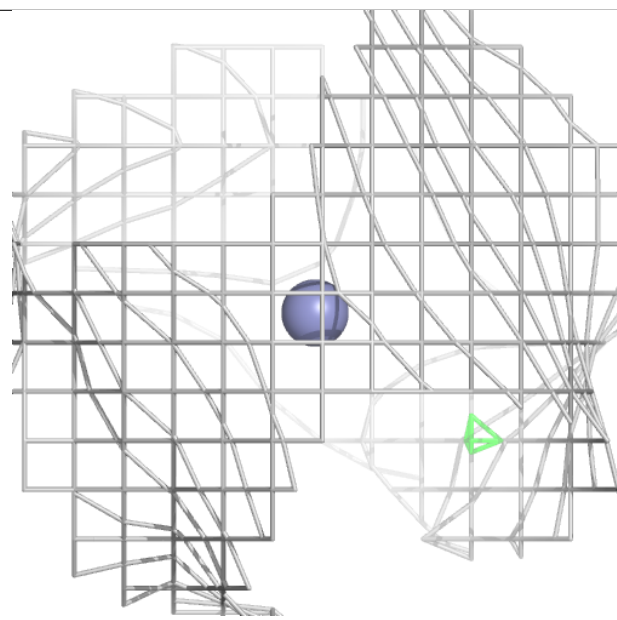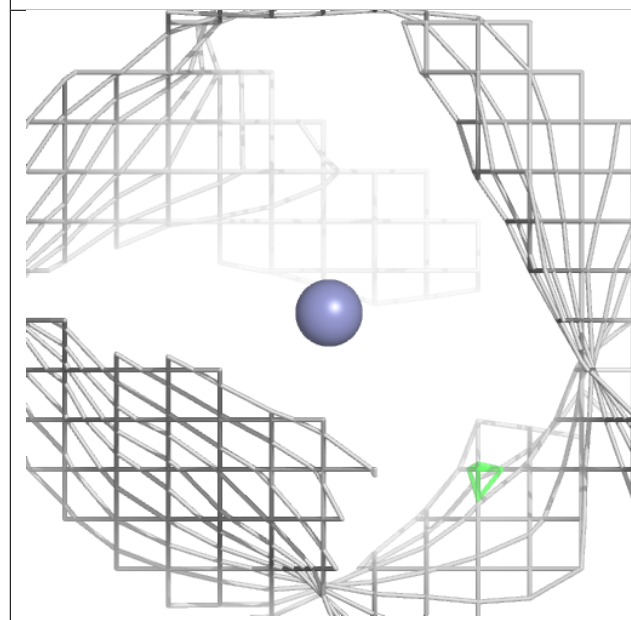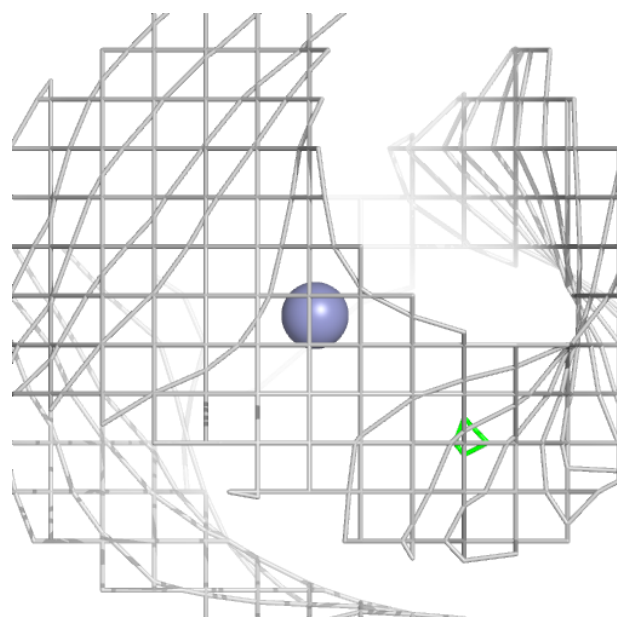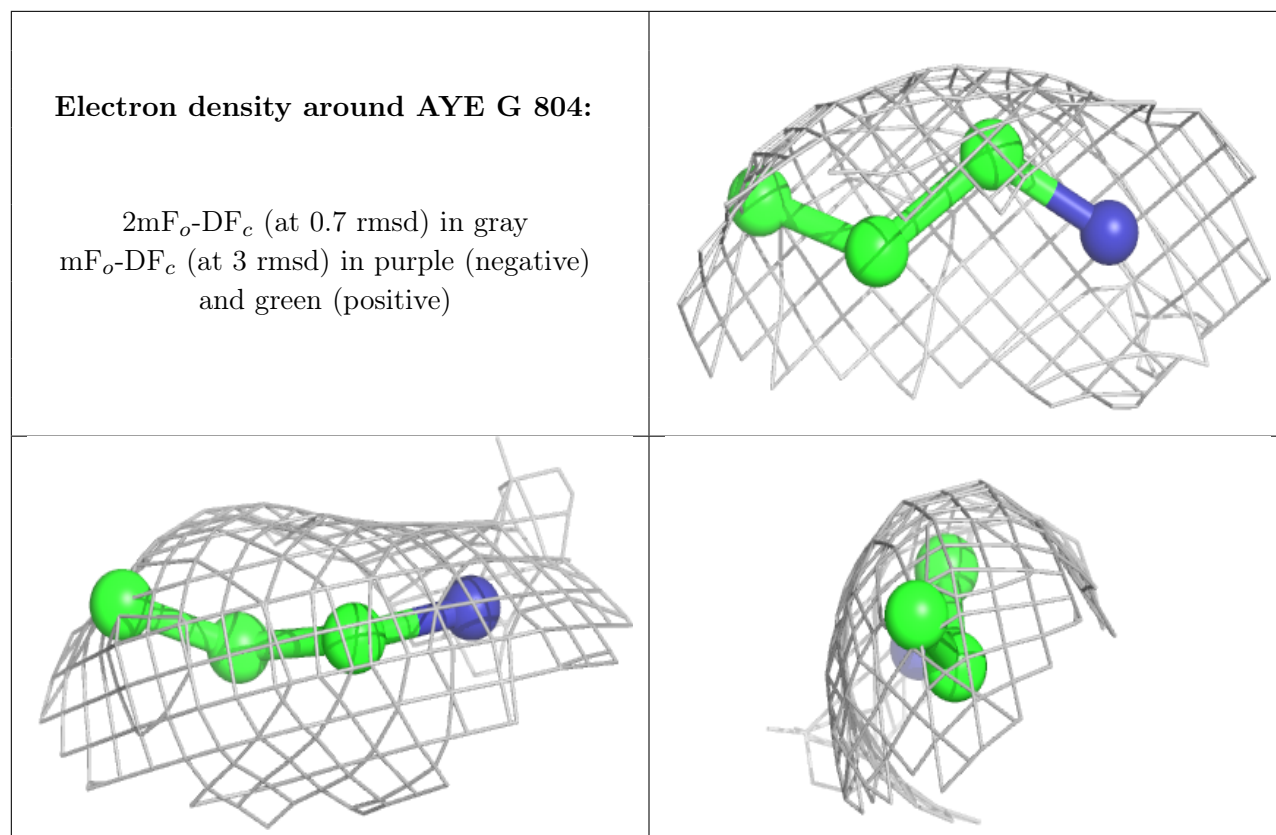and green (positive)

Electron density around ZN J 803:

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

Electron density around ZN J 801:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
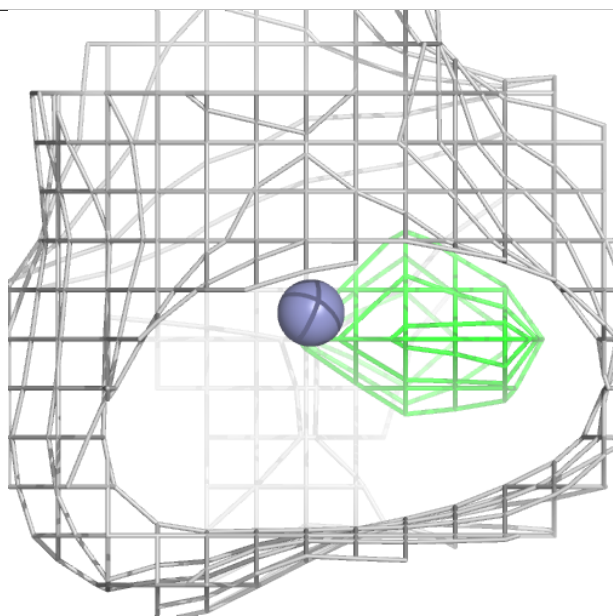mF_o-DF_c (at 3 rmsd) in purple (negative)
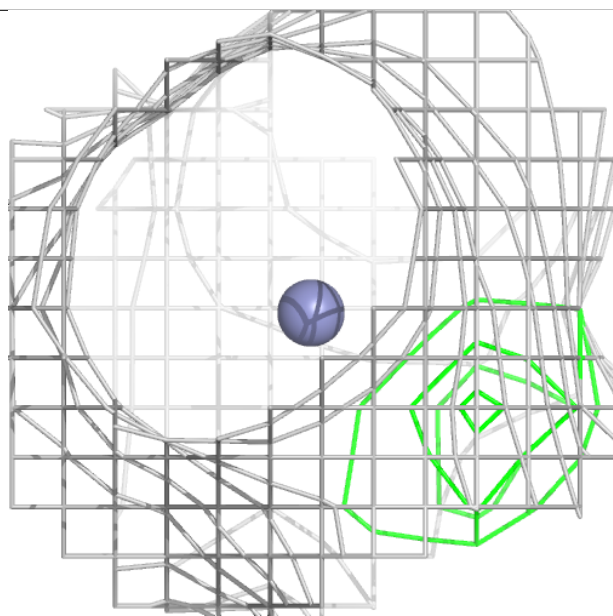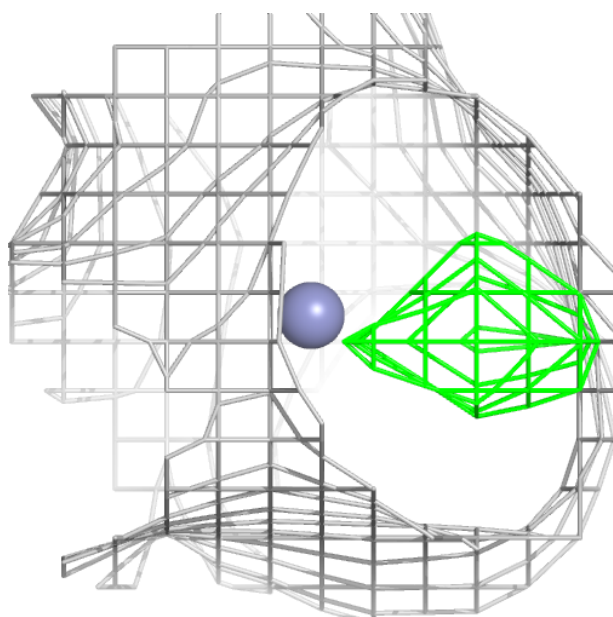and green (positive)
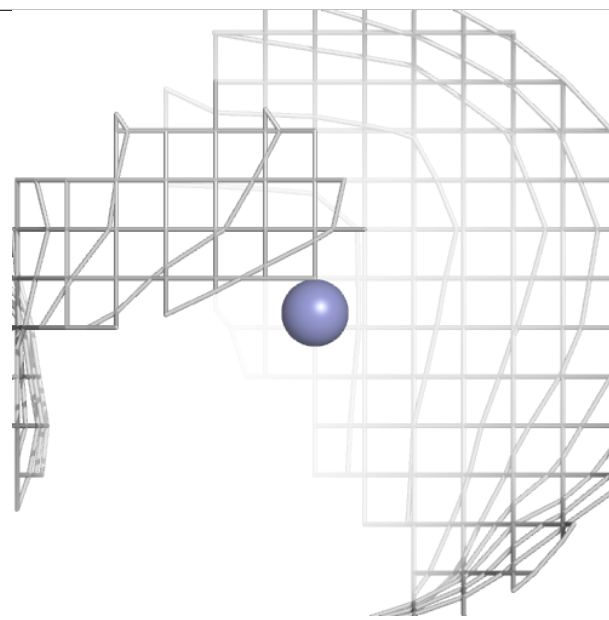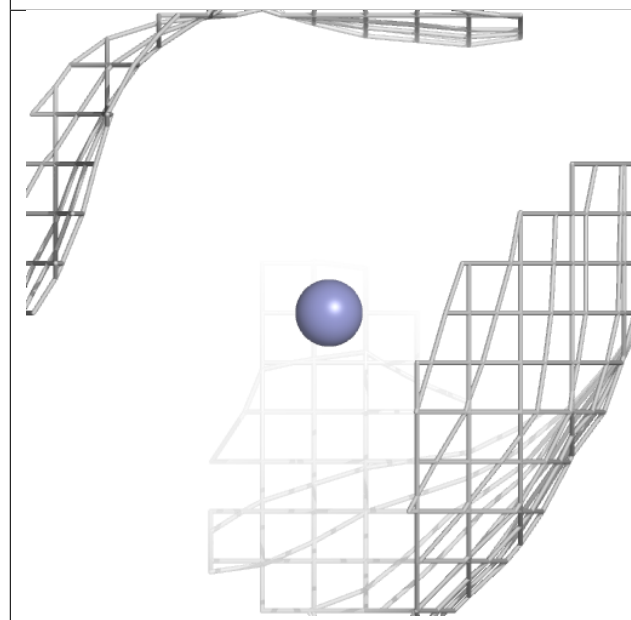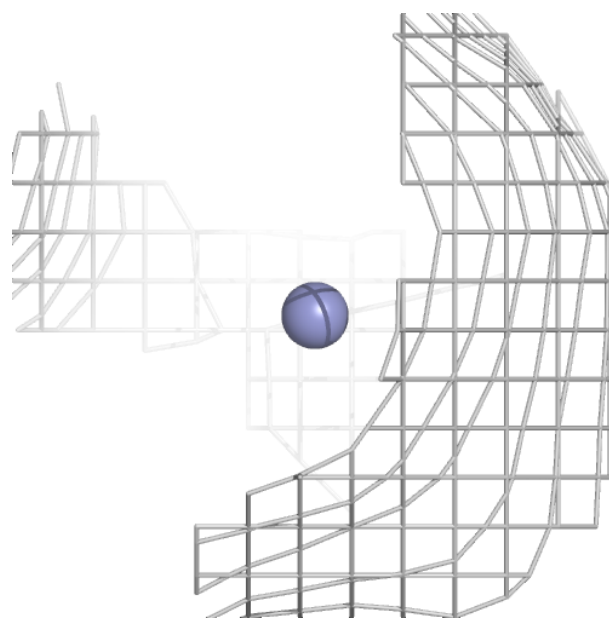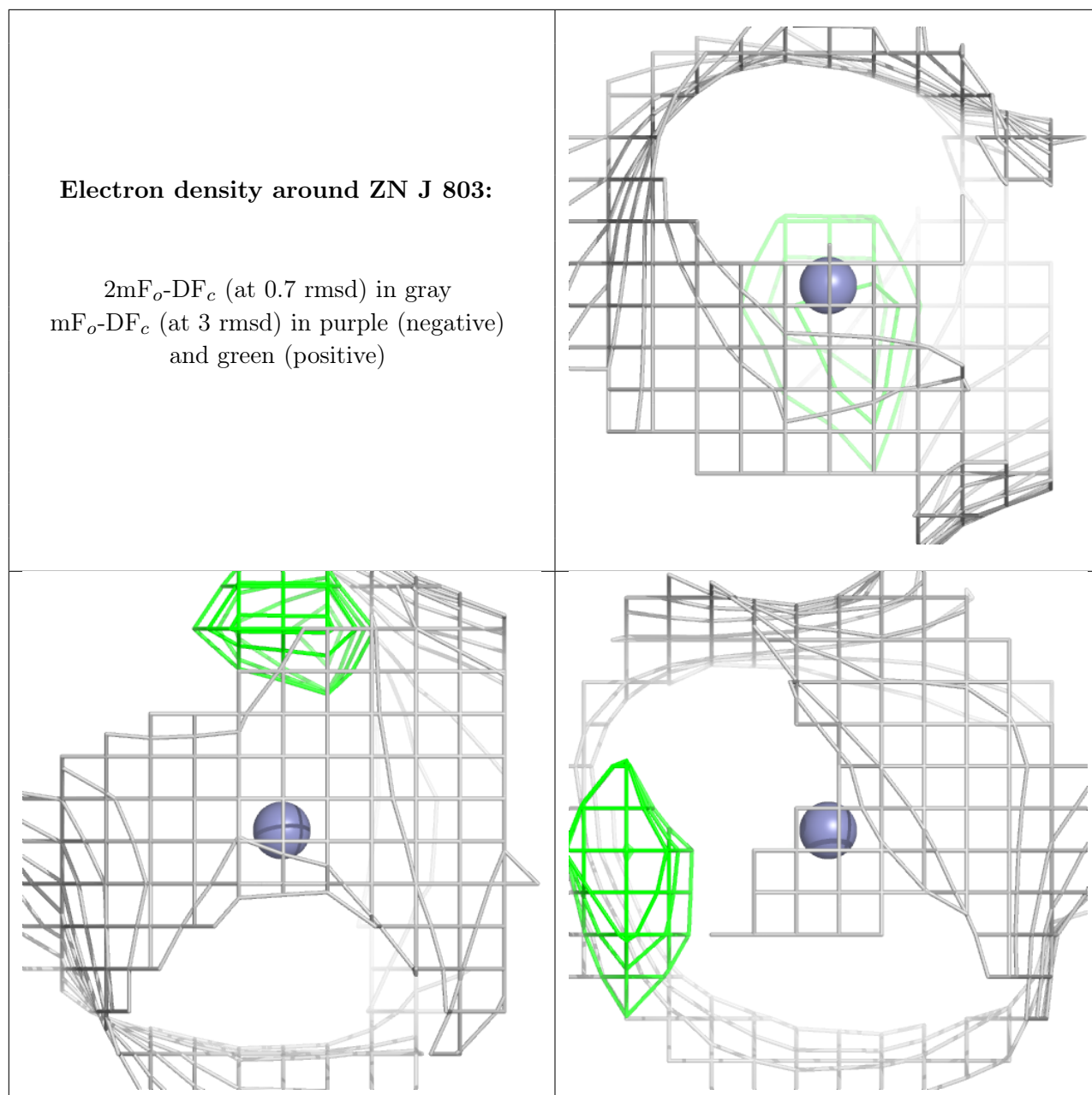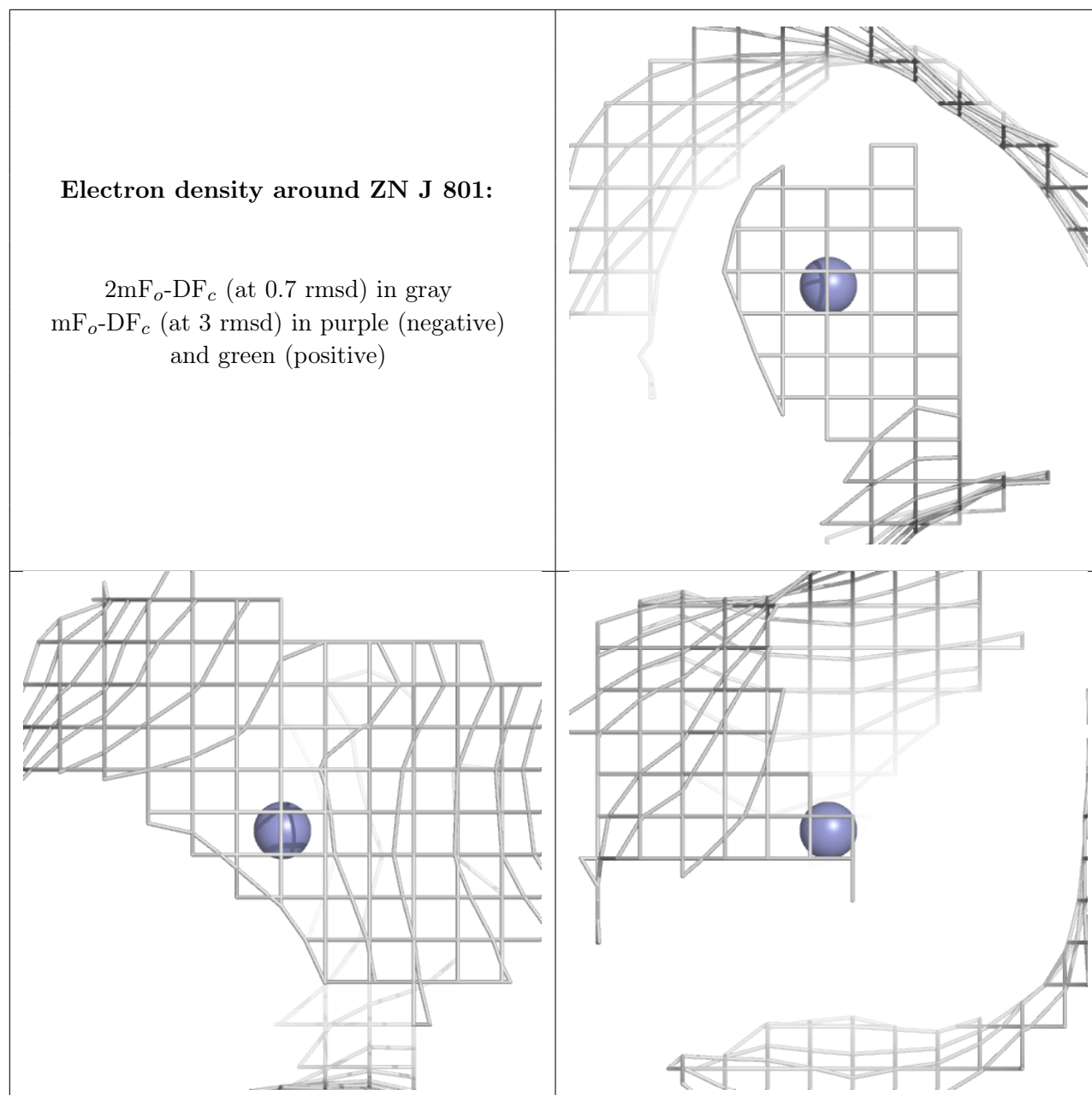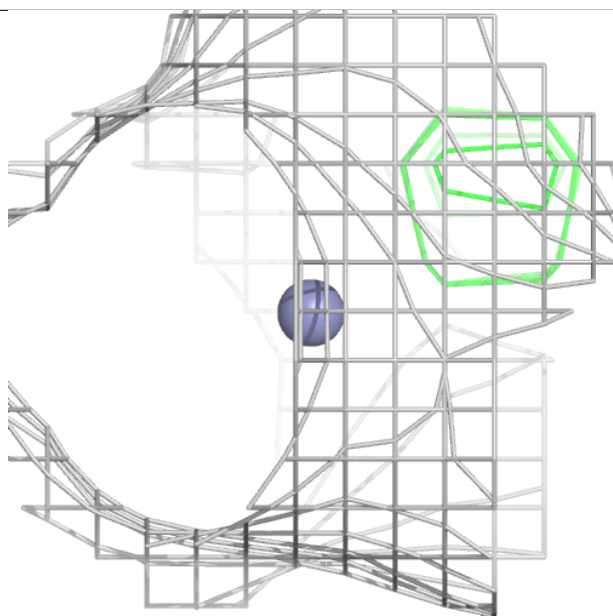
Electron density around AYE J 804:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
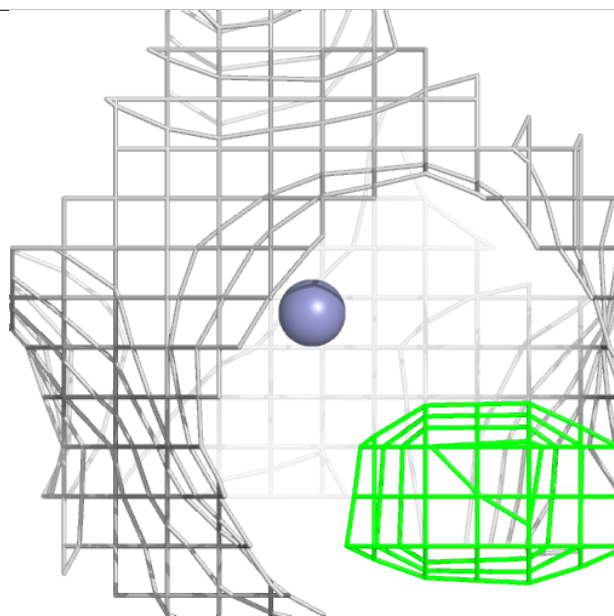and green (positive)
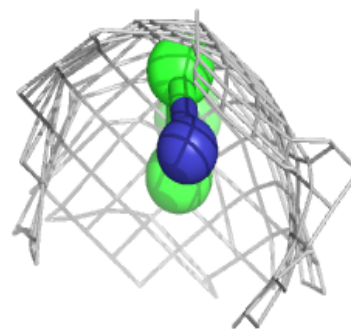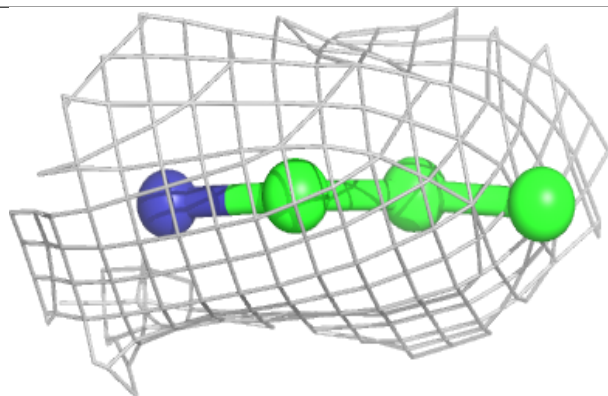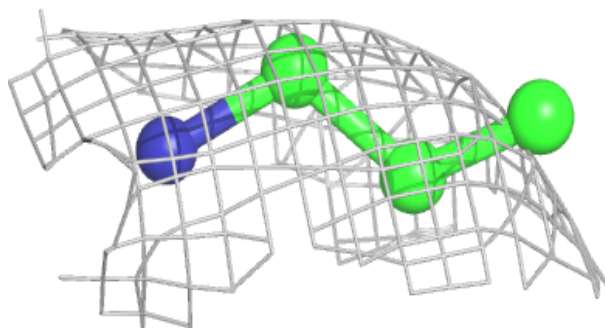
Electron density around ZN D 803:

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

Electron density around AYE A 804:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
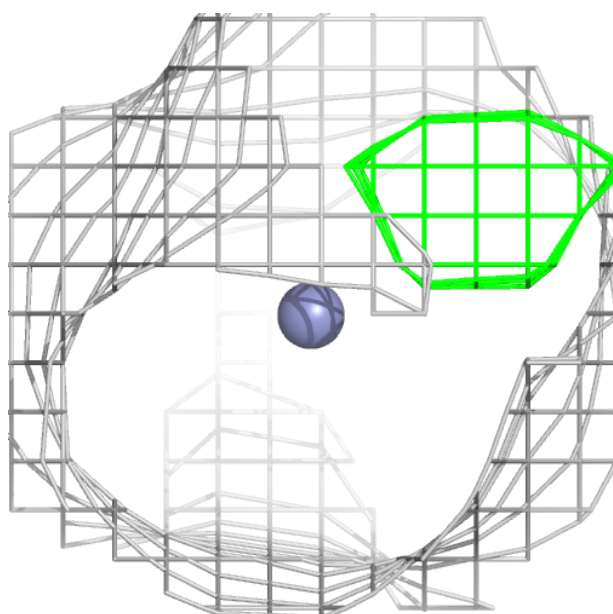and green (positive)
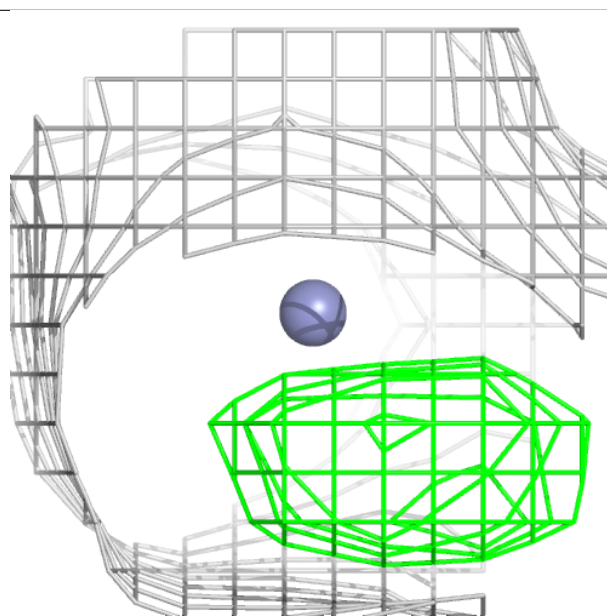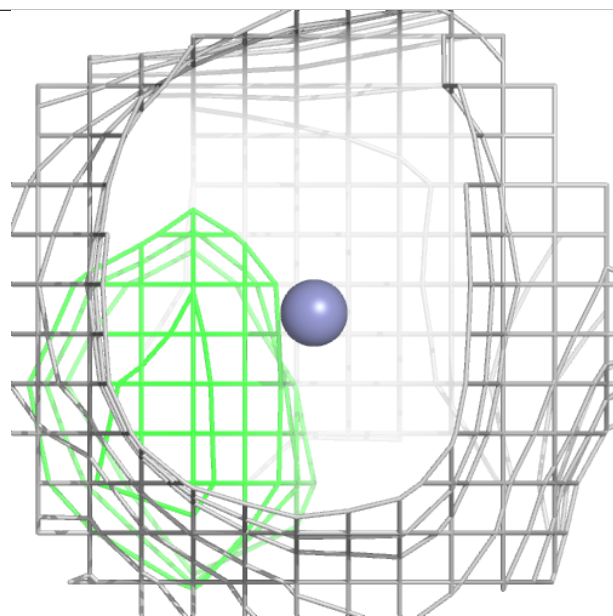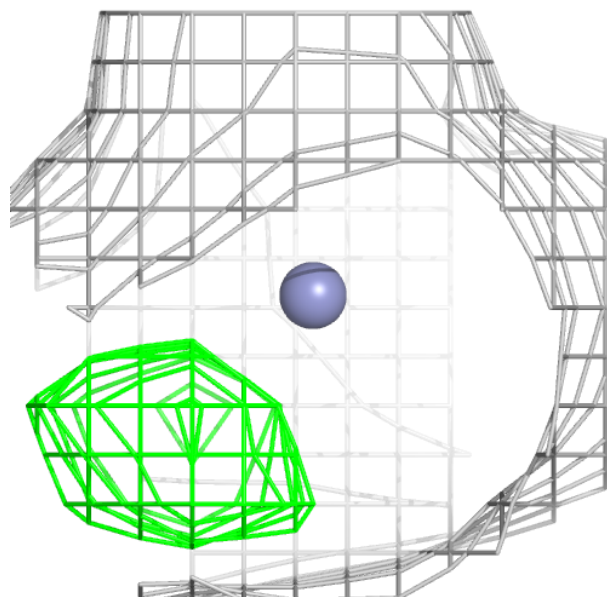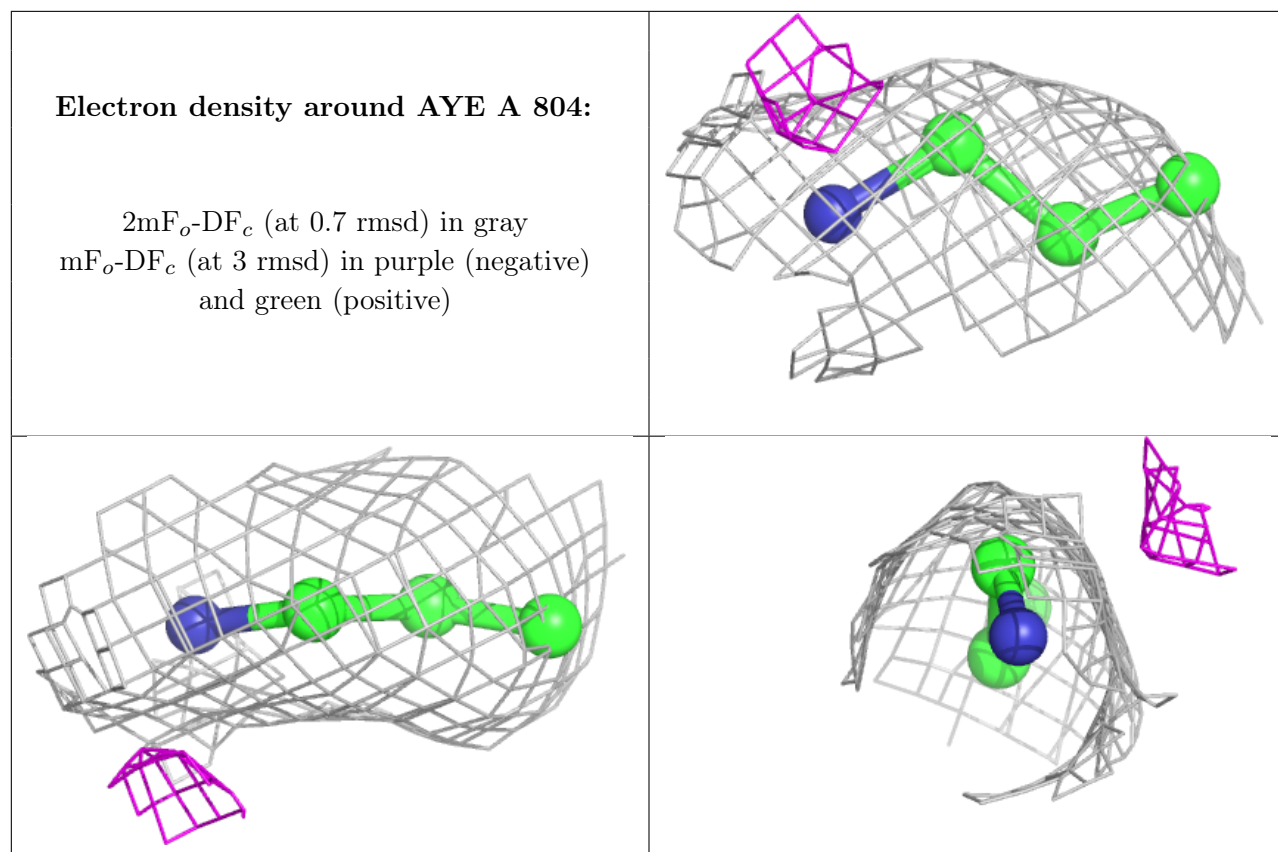
Electron density around ZN A 803:

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

Electron density around ZN D 802:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
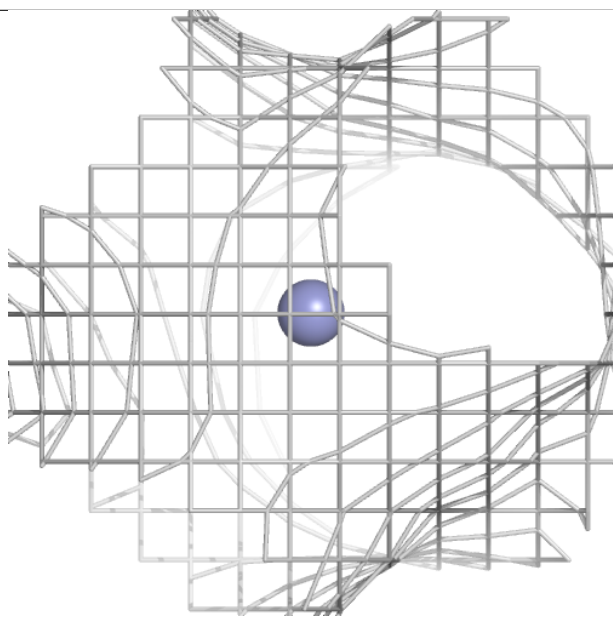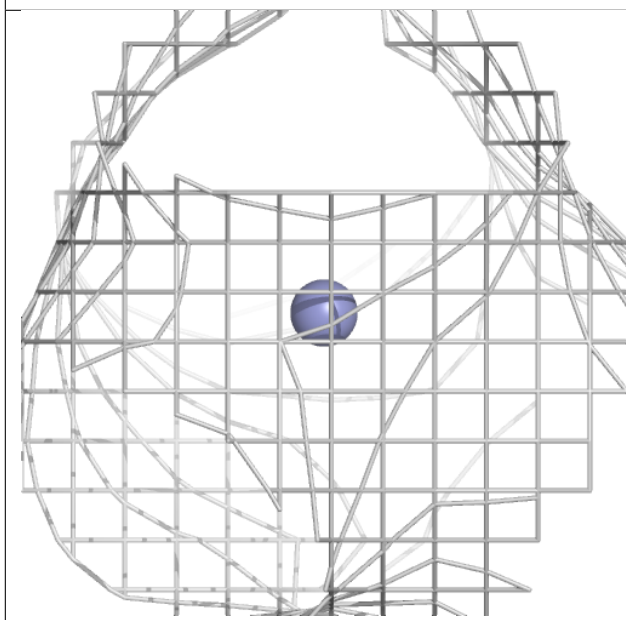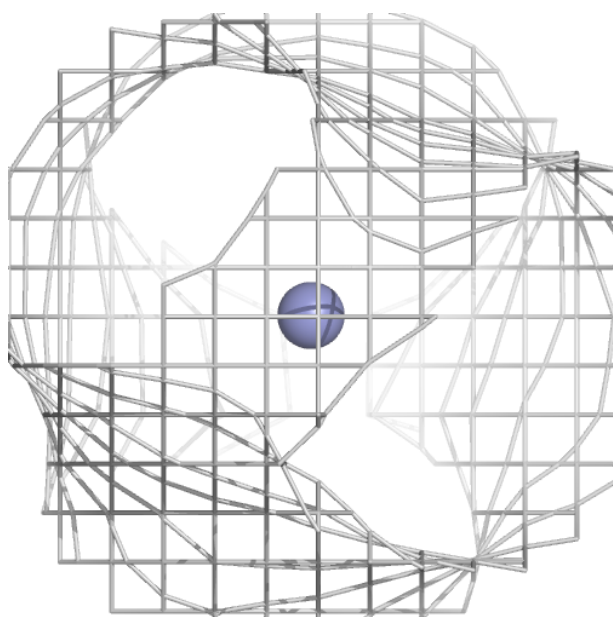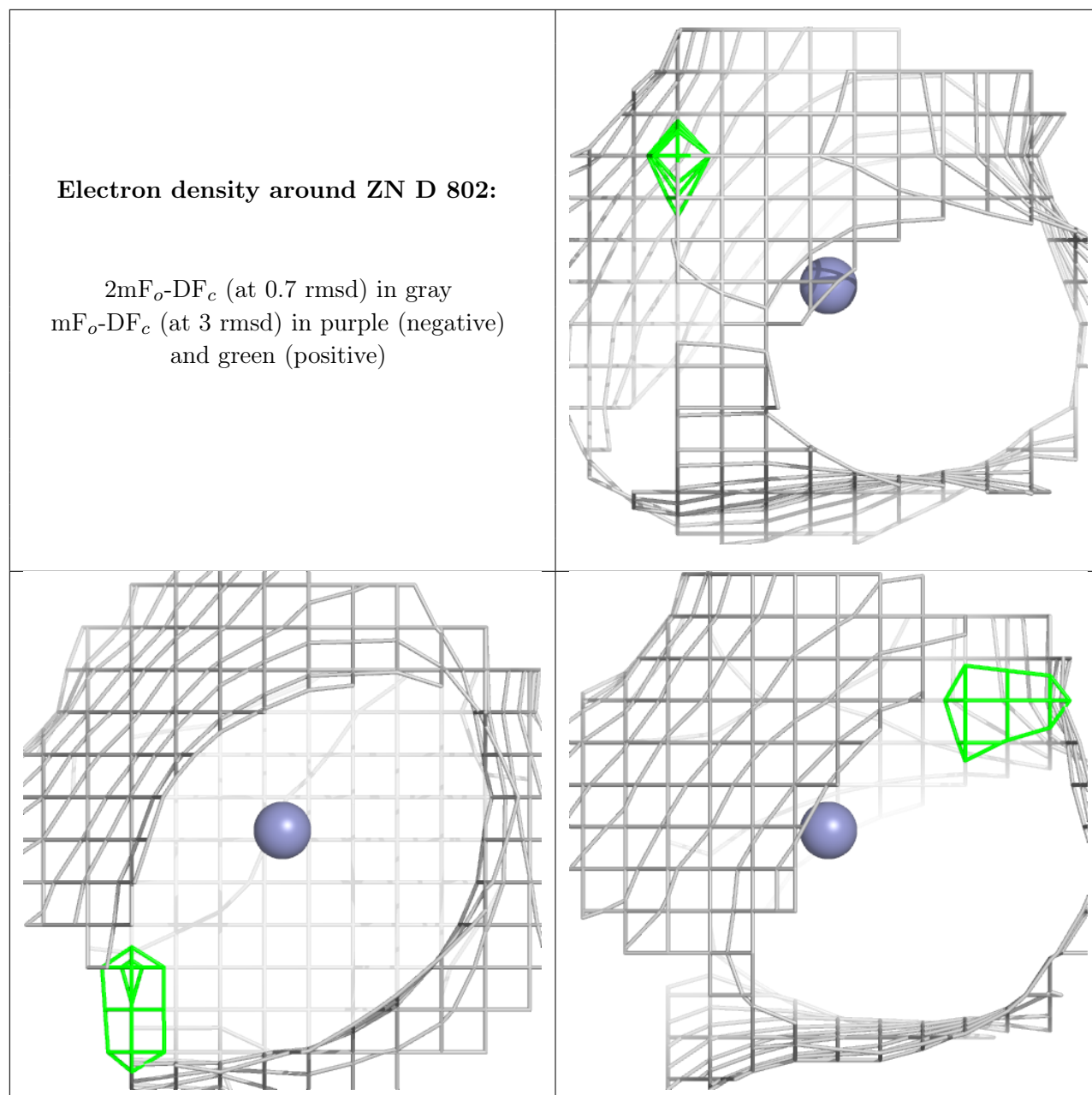
Electron density around ZN A 801:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
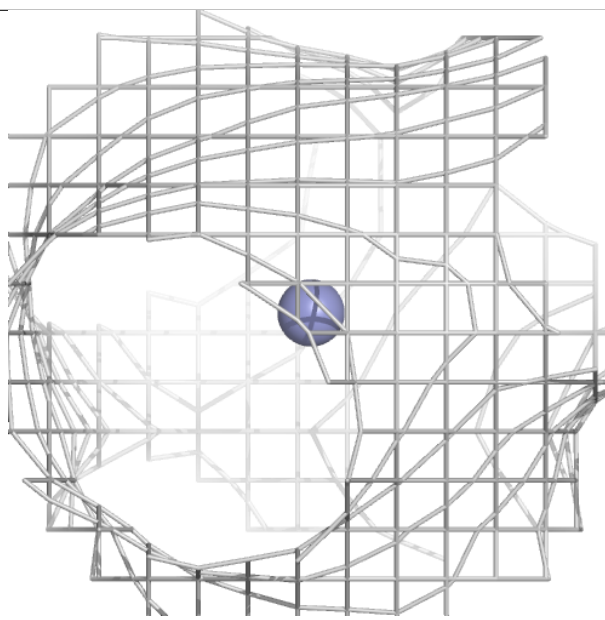$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
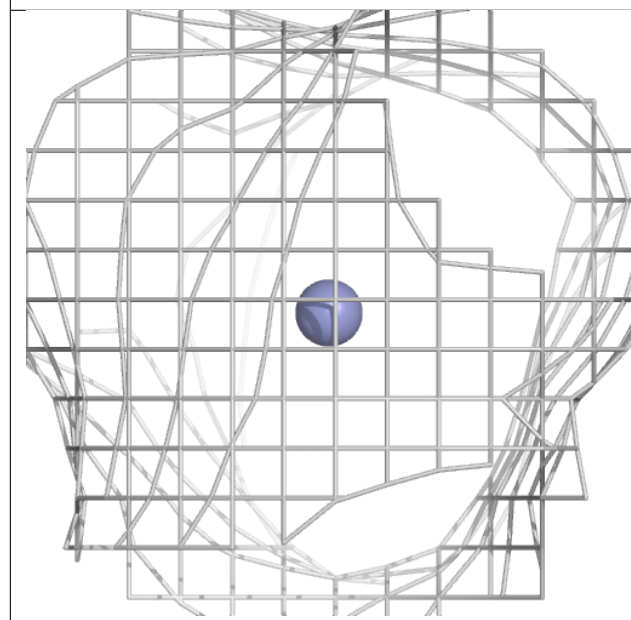and green (positive)
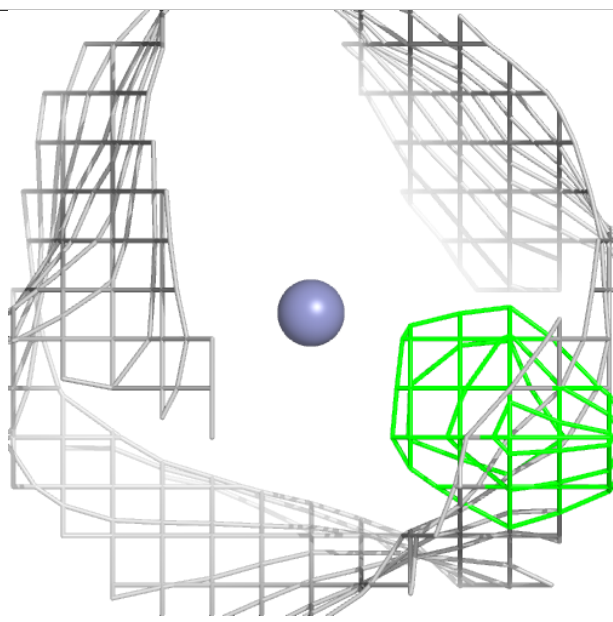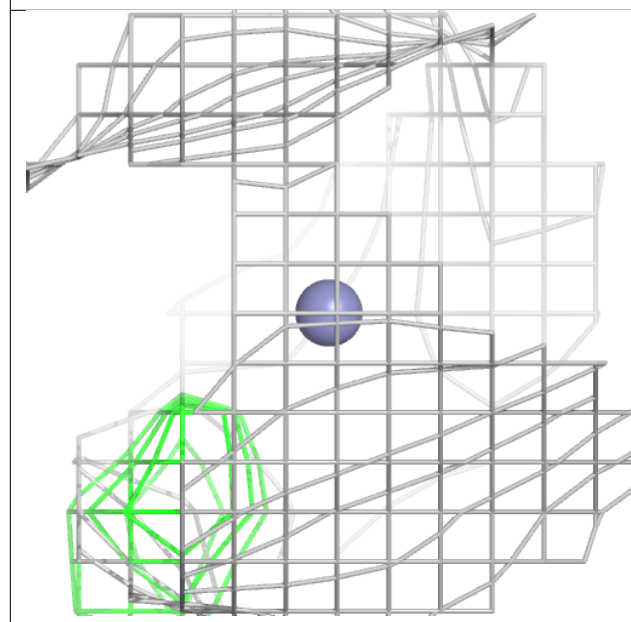
Electron density around ZN G 801:

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

Electron density around AYE G 804:

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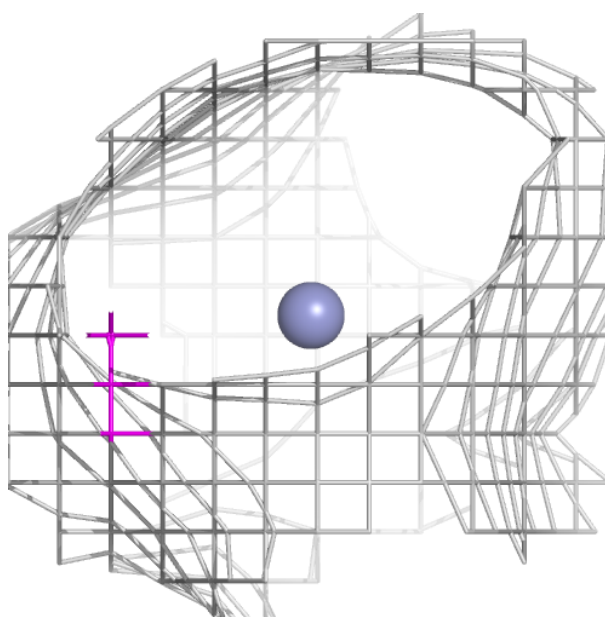and green (positive)

Electron density around ZN G 802:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
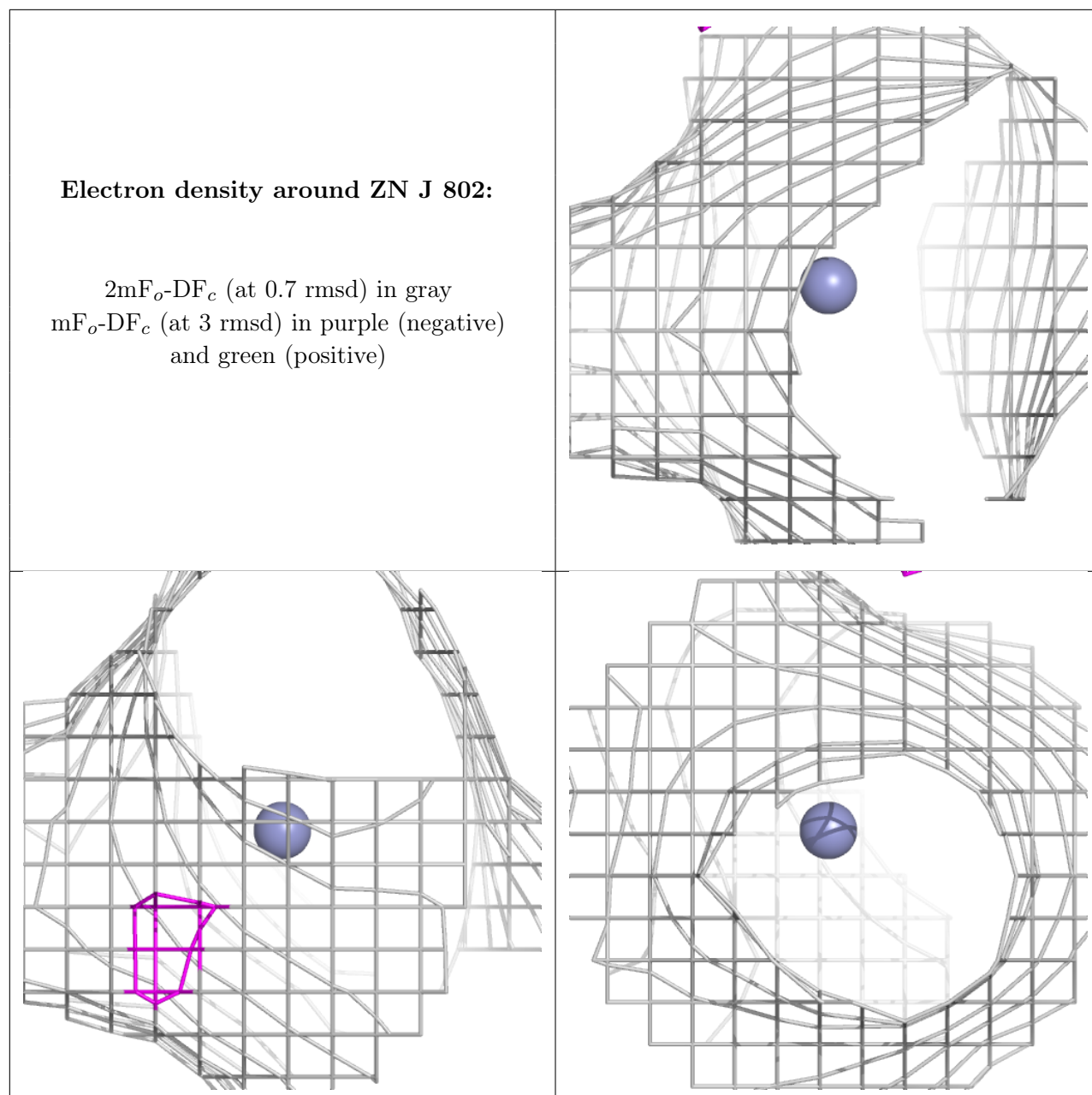and green (positive)

Electron density around ZN G 803:

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

Electron density around ZN A 802:

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

Electron density around ZN J 802:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.