



# wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 8, 2026 – 12:30 PM UTC

PDB ID : 7C07 / pdb\_00007c07  
Title : Crystal structure of yeast U2AF1 complex bound to 5'-AAGGU RNA.  
Authors : Yoshida, H.; Park, S.Y.; Urano, T.; Obayashi, E.  
Deposited on : 2020-04-30  
Resolution : 3.20 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

MolProbity : 4-5-2 with Phenix2.0  
Xtrriage (Phenix) : 2.0  
EDS : 3.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
CCP4 : 9.0.010 (Gargrove)  
Density-Fitness : 1.0.12  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

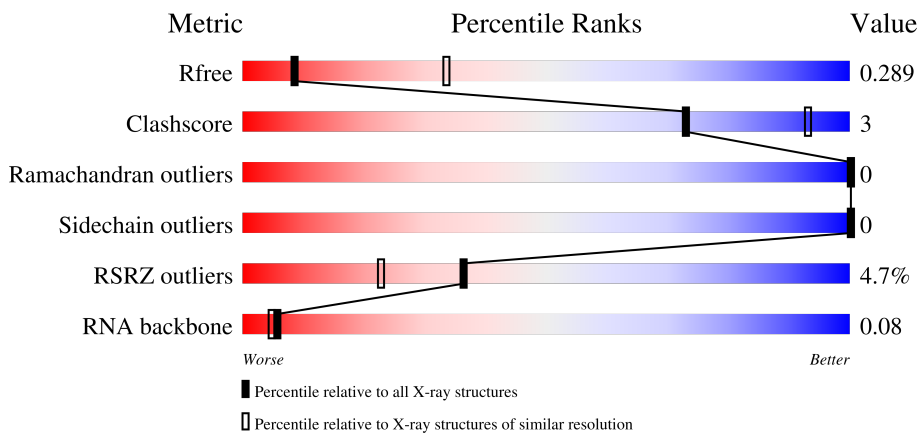
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.20 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	180053	1466 (3.20-3.20)
Clashscore	190562	1573 (3.20-3.20)
Ramachandran outliers	187476	1548 (3.20-3.20)
Sidechain outliers	187428	1547 (3.20-3.20)
RSRZ outliers	180081	1466 (3.20-3.20)
RNA backbone	3983	1222 (3.50-2.90)

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	216	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 84%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 5%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 11%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">2%      84%      5%      11%</p>
1	D	216	<div style="display: flex; align-items: center;"> <div style="width: 1%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 81%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 6%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 13%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">%      81%      6%      13%</p>
1	G	216	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 81%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 8%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 11%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">2%      81%      8%      11%</p>
1	J	216	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 82%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 7%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 11%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">4%      82%      7%      11%</p>

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Mol	Chain	Length	Quality of chain
1	M	216	4% 76% 7% 17%
1	P	216	5% 83% 12%
1	S	216	7% 79% 8% 13%
1	V	216	5% 77% 19%
1	Y	216	6% 77% 6% 17%
2	B	69	% 81% 19%
2	E	69	% 57% 17% 26%
2	H	69	65% 12% 23%
2	K	69	6% 72% 6% 22%
2	N	69	3% 62% 13% 25%
2	Q	69	12% 64% 13% 23%
2	T	69	% 59% 9% 32%
2	W	69	6% 61% 16% 23%
2	Z	69	3% 55% 9% 36%
3	1	6	17% 33% 50% 17%
3	C	6	33% 33% 17% 17%
3	F	6	17% 50% 17% 17%
3	I	6	33% 17% 33% 17%
3	L	6	33% 50% 17%
3	O	6	17% 33% 50% 17%
3	R	6	17% 50% 17% 17% 17%
3	U	6	33% 17% 33% 17%
3	X	6	33% 50% 17%

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 18390 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 Splicing factor U2AF 23 kDa subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	193	Total 1567	C 981	N 278	O 295	S 13	0	0	0
1	D	187	Total 1524	C 955	N 270	O 286	S 13	0	0	0
1	G	193	Total 1567	C 981	N 278	O 295	S 13	0	0	0
1	J	193	Total 1567	C 981	N 278	O 295	S 13	0	0	0
1	M	179	Total 1461	C 916	N 260	O 272	S 13	0	0	0
1	P	189	Total 1534	C 962	N 273	O 286	S 13	0	0	0
1	S	188	Total 1539	C 964	N 274	O 288	S 13	0	1	0
1	V	174	Total 1424	C 895	N 254	O 262	S 13	0	0	0
1	Y	179	Total 1461	C 916	N 260	O 272	S 13	0	0	0

- Molecule 2 is a protein called Splicing factor U2AF 59 kDa subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	56	Total 455	C 288	N 82	O 84	S 1	0	0	0
2	E	51	Total 417	C 266	N 74	O 76	S 1	0	0	0
2	H	53	Total 430	C 274	N 76	O 79	S 1	0	0	0
2	K	54	Total 435	C 277	N 77	O 80	S 1	0	0	0
2	N	52	Total 426	C 272	N 75	O 78	S 1	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	Q	53	Total	C	N	O	S	0	0	0
			430	274	76	79	1			
2	T	47	Total	C	N	O	S	0	0	0
			383	246	67	69	1			
2	W	53	Total	C	N	O	S	0	0	0
			430	274	76	79	1			
2	Z	44	Total	C	N	O	S	0	0	0
			359	232	63	63	1			

- Molecule 3 is a RNA chain called RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	5	Total	C	N	O	P	0	0	0
			107	49	22	32	4			
3	F	5	Total	C	N	O	P	0	0	0
			107	49	22	32	4			
3	I	5	Total	C	N	O	P	0	0	0
			107	49	22	32	4			
3	L	5	Total	C	N	O	P	0	0	0
			107	49	22	32	4			
3	O	5	Total	C	N	O	P	0	0	0
			107	49	22	32	4			
3	R	5	Total	C	N	O	P	0	0	0
			107	49	22	32	4			
3	U	5	Total	C	N	O	P	0	0	0
			107	49	22	32	4			
3	X	5	Total	C	N	O	P	0	0	0
			107	49	22	32	4			
3	1	5	Total	C	N	O	P	0	0	0
			107	49	22	32	4			

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	Zn	0	0
			2	2		
4	D	2	Total	Zn	0	0
			2	2		
4	G	2	Total	Zn	0	0
			2	2		
4	J	2	Total	Zn	0	0
			2	2		

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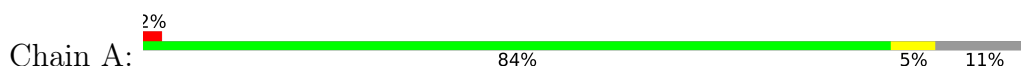
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<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
4	M	2	Total 2	Zn 2	0	0
4	P	2	Total 2	Zn 2	0	0
4	S	2	Total 2	Zn 2	0	0
4	V	2	Total 2	Zn 2	0	0
4	Y	2	Total 2	Zn 2	0	0

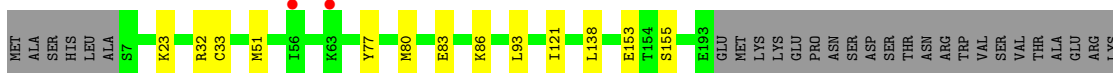
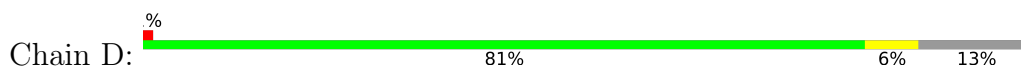
### 3 Residue-property plots [i](#)

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

- Molecule 1: Splicing factor U2AF 23 kDa subunit

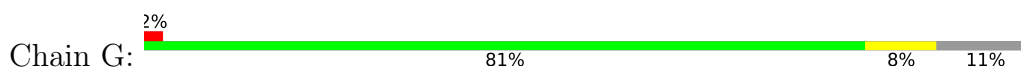


- Molecule 1: Splicing factor U2AF 23 kDa subunit



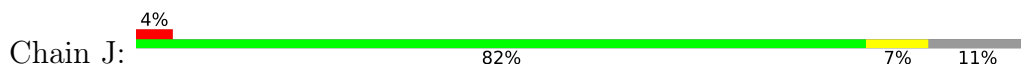
ASN

- Molecule 1: Splicing factor U2AF 23 kDa subunit



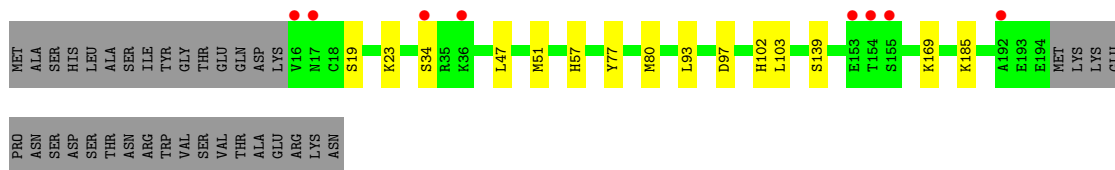
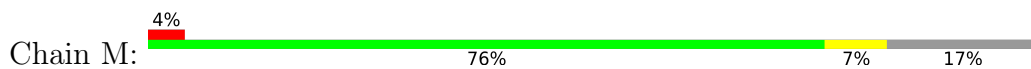
ALA  
GLU  
ARG  
LYS  
ASN

- Molecule 1: Splicing factor U2AF 23 kDa subunit

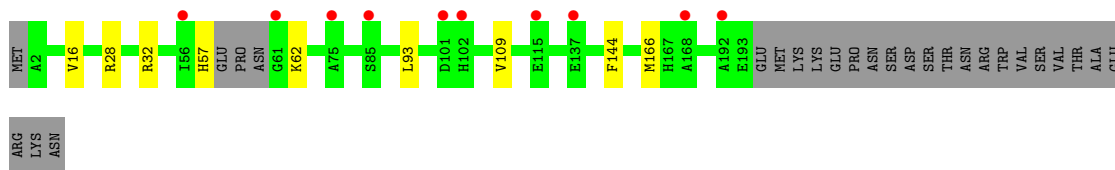
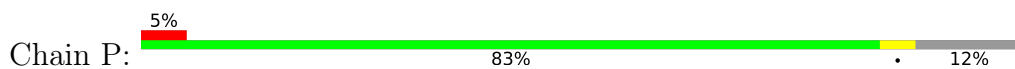


ASN  
ARG  
TRP  
VAL  
SER  
VAL  
THR  
ALA  
GLU  
ARG  
LYS  
ASN

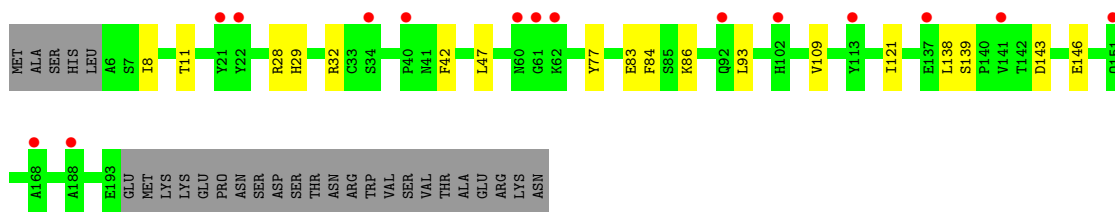
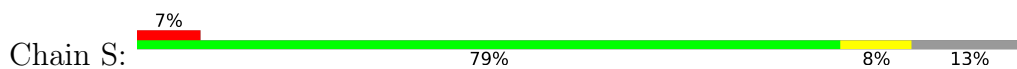
- Molecule 1: Splicing factor U2AF 23 kDa subunit



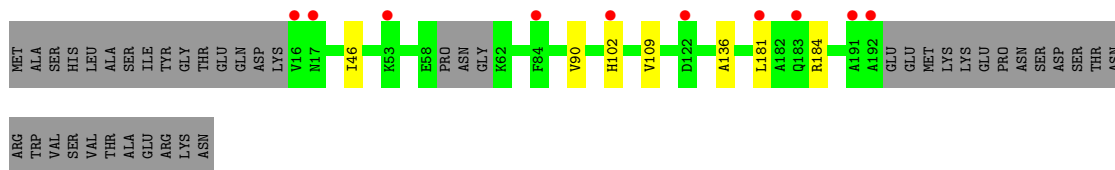
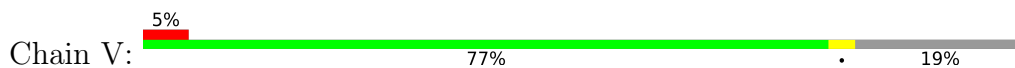
- Molecule 1: Splicing factor U2AF 23 kDa subunit



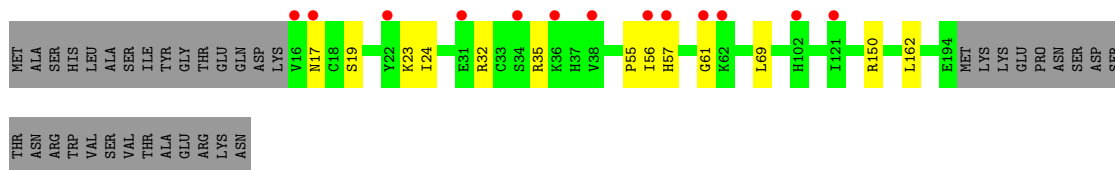
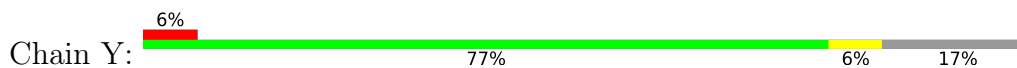
- Molecule 1: Splicing factor U2AF 23 kDa subunit



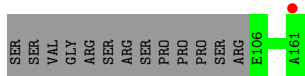
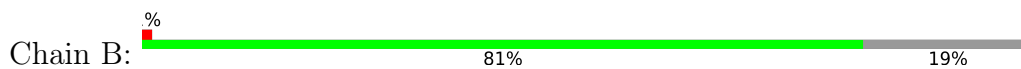
- Molecule 1: Splicing factor U2AF 23 kDa subunit



- Molecule 1: Splicing factor U2AF 23 kDa subunit



- Molecule 2: Splicing factor U2AF 59 kDa subunit



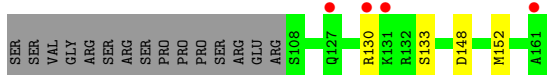
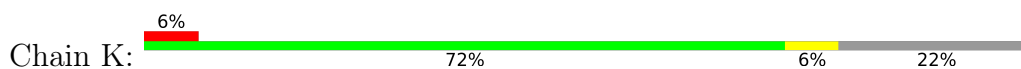
- Molecule 2: Splicing factor U2AF 59 kDa subunit



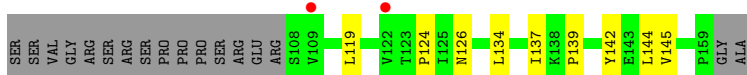
- Molecule 2: Splicing factor U2AF 59 kDa subunit



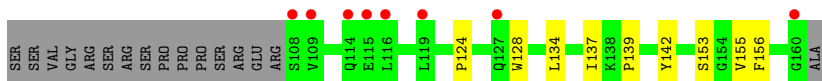
- Molecule 2: Splicing factor U2AF 59 kDa subunit



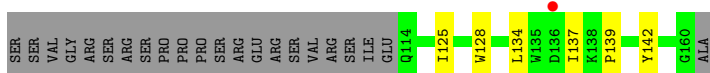
- Molecule 2: Splicing factor U2AF 59 kDa subunit



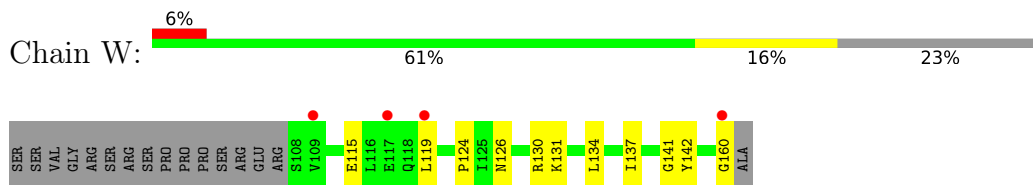
- Molecule 2: Splicing factor U2AF 59 kDa subunit



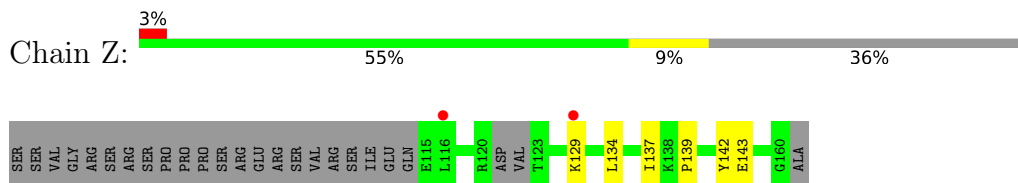
- Molecule 2: Splicing factor U2AF 59 kDa subunit



- Molecule 2: Splicing factor U2AF 59 kDa subunit



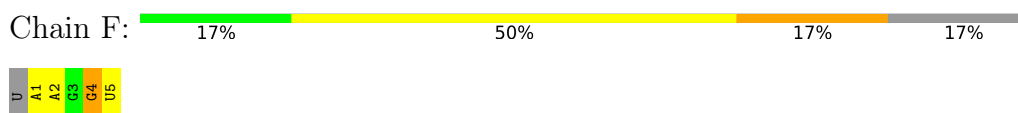
- Molecule 2: Splicing factor U2AF 59 kDa subunit



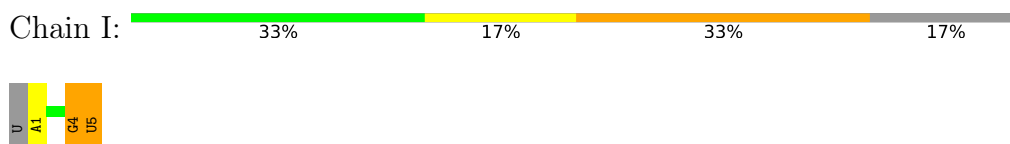
- Molecule 3: RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3')



- Molecule 3: RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3')



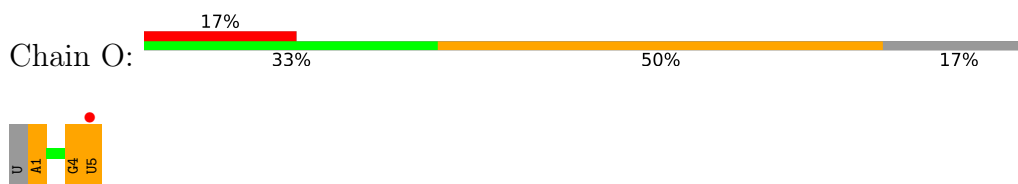
- Molecule 3: RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3')



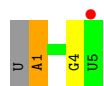
- Molecule 3: RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3')



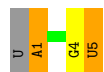
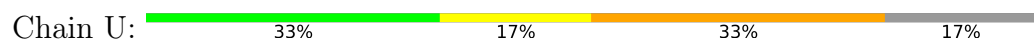
- Molecule 3: RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3')



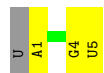
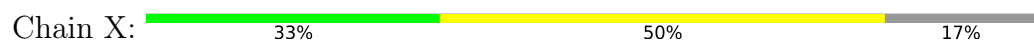
- Molecule 3: RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3')



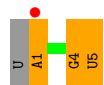
- Molecule 3: RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3')



- Molecule 3: RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3')



- Molecule 3: RNA (5'-R(\*U\*AP\*AP\*GP\*GP\*U)-3')



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	94.49Å 256.95Å 94.59Å 90.00° 100.75° 90.00°	Depositor
Resolution (Å)	48.17 – 3.20 48.17 – 3.20	Depositor EDS
% Data completeness (in resolution range)	100.0 (48.17-3.20) 99.9 (48.17-3.20)	Depositor EDS
$R_{merge}$	0.12	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.11 (at 3.19Å)	Xtrriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, $R_{free}$	0.255 , 0.285 0.259 , 0.289	Depositor DCC
$R_{free}$ test set	3656 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	73.6	Xtrriage
Anisotropy	0.368	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 49.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	0.039 for l,-k,h	Xtrriage
$F_o, F_c$ correlation	0.88	EDS
Total number of atoms	18390	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	80.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 14.49% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section:  
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	0.07	0/1604	0.26	0/2163
1	D	0.08	0/1560	0.26	0/2103
1	G	0.08	0/1604	0.27	0/2163
1	J	0.08	0/1604	0.28	0/2163
1	M	0.08	0/1496	0.27	0/2017
1	P	0.08	0/1569	0.25	0/2113
1	S	0.08	0/1576	0.27	0/2125
1	V	0.08	0/1457	0.26	0/1962
1	Y	0.08	0/1496	0.27	0/2017
2	B	0.09	0/465	0.28	0/629
2	E	0.11	0/427	0.32	0/578
2	H	0.10	0/440	0.31	0/596
2	K	0.09	0/445	0.30	0/603
2	N	0.10	0/436	0.32	0/591
2	Q	0.09	0/440	0.30	0/596
2	T	0.09	0/393	0.26	0/533
2	W	0.10	0/440	0.31	0/596
2	Z	0.09	0/368	0.28	0/497
3	1	0.17	0/120	0.55	0/186
3	C	0.14	0/120	0.44	0/186
3	F	0.14	0/120	0.49	0/186
3	I	0.17	0/120	0.55	0/186
3	L	0.15	0/120	0.57	0/186
3	O	0.16	0/120	0.55	0/186
3	R	0.16	0/120	0.59	0/186
3	U	0.15	0/120	0.56	0/186
3	X	0.16	0/120	0.58	0/186
All	All	0.09	0/18900	0.30	0/25719

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	1567	0	1487	7	0
1	D	1524	0	1448	9	0
1	G	1567	0	1487	16	0
1	J	1567	0	1488	9	0
1	M	1461	0	1389	11	0
1	P	1534	0	1461	8	0
1	S	1539	0	1459	13	0
1	V	1424	0	1360	5	0
1	Y	1461	0	1389	11	0
2	B	455	0	460	0	0
2	E	417	0	422	7	0
2	H	430	0	436	6	0
2	K	435	0	441	3	0
2	N	426	0	433	7	0
2	Q	430	0	436	5	0
2	T	383	0	387	4	0
2	W	430	0	436	10	0
2	Z	359	0	365	5	0
3	1	107	0	56	4	0
3	C	107	0	56	1	0
3	F	107	0	56	3	0
3	I	107	0	56	3	0
3	L	107	0	56	0	0
3	O	107	0	56	4	0
3	R	107	0	56	1	0
3	U	107	0	56	2	0
3	X	107	0	56	0	0
4	A	2	0	0	0	0
4	D	2	0	0	0	0
4	G	2	0	0	0	0
4	J	2	0	0	0	0
4	M	2	0	0	0	0
4	P	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	S	2	0	0	0	0
4	V	2	0	0	0	0
4	Y	2	0	0	0	0
All	All	18390	0	17288	114	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

The worst 5 of 114 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:A:22:TYR:OH	1:G:184:ARG:NH2	2.22	0.71
1:D:33:CYS:HA	3:F:1:A:H62	1.57	0.70
2:W:131:LYS:HD3	2:W:131:LYS:H	1.57	0.69
1:D:23:LYS:NZ	3:F:4:G:O2'	2.31	0.64
1:J:14:ASP:O	1:J:35:ARG:NH2	2.29	0.64

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	191/216 (88%)	185 (97%)	6 (3%)	0	100	100
1	D	185/216 (86%)	181 (98%)	4 (2%)	0	100	100
1	G	191/216 (88%)	186 (97%)	5 (3%)	0	100	100
1	J	191/216 (88%)	183 (96%)	8 (4%)	0	100	100
1	M	177/216 (82%)	171 (97%)	6 (3%)	0	100	100
1	P	185/216 (86%)	179 (97%)	6 (3%)	0	100	100
1	S	187/216 (87%)	182 (97%)	5 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	V	170/216 (79%)	167 (98%)	3 (2%)	0	100	100
1	Y	177/216 (82%)	171 (97%)	6 (3%)	0	100	100
2	B	54/69 (78%)	52 (96%)	2 (4%)	0	100	100
2	E	49/69 (71%)	47 (96%)	2 (4%)	0	100	100
2	H	51/69 (74%)	48 (94%)	3 (6%)	0	100	100
2	K	52/69 (75%)	48 (92%)	4 (8%)	0	100	100
2	N	50/69 (72%)	47 (94%)	3 (6%)	0	100	100
2	Q	51/69 (74%)	49 (96%)	2 (4%)	0	100	100
2	T	45/69 (65%)	41 (91%)	4 (9%)	0	100	100
2	W	51/69 (74%)	48 (94%)	3 (6%)	0	100	100
2	Z	40/69 (58%)	36 (90%)	4 (10%)	0	100	100
All	All	2097/2565 (82%)	2021 (96%)	76 (4%)	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	170/192 (88%)	170 (100%)	0	100	100
1	D	166/192 (86%)	166 (100%)	0	100	100
1	G	170/192 (88%)	170 (100%)	0	100	100
1	J	170/192 (88%)	170 (100%)	0	100	100
1	M	159/192 (83%)	159 (100%)	0	100	100
1	P	166/192 (86%)	166 (100%)	0	100	100
1	S	167/192 (87%)	167 (100%)	0	100	100
1	V	155/192 (81%)	155 (100%)	0	100	100
1	Y	159/192 (83%)	159 (100%)	0	100	100
2	B	50/62 (81%)	50 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	E	46/62 (74%)	46 (100%)	0	100	100
2	H	48/62 (77%)	48 (100%)	0	100	100
2	K	48/62 (77%)	48 (100%)	0	100	100
2	N	48/62 (77%)	48 (100%)	0	100	100
2	Q	48/62 (77%)	48 (100%)	0	100	100
2	T	42/62 (68%)	42 (100%)	0	100	100
2	W	48/62 (77%)	48 (100%)	0	100	100
2	Z	39/62 (63%)	39 (100%)	0	100	100
All	All	1899/2286 (83%)	1899 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 19 such sidechains are listed below:

Mol	Chain	Res	Type
1	S	106	ASN
1	V	183	GLN
1	Y	131	GLN
1	V	131	GLN
1	M	164	ASN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
3	1	5/6 (83%)	2 (40%)	1 (20%)
3	C	5/6 (83%)	2 (40%)	1 (20%)
3	F	4/6 (66%)	3 (75%)	0
3	I	5/6 (83%)	2 (40%)	1 (20%)
3	L	5/6 (83%)	2 (40%)	1 (20%)
3	O	5/6 (83%)	2 (40%)	1 (20%)
3	R	5/6 (83%)	1 (20%)	1 (20%)
3	U	5/6 (83%)	2 (40%)	1 (20%)
3	X	5/6 (83%)	2 (40%)	1 (20%)
All	All	44/54 (81%)	18 (40%)	8 (18%)

5 of 18 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
3	C	4	G
3	C	5	U
3	F	2	A
3	F	4	G
3	F	5	U

5 of 8 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
3	1	1	A
3	X	1	A
3	R	1	A
3	O	1	A
3	U	1	A

#### 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

#### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

#### 5.6 Ligand geometry [i](#)

Of 18 ligands modelled in this entry, 18 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

#### 5.7 Other polymers [i](#)

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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	193/216 (89%)	0.38	4 (2%) 63 43	45, 68, 108, 136	0
1	D	187/216 (86%)	0.35	2 (1%) 78 61	42, 62, 102, 125	0
1	G	193/216 (89%)	0.28	5 (2%) 57 37	33, 56, 99, 131	0
1	J	193/216 (89%)	0.85	9 (4%) 36 23	43, 72, 106, 130	0
1	M	179/216 (82%)	0.56	8 (4%) 38 24	49, 81, 121, 138	0
1	P	189/216 (87%)	0.75	10 (5%) 32 20	42, 67, 92, 122	0
1	S	188/216 (87%)	0.89	15 (7%) 18 12	33, 84, 125, 141	1 (0%)
1	V	174/216 (80%)	0.68	10 (5%) 29 19	70, 94, 119, 129	0
1	Y	179/216 (82%)	0.70	13 (7%) 21 13	43, 91, 128, 142	0
2	B	56/69 (81%)	0.53	1 (1%) 67 48	48, 72, 111, 119	0
2	E	51/69 (73%)	0.45	1 (1%) 65 45	48, 65, 144, 148	0
2	H	53/69 (76%)	0.42	0 100 100	26, 60, 115, 120	0
2	K	54/69 (78%)	0.85	4 (7%) 20 13	40, 69, 112, 136	0
2	N	52/69 (75%)	0.66	2 (3%) 44 27	52, 78, 139, 148	0
2	Q	53/69 (76%)	0.99	8 (15%) 5 4	45, 69, 128, 145	0
2	T	47/69 (68%)	0.77	1 (2%) 63 43	66, 89, 150, 156	0
2	W	53/69 (76%)	0.77	4 (7%) 20 13	69, 94, 144, 148	0
2	Z	44/69 (63%)	0.56	2 (4%) 38 24	48, 71, 124, 137	0
3	I	5/6 (83%)	1.17	1 (20%) 3 2	105, 115, 126, 146	0
3	C	5/6 (83%)	0.21	0 100 100	65, 80, 90, 93	0
3	F	5/6 (83%)	0.30	0 100 100	66, 68, 83, 118	0
3	I	5/6 (83%)	0.21	0 100 100	55, 60, 82, 95	0
3	L	5/6 (83%)	0.57	0 100 100	66, 87, 92, 101	0
3	O	5/6 (83%)	1.07	1 (20%) 3 2	100, 108, 130, 142	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
3	R	5/6 (83%)	0.67	1 (20%) 3 2	58, 60, 83, 90	0
3	U	5/6 (83%)	0.36	0 100 100	71, 72, 83, 145	0
3	X	5/6 (83%)	0.63	0 100 100	105, 107, 112, 118	0
All	All	2183/2619 (83%)	0.62	102 (4%) 36 23	26, 76, 125, 156	1 (0%)

The worst 5 of 102 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	Q	114	GLN	5.1
1	J	8	ILE	4.8
1	S	102[A]	HIS	3.9
1	Y	16	VAL	3.8
2	K	127	GLN	3.7

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

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

## 6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> 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.

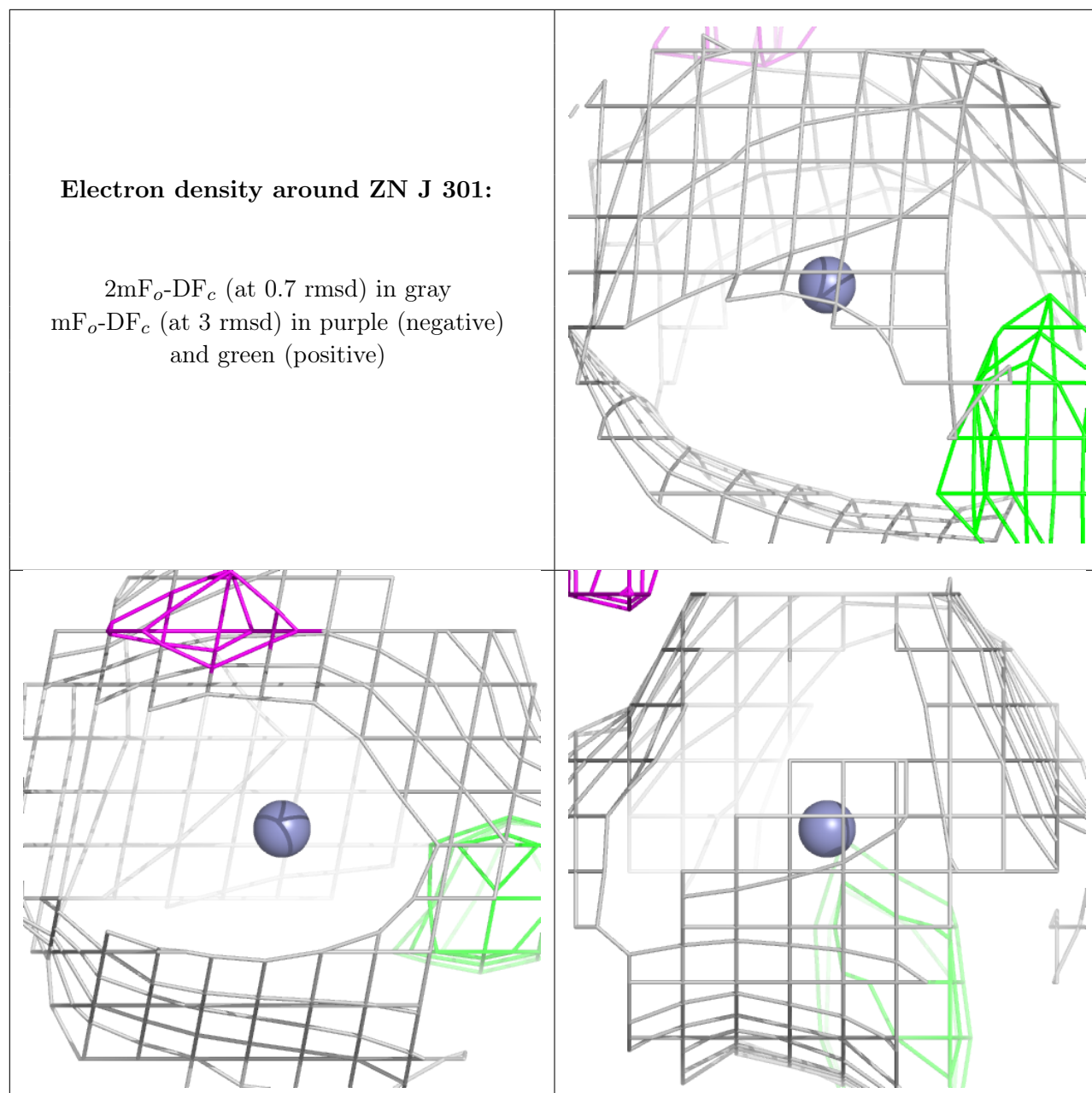
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
4	ZN	J	301	1/1	0.98	0.04	67,67,67,67	0
4	ZN	A	302	1/1	0.99	0.04	55,55,55,55	0
4	ZN	G	301	1/1	0.99	0.05	48,48,48,48	0
4	ZN	G	302	1/1	0.99	0.04	54,54,54,54	0
4	ZN	A	301	1/1	0.99	0.03	60,60,60,60	0
4	ZN	J	302	1/1	0.99	0.04	54,54,54,54	0
4	ZN	M	301	1/1	0.99	0.03	70,70,70,70	0
4	ZN	M	302	1/1	0.99	0.03	65,65,65,65	0
4	ZN	P	302	1/1	0.99	0.04	45,45,45,45	0

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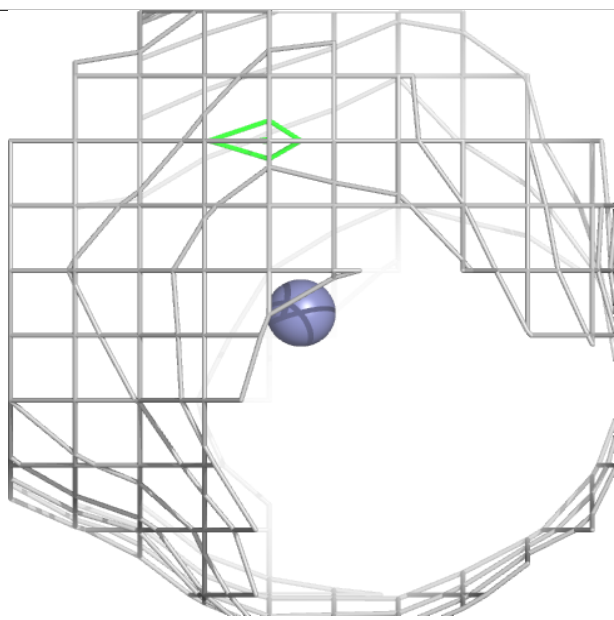
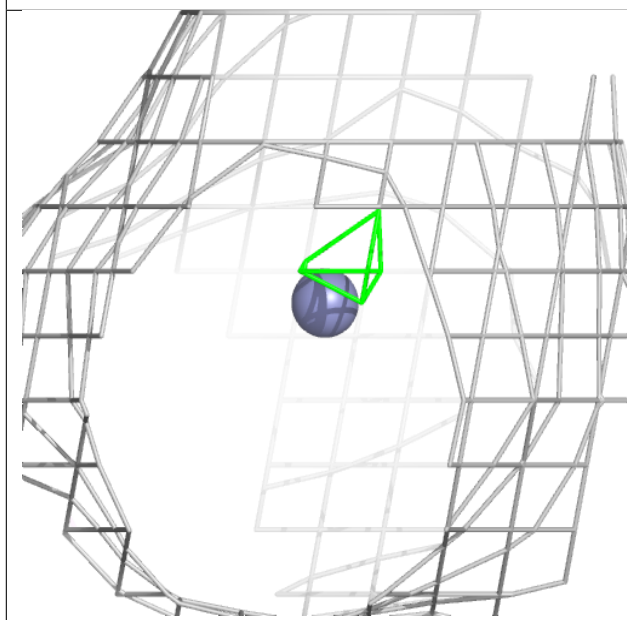
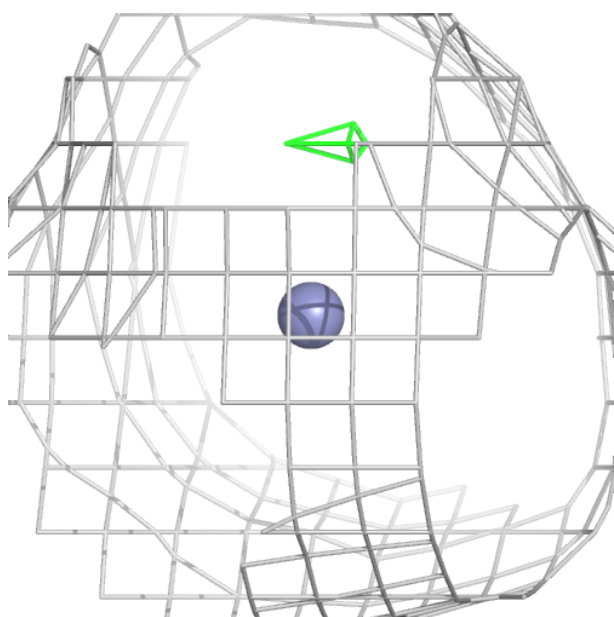
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	ZN	S	301	1/1	0.99	0.05	59,59,59,59	0
4	ZN	S	302	1/1	0.99	0.05	73,73,73,73	0
4	ZN	V	301	1/1	0.99	0.05	72,72,72,72	0
4	ZN	V	302	1/1	0.99	0.02	71,71,71,71	0
4	ZN	Y	301	1/1	0.99	0.05	80,80,80,80	0
4	ZN	Y	302	1/1	0.99	0.03	70,70,70,70	0
4	ZN	D	302	1/1	1.00	0.02	49,49,49,49	0
4	ZN	P	301	1/1	1.00	0.04	44,44,44,44	0
4	ZN	D	301	1/1	1.00	0.04	45,45,45,45	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.



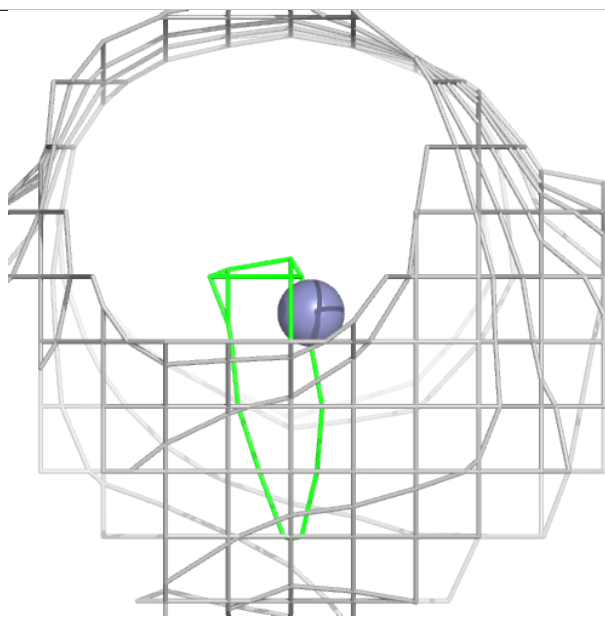
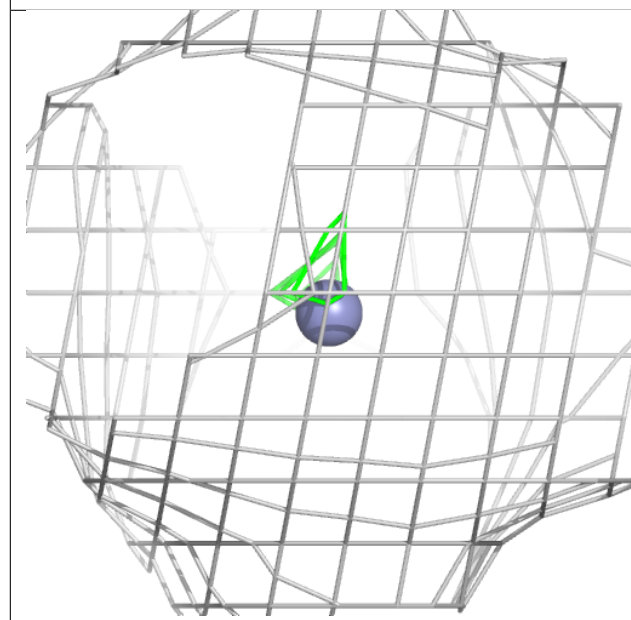
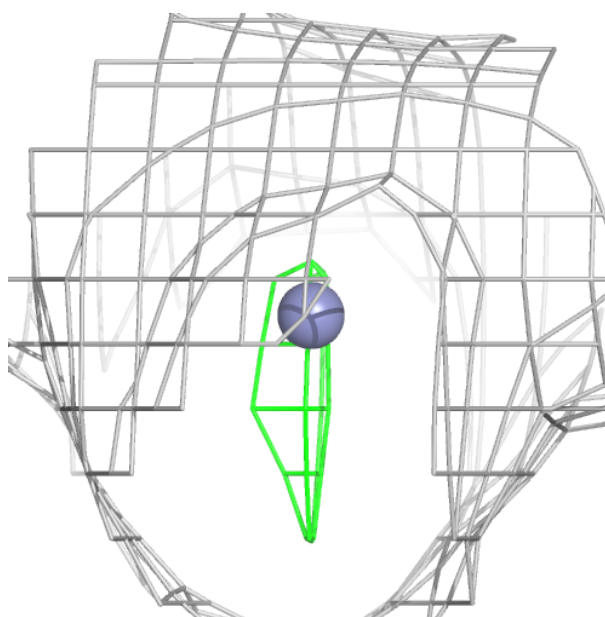
**Electron density around ZN A 302:**

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



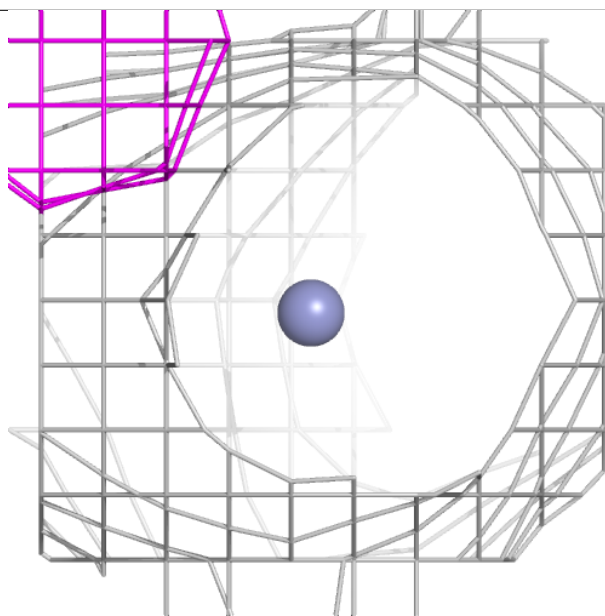
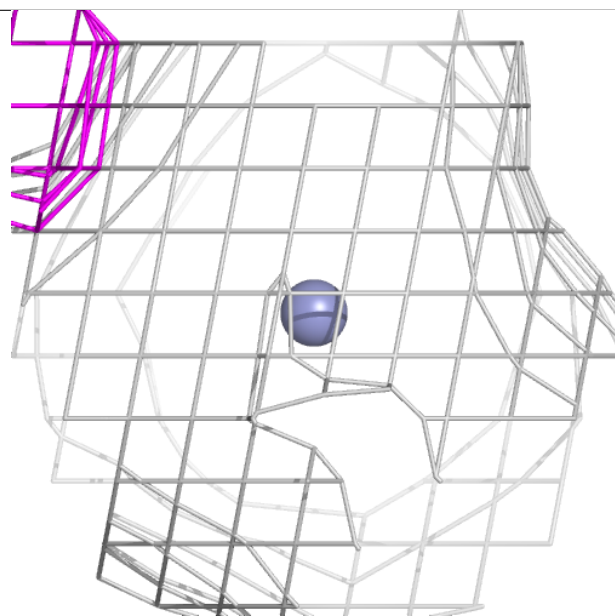
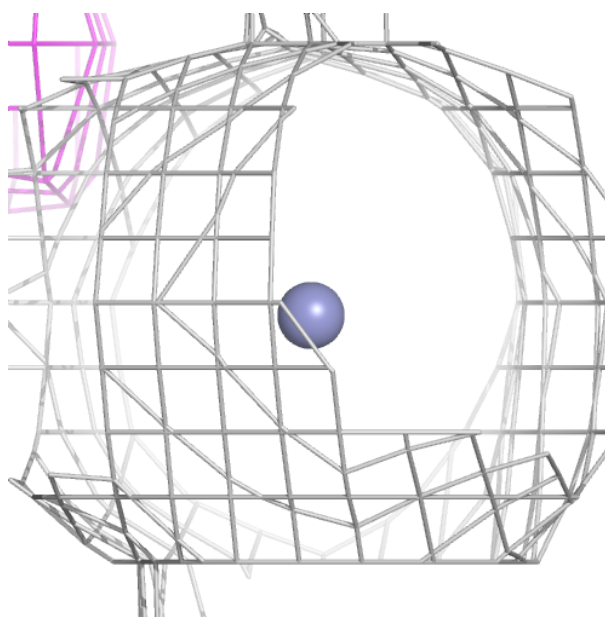
**Electron density around ZN G 301:**

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



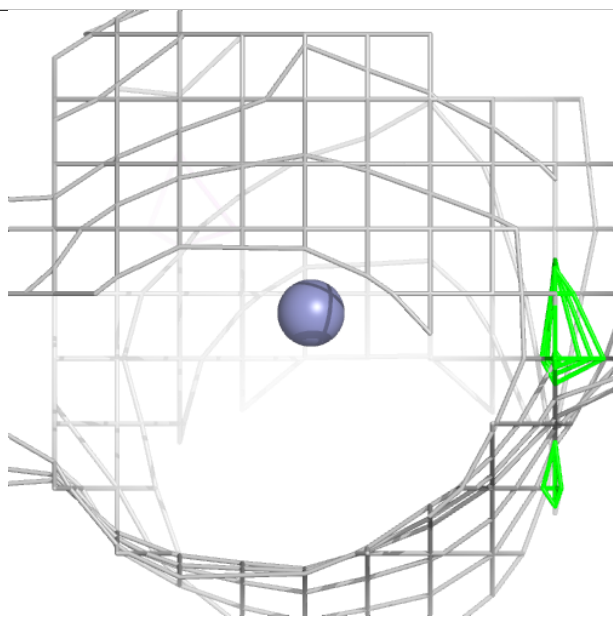
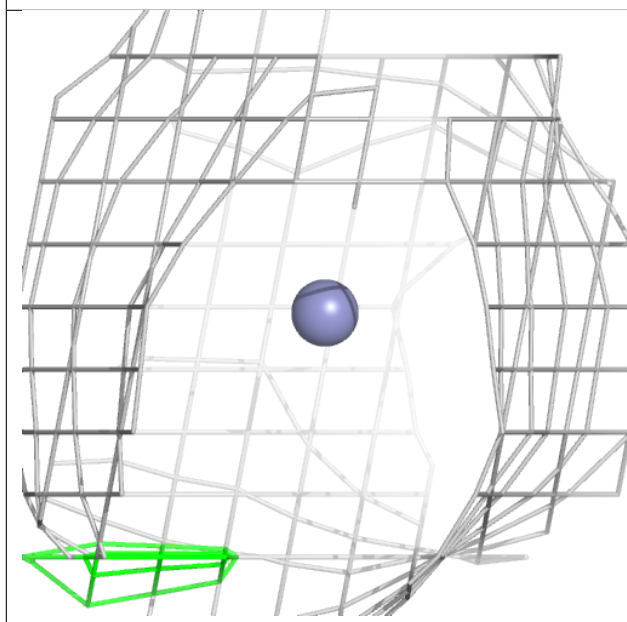
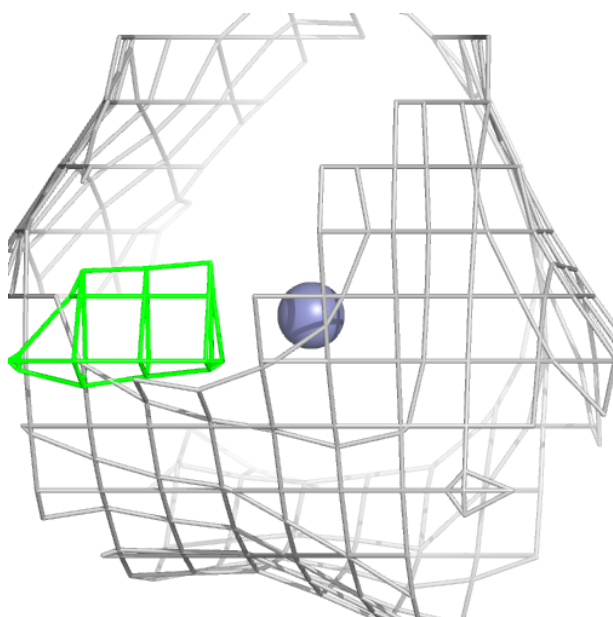
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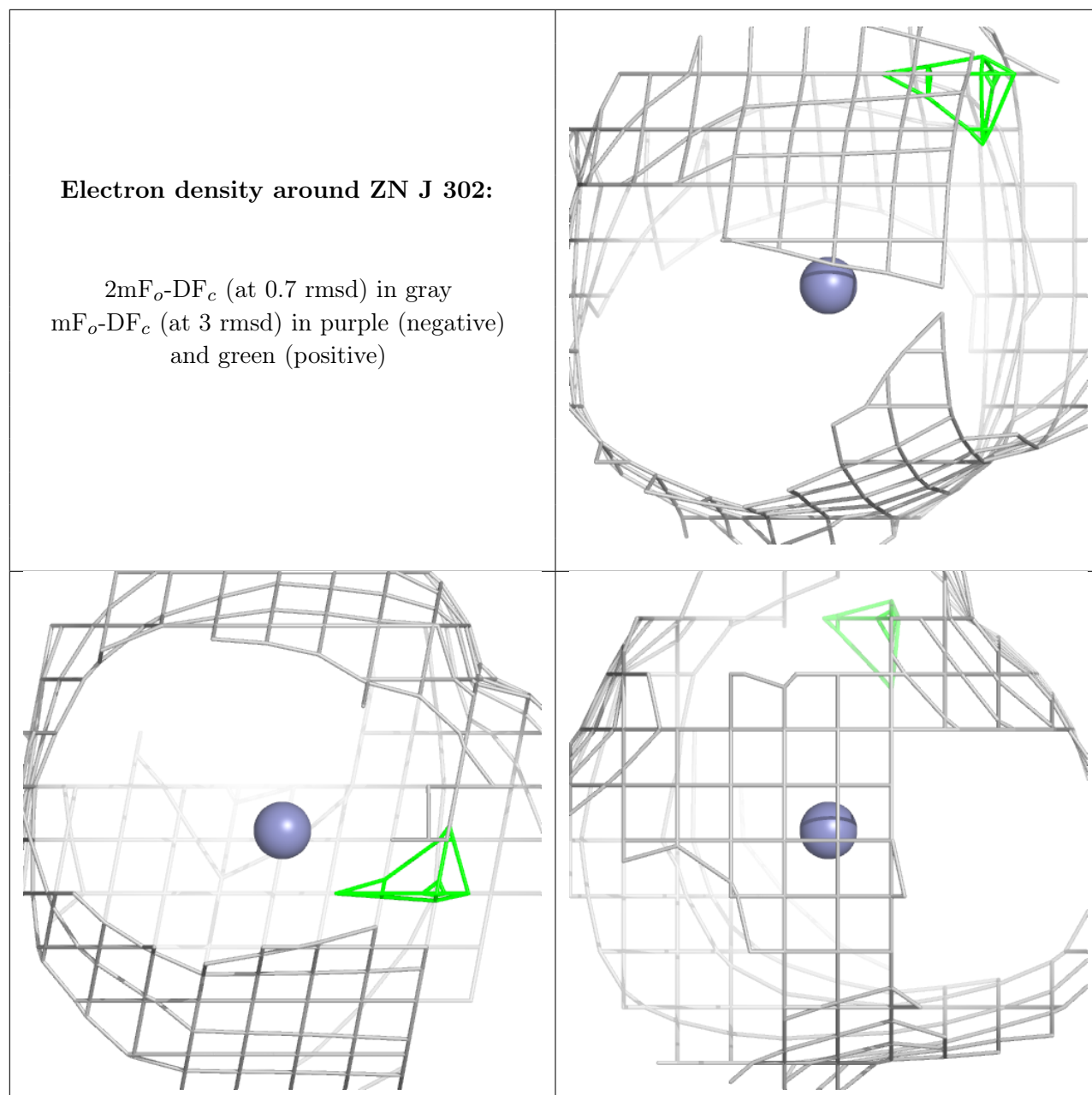
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and green (positive)



**Electron density around ZN A 301:**

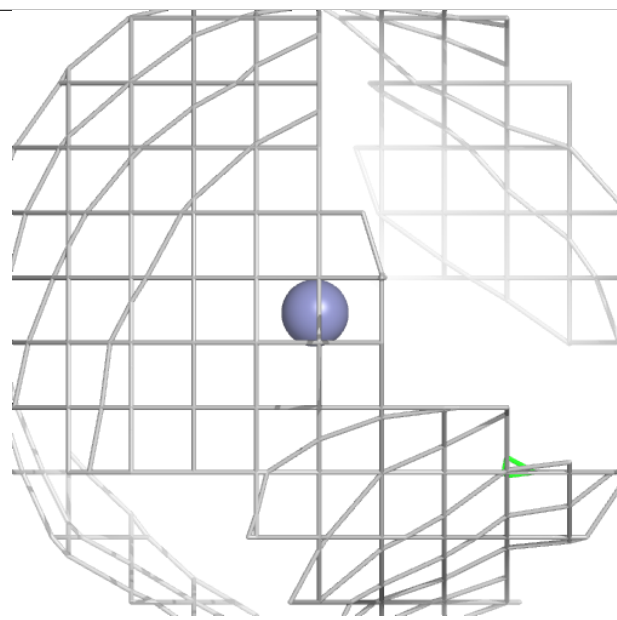
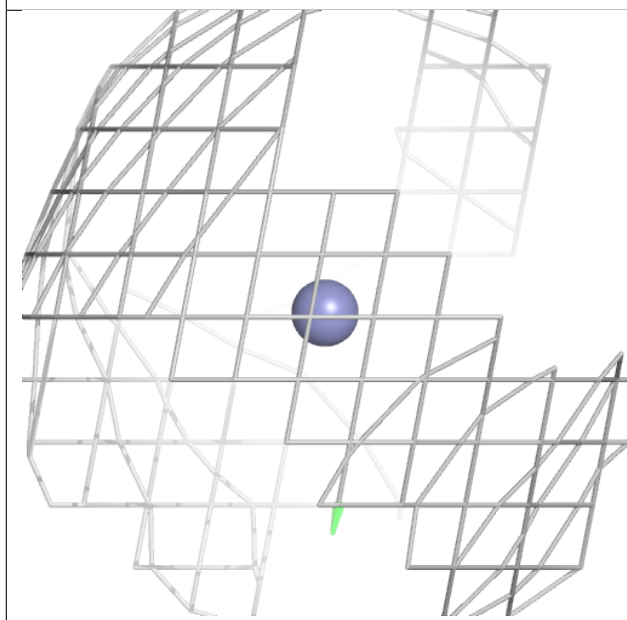
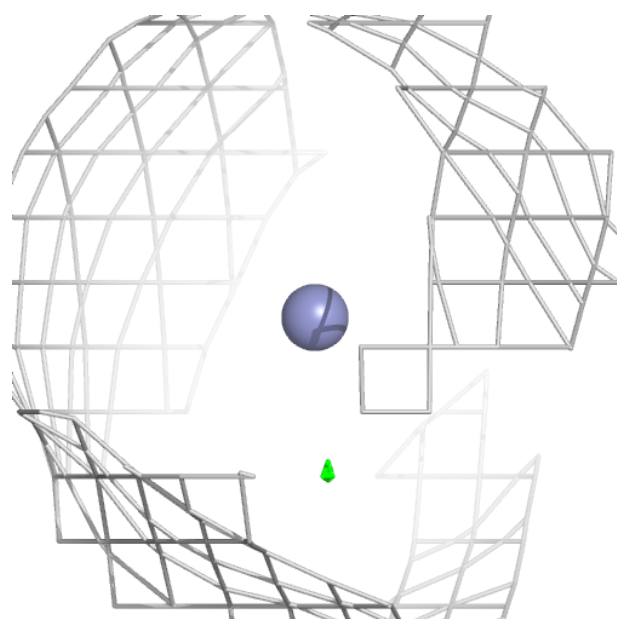
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





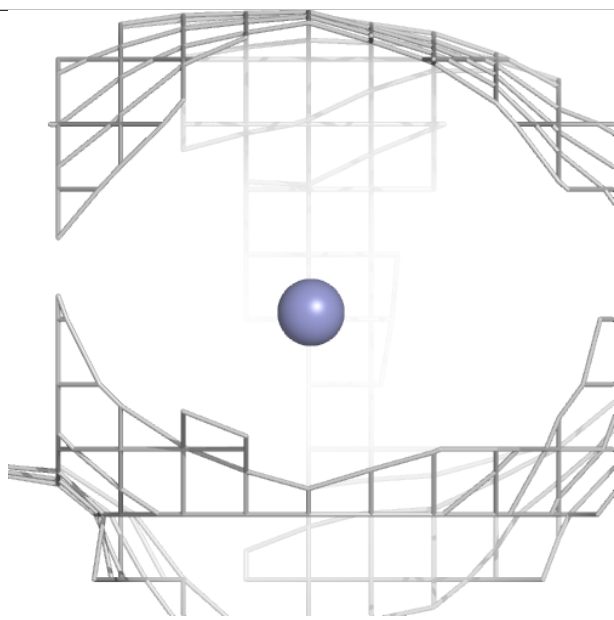
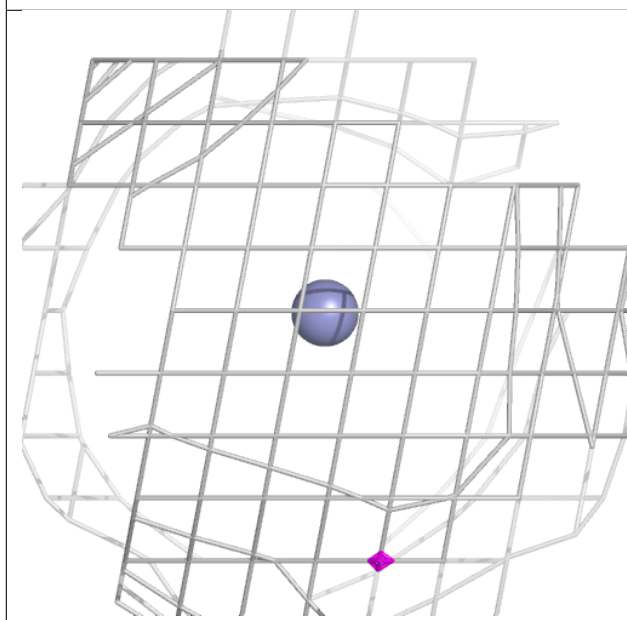
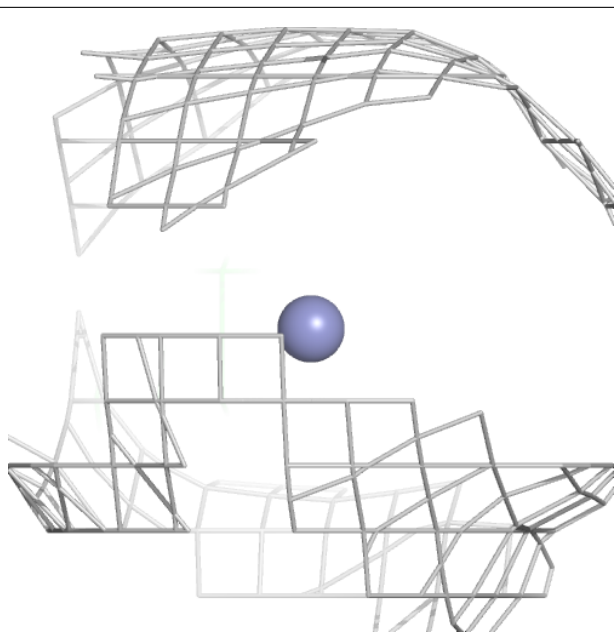
**Electron density around ZN M 301:**

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



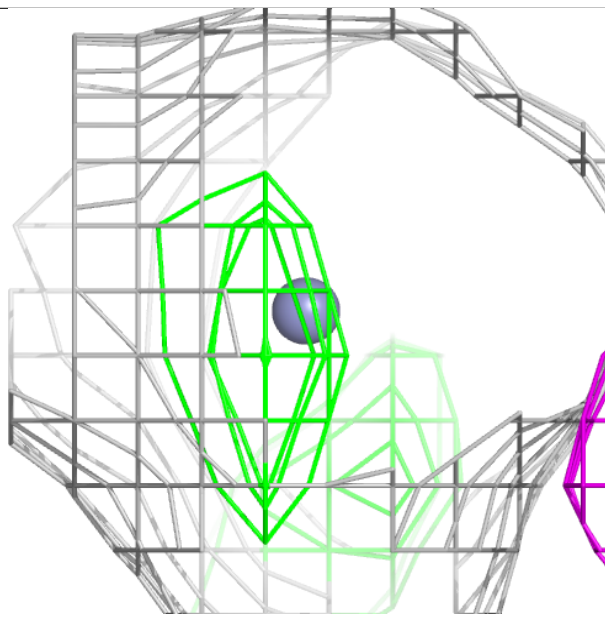
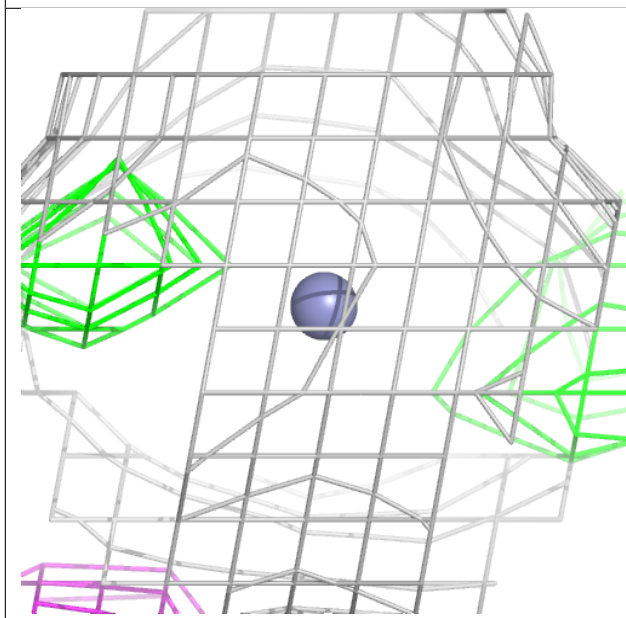
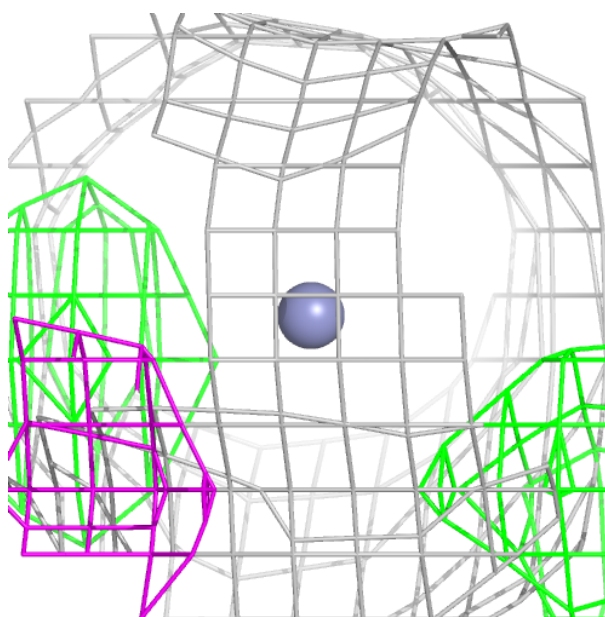
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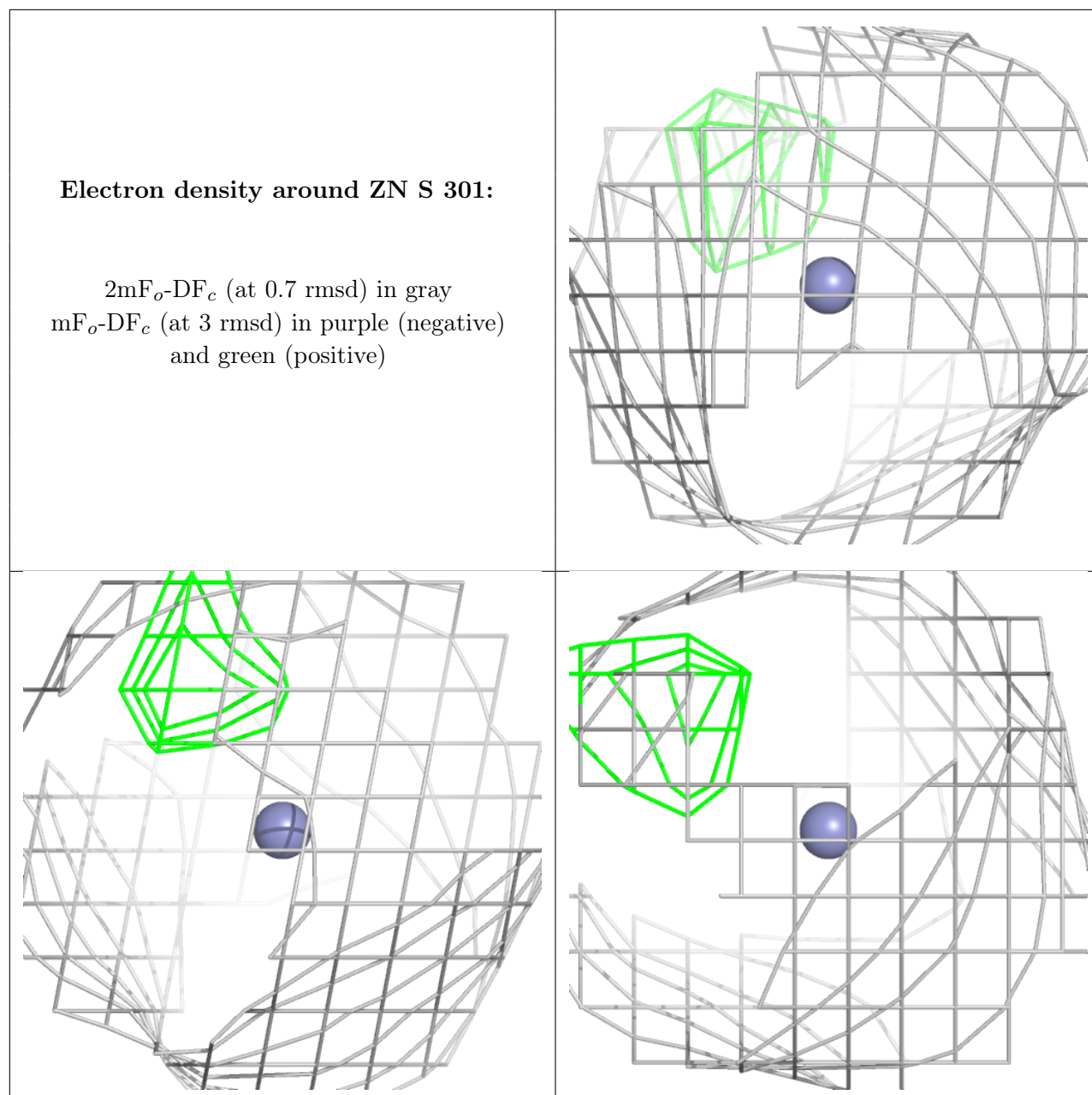
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

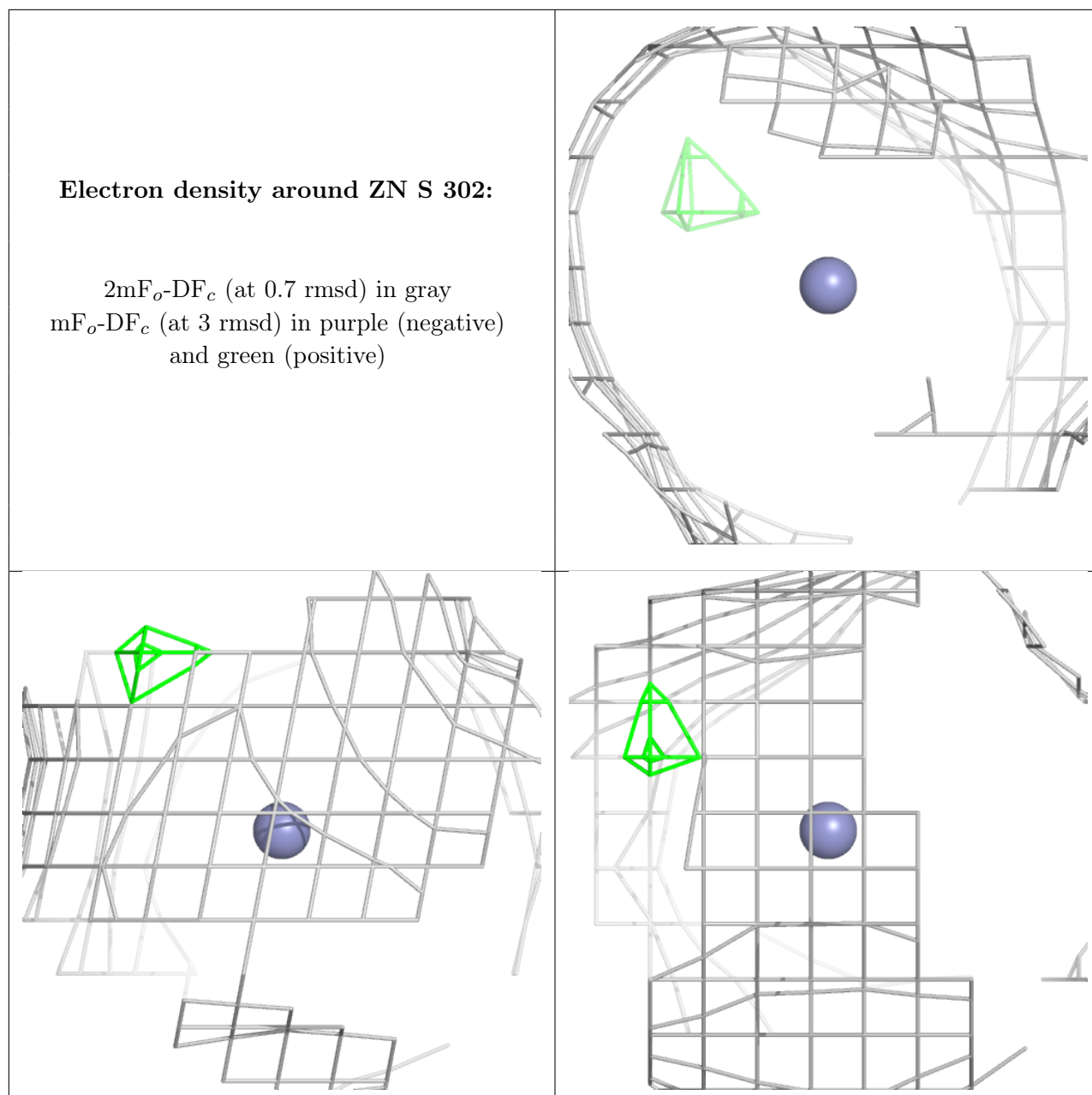


**Electron density around ZN P 302:**

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

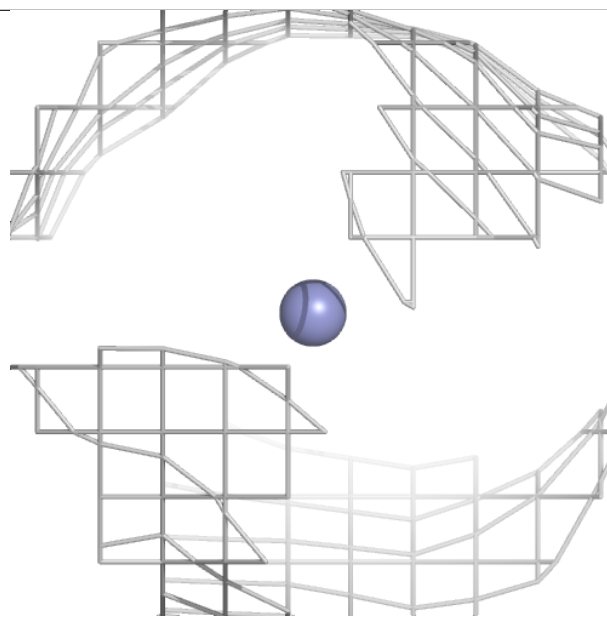
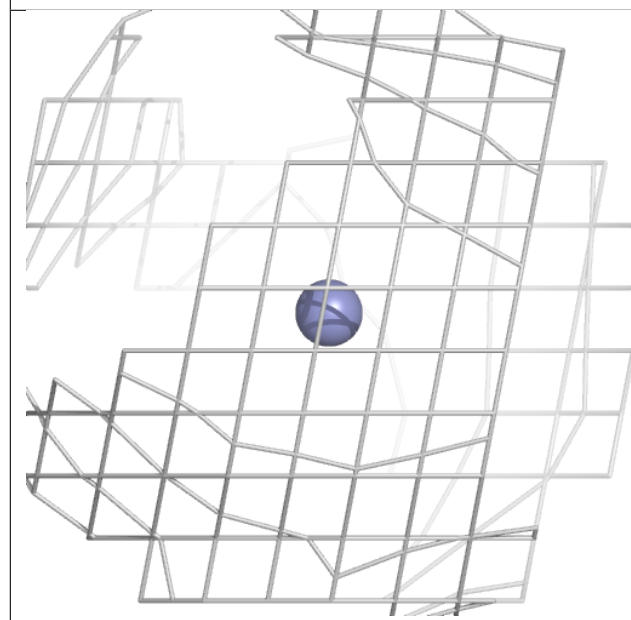
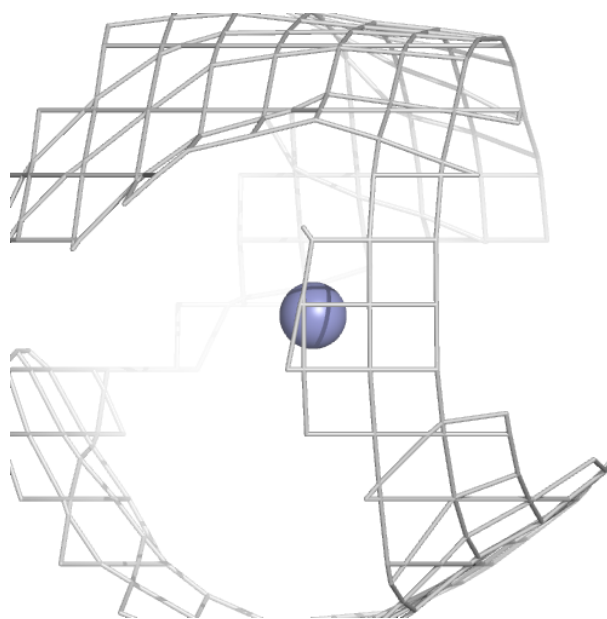






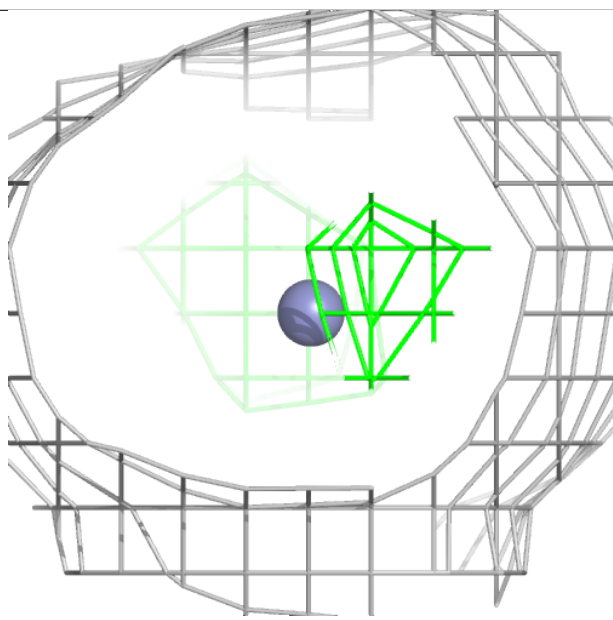
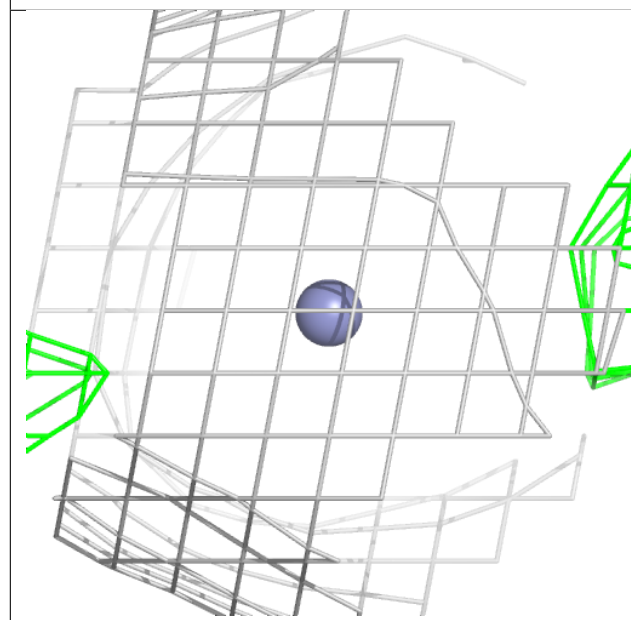
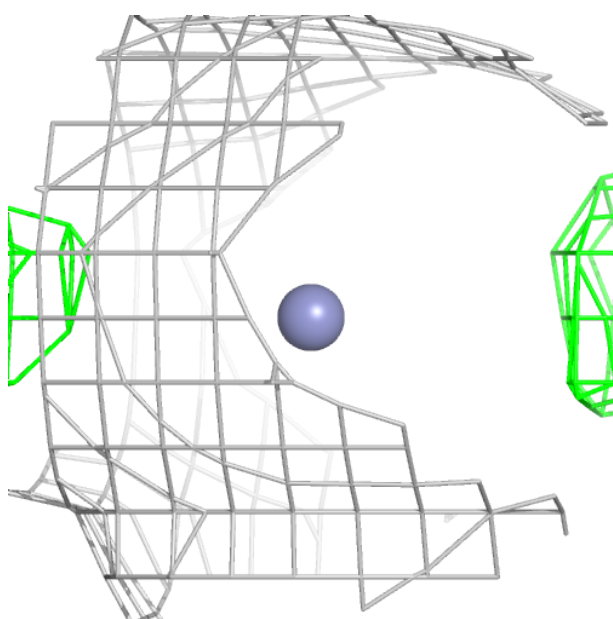
**Electron density around ZN V 301:**

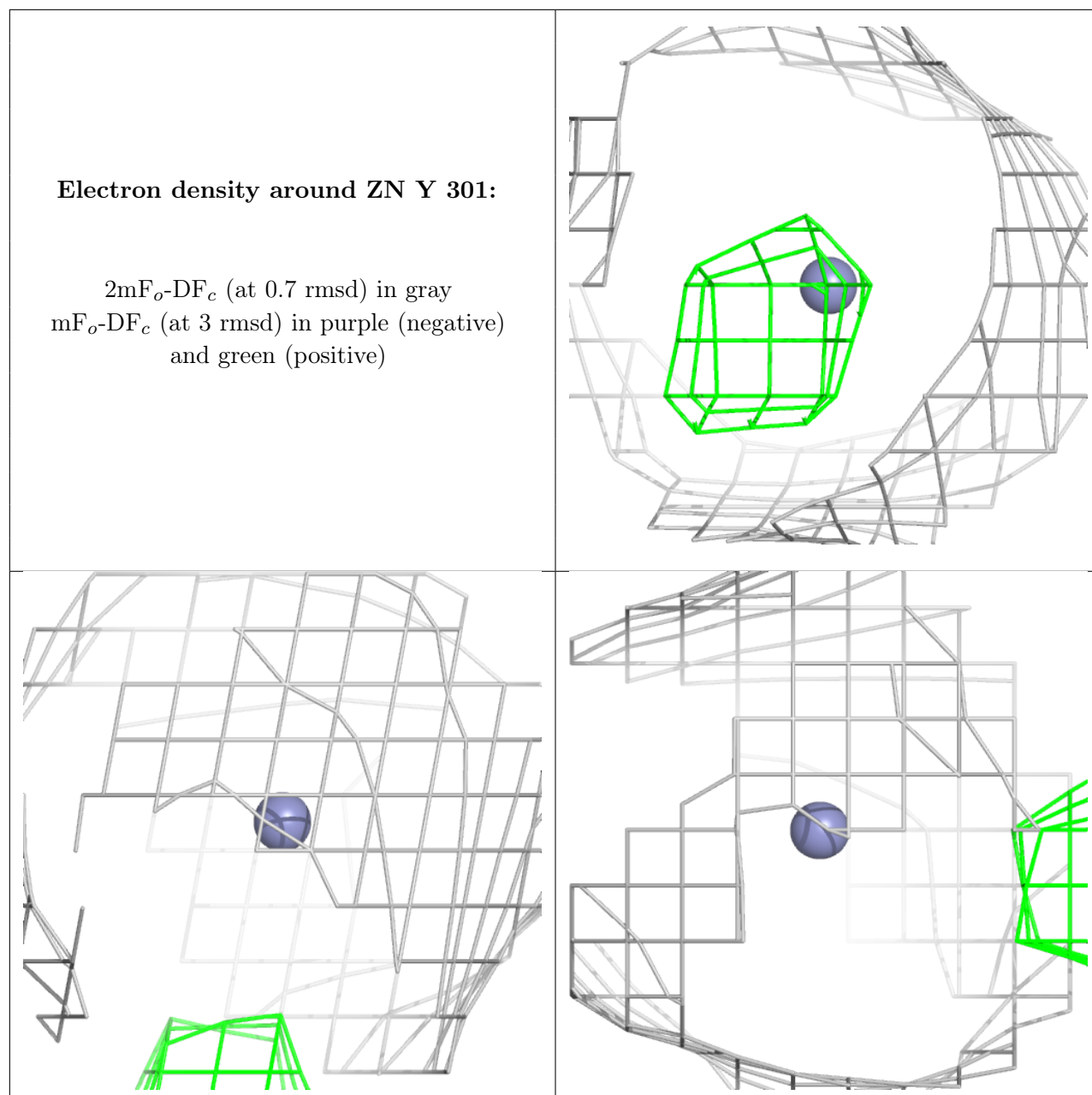
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around ZN V 302:**

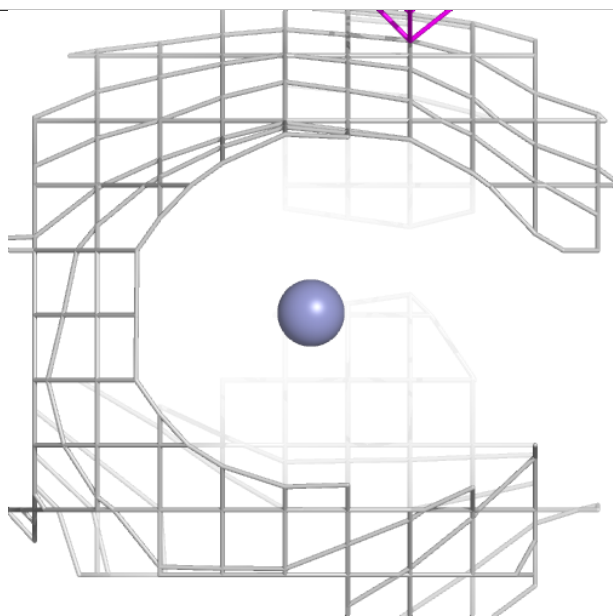
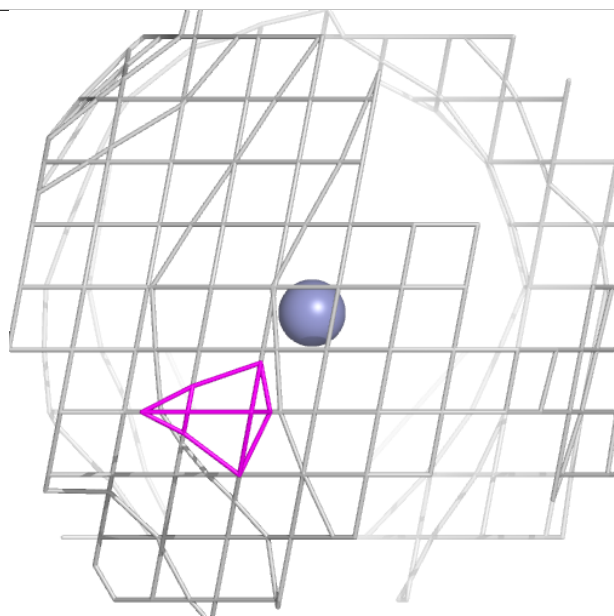
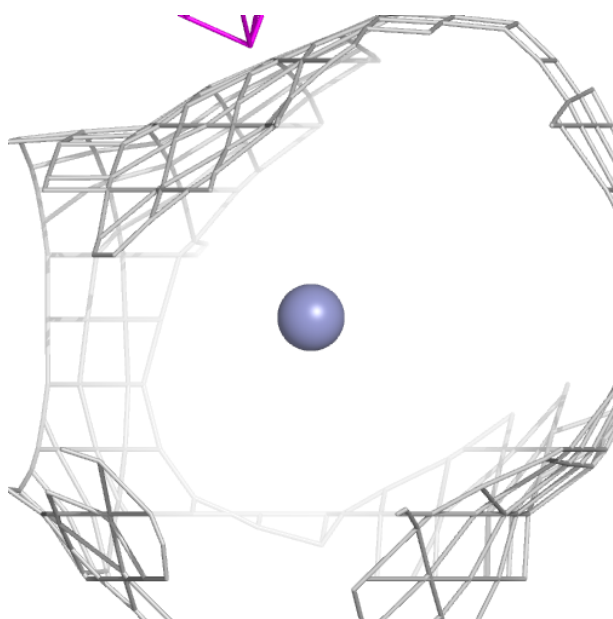
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





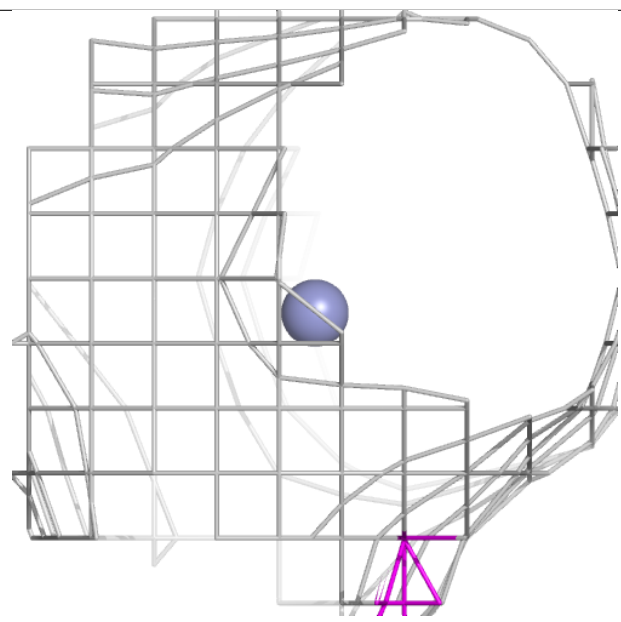
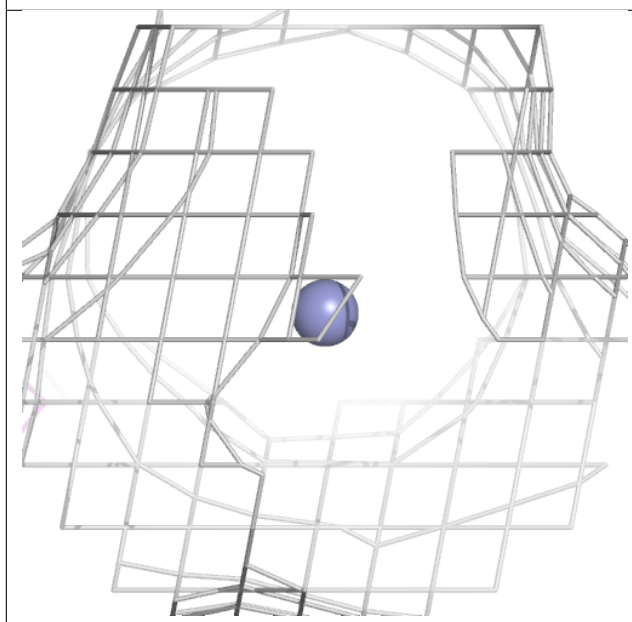
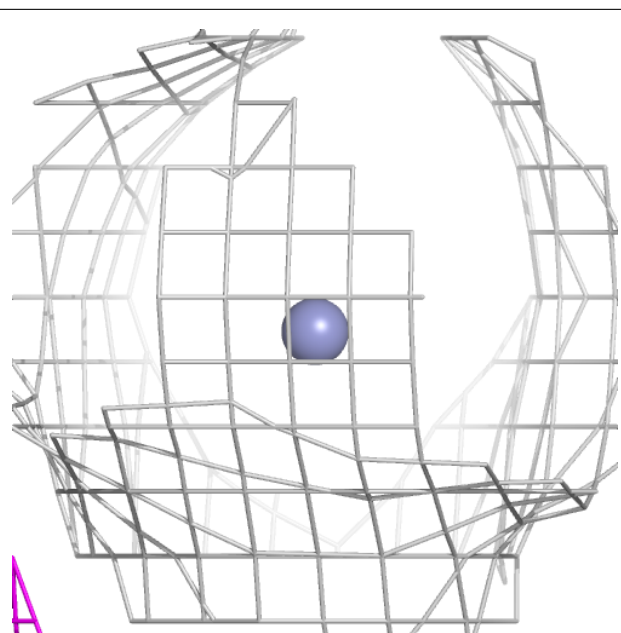
**Electron density around ZN Y 302:**

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



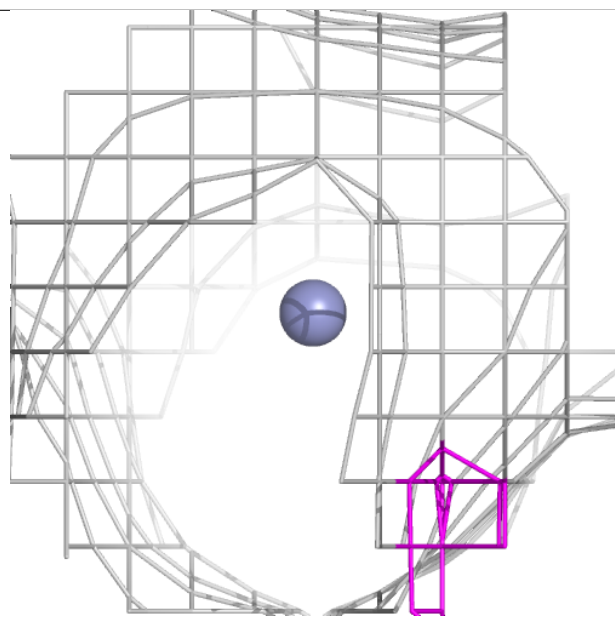
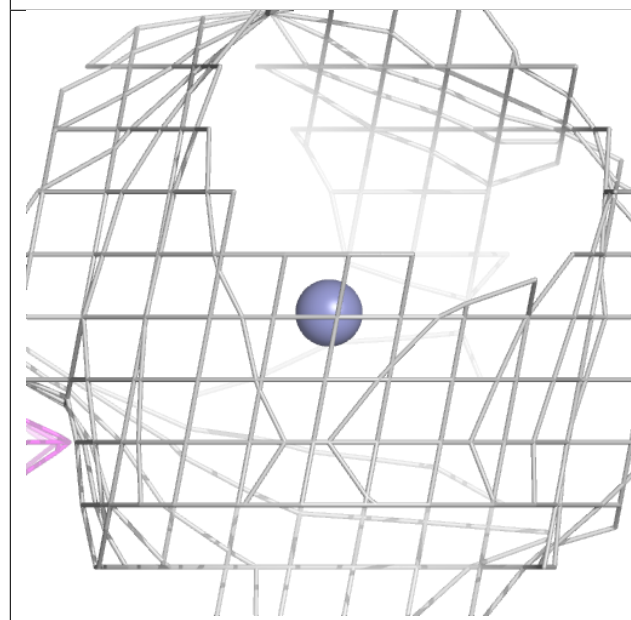
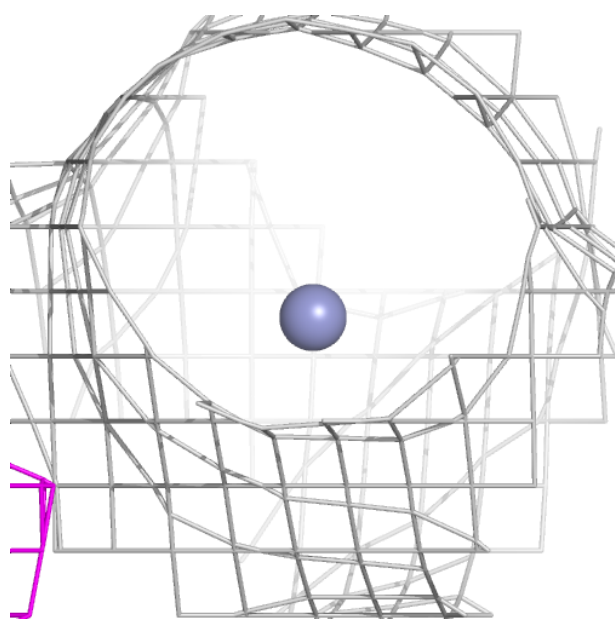
**Electron density around ZN D 302:**

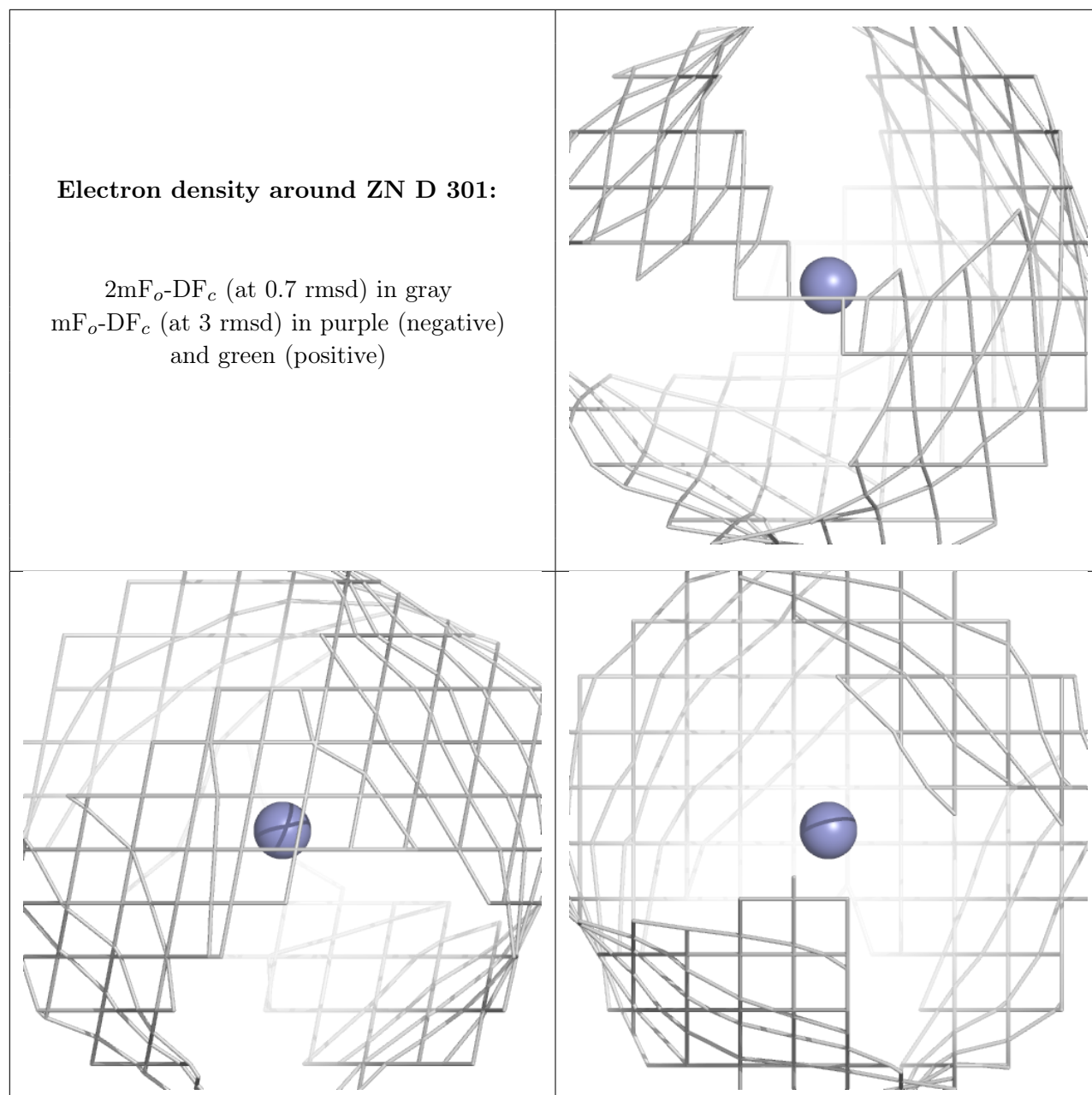
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around ZN P 301:**

$2mF_o-DF_c$  (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.