



Full wwPDB X-ray Structure Validation Report ⓘ

Apr 18, 2026 – 01:35 PM UTC

PDB ID : 2ZIT / pdb_00002zit
Title : Structure of the eEF2-ExoA-NAD⁺ complex
Authors : Jorgensen, R.; Merrill, A.R.
Deposited on : 2008-02-24
Resolution : 3.00 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
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

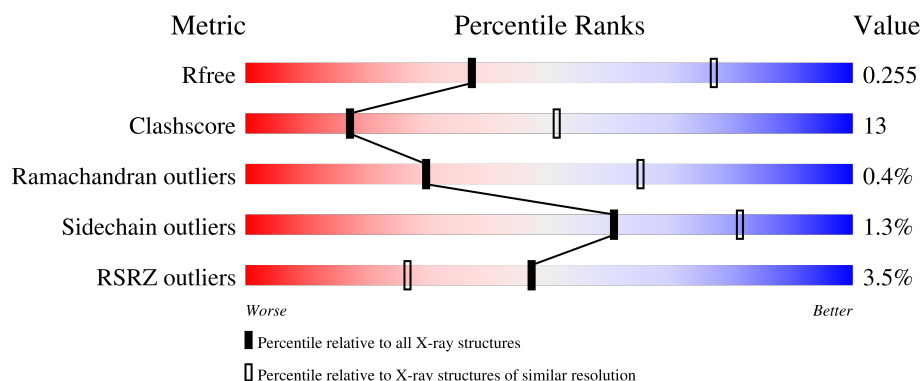
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 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	2672 (3.00-3.00)
Clashscore	190562	2977 (3.00-3.00)
Ramachandran outliers	187476	2877 (3.00-3.00)
Sidechain outliers	187428	2880 (3.00-3.00)
RSRZ outliers	180081	2671 (3.00-3.00)

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 $\leq 5\%$. 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	842	% 71% 26% ..
1	C	842	3% 71% 26% ..
1	E	842	9% 61% 36% ..
2	B	207	79% 20% .
2	D	207	76% 23% .

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Mol	Chain	Length	Quality of chain
2	F	207	79% 20%•

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 24121 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 Elongation factor 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	823	Total	C	N	O	S	0	0	0
			6405	4075	1093	1207	30			
1	C	823	Total	C	N	O	S	0	0	0
			6415	4082	1095	1208	30			
1	E	823	Total	C	N	O	S	0	0	0
			6405	4075	1093	1207	30			

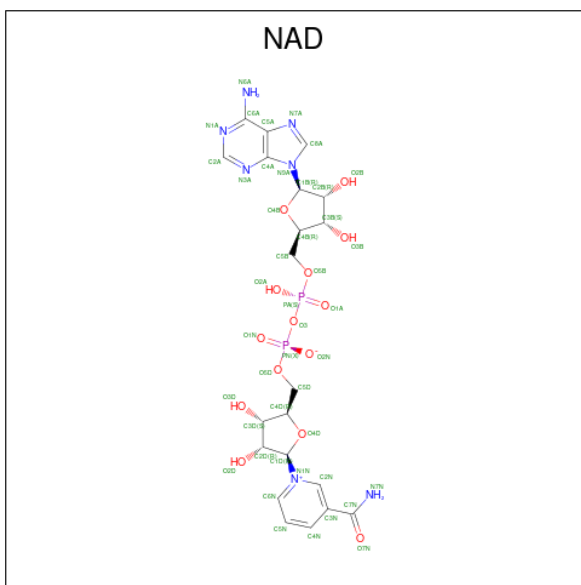
- Molecule 2 is a protein called Exotoxin A.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	B	207	Total	C	N	O	0	0	0
			1588	1001	283	304			
2	D	207	Total	C	N	O	0	0	0
			1588	1001	283	304			
2	F	207	Total	C	N	O	0	0	0
			1588	1001	283	304			

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	399	ALA	-	expression tag	UNP P11439
B	407	VAL	ILE	SEE REMARK 999	UNP P11439
B	515	SER	GLY	SEE REMARK 999	UNP P11439
D	399	ALA	-	expression tag	UNP P11439
D	407	VAL	ILE	SEE REMARK 999	UNP P11439
D	515	SER	GLY	SEE REMARK 999	UNP P11439
F	399	ALA	-	expression tag	UNP P11439
F	407	VAL	ILE	SEE REMARK 999	UNP P11439
F	515	SER	GLY	SEE REMARK 999	UNP P11439

- Molecule 3 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (CCD ID: NAD) (formula: $C_{21}H_{27}N_7O_{14}P_2$).

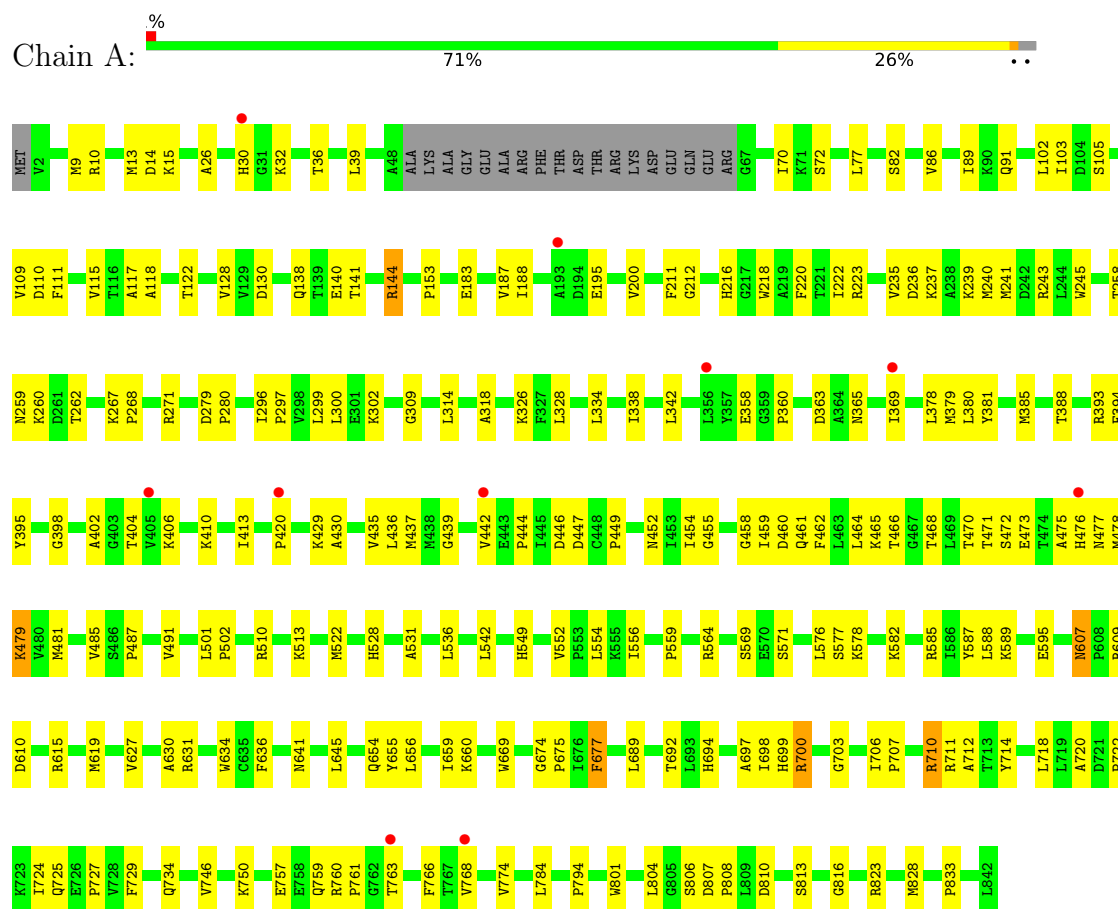


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	B	1	Total 44	C 21	N 7	O 14	P 2	0	0
3	D	1	Total 44	C 21	N 7	O 14	P 2	0	0
3	F	1	Total 44	C 21	N 7	O 14	P 2	0	0

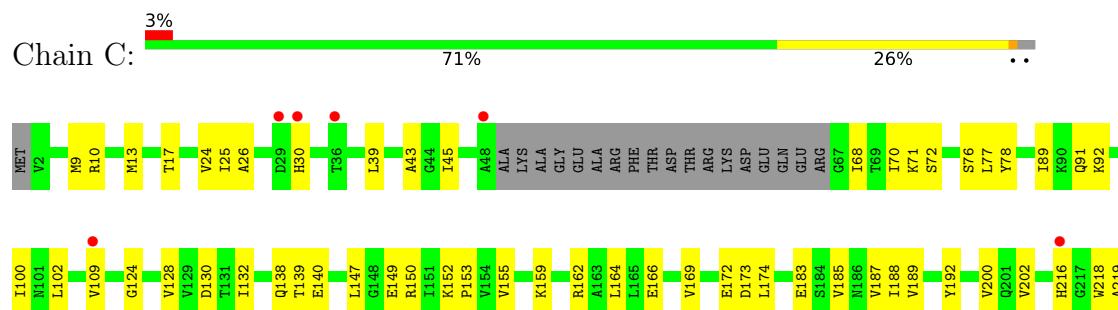
3 Residue-property plots

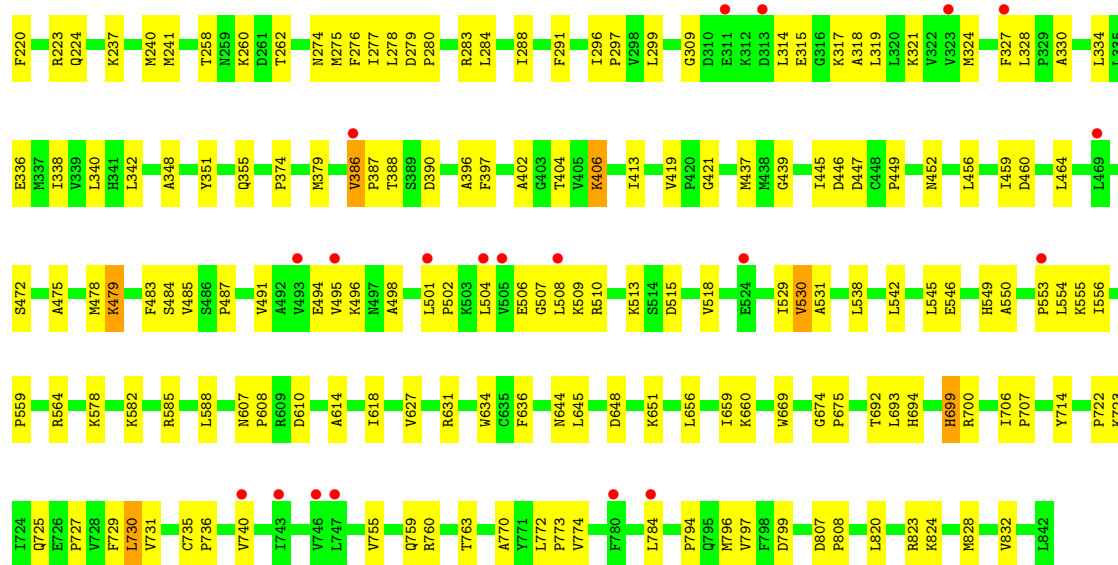
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Elongation factor 2

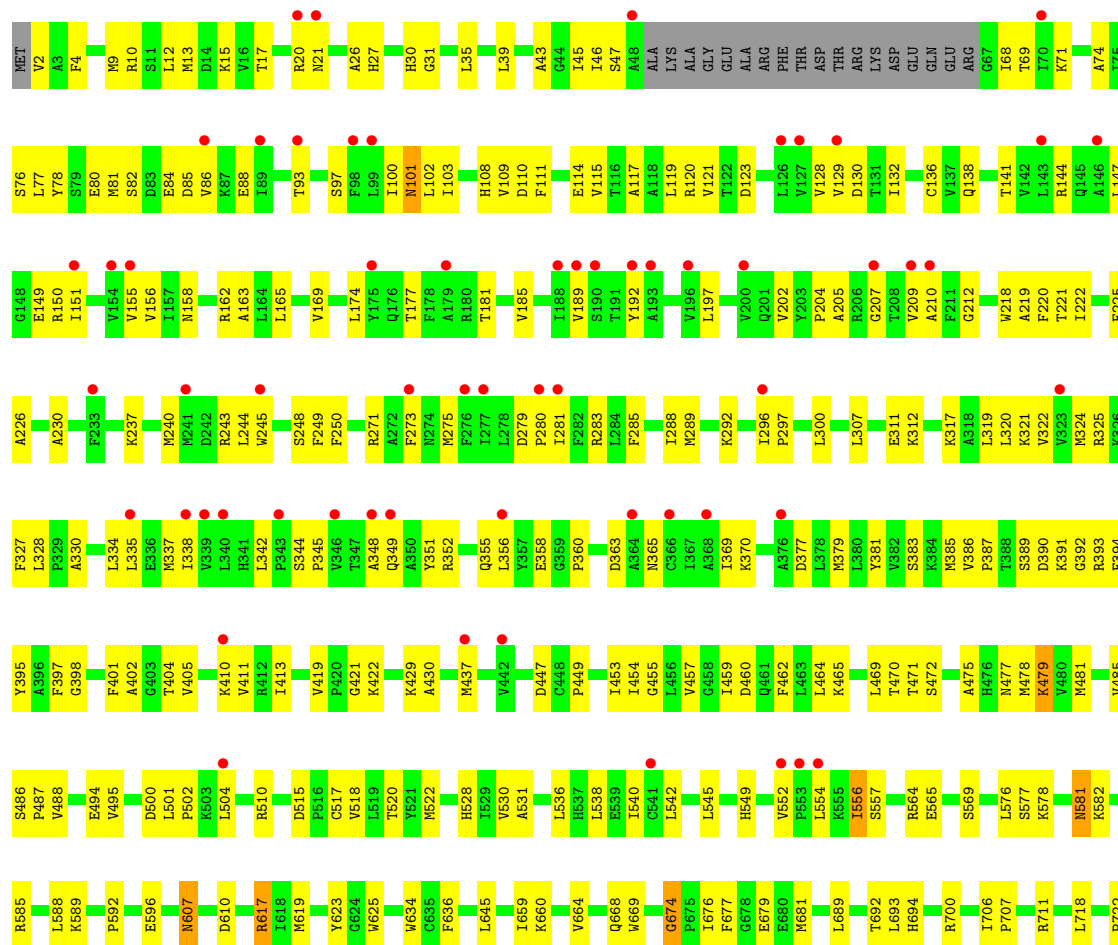


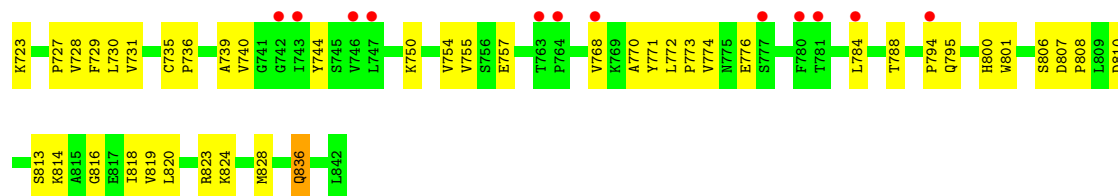
• Molecule 1: Elongation factor 2





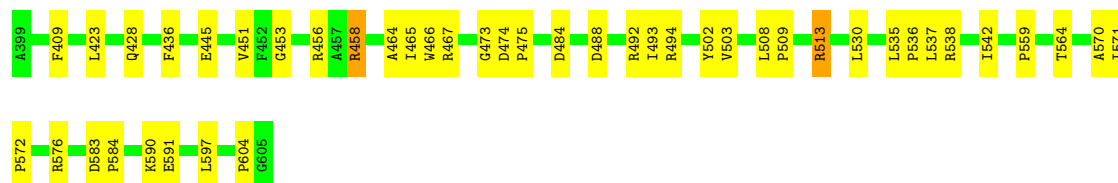
• Molecule 1: Elongation factor 2





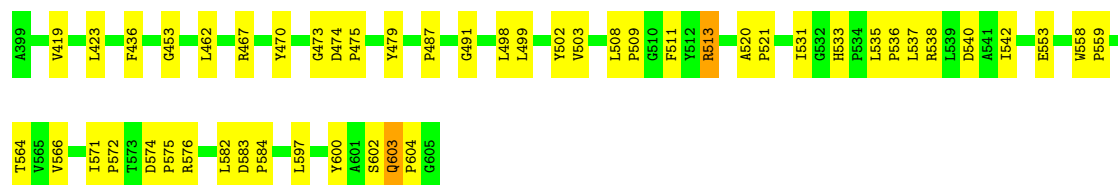
• Molecule 2: Exotoxin A

Chain B: 79% 20%



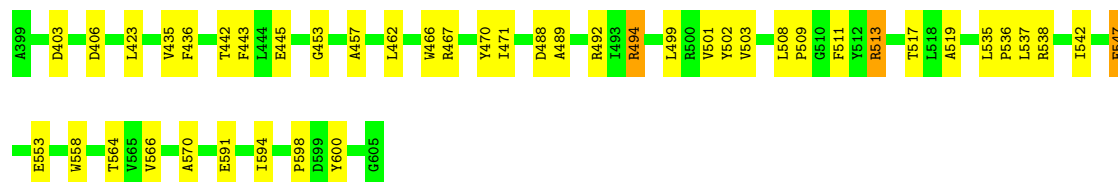
• Molecule 2: Exotoxin A

Chain D: 76% 23%



• Molecule 2: Exotoxin A

Chain F: 79% 20%



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	326.92Å 69.24Å 190.48Å 90.00° 103.30° 90.00°	Depositor
Resolution (Å)	19.90 – 3.00 19.90 – 3.00	Depositor EDS
% Data completeness (in resolution range)	98.5 (19.90-3.00) 98.3 (19.90-3.00)	Depositor EDS
R_{merge}	0.16	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.87 (at 2.98Å)	Xtrriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.220 , 0.266 0.212 , 0.255	Depositor DCC
R_{free} test set	1691 reflections (1.95%)	wwPDB-VP
Wilson B-factor (Å ²)	54.4	Xtrriage
Anisotropy	0.586	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.26 , 56.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	24121	wwPDB-VP
Average B, all atoms (Å ²)	95.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 61.09 % 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 1.3798e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹Intensities estimated from amplitudes.

²Theoretical 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

5.1 Standard geometry

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

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	0.26	0/6517	0.71	4/8823 (0.0%)
1	C	0.26	0/6517	0.71	2/8823 (0.0%)
1	E	0.25	0/6517	0.71	5/8823 (0.1%)
2	B	0.28	0/1627	0.72	0/2216
2	D	0.28	0/1627	0.74	0/2216
2	F	0.28	0/1627	0.73	0/2216
All	All	0.26	0/24432	0.72	11/33117 (0.0%)

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	674	GLY	CA-C-N	6.11	125.73	119.56
1	A	674	GLY	C-N-CA	6.11	125.73	119.56
1	E	674	GLY	CA-C-N	5.84	125.38	119.19
1	E	674	GLY	C-N-CA	5.84	125.38	119.19
1	C	674	GLY	CA-C-N	5.49	125.58	119.87
1	C	674	GLY	C-N-CA	5.49	125.58	119.87
1	E	607	ASN	CA-C-N	5.34	125.16	119.28
1	E	607	ASN	C-N-CA	5.34	125.16	119.28
1	A	607	ASN	CA-C-N	5.08	124.69	119.05
1	A	607	ASN	C-N-CA	5.08	124.69	119.05
1	E	471	THR	N-CA-C	-5.07	108.36	114.75

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	6405	0	6472	144	0
1	C	6415	0	6488	162	0
1	E	6405	0	6472	225	0
2	B	1588	0	1542	34	0
2	D	1588	0	1542	26	0
2	F	1588	0	1542	27	0
3	B	44	0	26	0	0
3	D	44	0	26	4	0
3	F	44	0	26	2	0
All	All	24121	0	24136	608	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 13.

All (608) 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:C:699:DDE:HAB2	1:C:699:DDE:HAT2	1.41	0.98
1:C:699:DDE:HAA1	3:D:701:NAD:H4D	1.46	0.98
1:A:470:THR:HG22	1:A:472:SER:H	1.31	0.94
1:A:710:ARG:HG3	1:A:710:ARG:HH11	1.33	0.92
1:E:147:LEU:HD13	1:E:192:TYR:HB2	1.51	0.92
1:C:404:THR:HG22	1:C:449:PRO:HA	1.55	0.88
1:E:391:LYS:HG3	1:E:392:GLY:H	1.40	0.86
1:E:617:ARG:HH21	1:E:617:ARG:HG3	1.40	0.86
2:B:458:ARG:HG2	2:B:458:ARG:HH11	1.45	0.82
1:E:77:LEU:HB2	1:E:100:ILE:HB	1.59	0.82
1:C:507:GLY:HA3	1:C:549:HIS:HB3	1.62	0.80
1:A:10:ARG:HH22	1:A:446:ASP:HB2	1.47	0.80
1:A:513:LYS:HA	1:A:513:LYS:HE2	1.64	0.79
1:E:30:HIS:CD2	1:E:130:ASP:HB2	2.17	0.79
1:A:615:ARG:HG2	1:A:619:MET:HE2	1.65	0.77
1:E:404:THR:HG22	1:E:449:PRO:HA	1.67	0.77
1:A:710:ARG:HG3	1:A:710:ARG:NH1	2.00	0.76
1:C:699:DDE:HAT2	1:C:699:DDE:CAB	2.16	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:360:PRO:HG2	1:A:363:ASP:HB2	1.68	0.74
1:E:836:GLN:H	1:E:836:GLN:HE21	1.33	0.74
1:A:470:THR:HG21	1:A:475:ALA:HB3	1.70	0.74
1:A:70:ILE:HG22	1:A:388:THR:HG22	1.71	0.73
1:C:132:ILE:HD12	1:C:132:ILE:H	1.53	0.73
2:D:503:VAL:HG12	2:D:564:THR:HG22	1.70	0.73
2:B:484:ASP:OD2	2:B:494:ARG:HG2	1.89	0.73
1:C:699:DDE:CAA	3:D:701:NAD:H4D	2.19	0.72
1:C:220:PHE:HB3	1:C:328:LEU:HD13	1.70	0.72
1:A:784:LEU:HD23	1:A:794:PRO:HG3	1.71	0.72
2:F:488:ASP:HB3	2:F:492:ARG:HB2	1.73	0.70
1:E:617:ARG:HG3	1:E:617:ARG:NH2	2.06	0.70
1:C:784:LEU:HD23	1:C:794:PRO:HG3	1.74	0.69
1:A:700:ARG:HH21	1:A:700:ARG:HB2	1.58	0.69
1:A:627:VAL:HG22	1:A:631:ARG:HE	1.58	0.69
1:E:149:GLU:HA	1:E:355:GLN:HE22	1.57	0.69
1:E:556:ILE:HG22	1:E:557:SER:H	1.58	0.68
1:A:109:VAL:HG23	1:A:138:GLN:HG3	1.75	0.68
1:A:464:LEU:HD21	1:A:485:VAL:HB	1.77	0.67
1:C:324:MET:HE2	1:C:324:MET:HA	1.76	0.67
1:C:759:GLN:HG2	1:C:760:ARG:H	1.59	0.67
1:A:89:ILE:HG22	1:A:91:GLN:HG2	1.76	0.66
1:C:68:ILE:HD13	1:C:390:ASP:HB2	1.76	0.66
1:E:589:LYS:HG3	1:E:689:LEU:HD11	1.76	0.66
1:C:578:LYS:HD2	1:C:582:LYS:HD3	1.77	0.66
1:C:578:LYS:HD3	1:C:582:LYS:HA	1.78	0.65
1:C:699:DDE:HAA3	1:C:699:DDE:NAD	2.09	0.65
1:C:379:MET:HB2	1:C:402:ALA:HB3	1.79	0.65
1:E:30:HIS:HD2	1:E:130:ASP:HB2	1.62	0.65
1:E:220:PHE:HB3	1:E:328:LEU:HD13	1.78	0.65
1:A:381:TYR:O	1:A:398:GLY:HA3	1.96	0.65
1:E:240:MET:HE3	1:E:240:MET:HA	1.79	0.65
1:A:578:LYS:HD3	1:A:582:LYS:HA	1.80	0.64
1:E:324:MET:HE2	1:E:324:MET:HA	1.77	0.64
1:A:619:MET:HE3	1:A:630:ALA:HB1	1.79	0.64
1:E:464:LEU:HD21	1:E:485:VAL:HB	1.80	0.64
1:C:279:ASP:HB3	1:C:280:PRO:HD3	1.80	0.63
1:A:542:LEU:HD13	1:A:556:ILE:HG21	1.81	0.63
1:A:810:ASP:O	1:A:816:GLY:HA3	1.99	0.63
1:E:279:ASP:HB3	1:E:280:PRO:HD3	1.80	0.62
1:E:545:LEU:HD12	1:E:549:HIS:HB2	1.79	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:89:ILE:HG22	1:C:91:GLN:HG2	1.80	0.62
1:C:155:VAL:HG21	1:C:185:VAL:HG11	1.81	0.62
1:E:27:HIS:HB3	1:E:30:HIS:ND1	2.14	0.62
1:A:379:MET:HB2	1:A:402:ALA:HB3	1.82	0.62
1:E:391:LYS:HB3	1:E:393:ARG:HG2	1.82	0.62
2:F:503:VAL:HG12	2:F:564:THR:HG22	1.80	0.62
1:C:419:VAL:HG12	1:C:421:GLY:H	1.64	0.62
2:B:453:GLY:HA3	2:B:456:ARG:NH2	2.14	0.62
2:D:513:ARG:HE	2:D:602:SER:HB3	1.65	0.61
1:A:299:LEU:HD12	1:A:302:LYS:HE2	1.81	0.61
1:C:464:LEU:HD23	1:C:483:PHE:HE1	1.65	0.61
1:C:9:MET:O	1:C:13:MET:HG3	2.01	0.61
1:C:484:SER:HB3	1:C:797:VAL:HG22	1.82	0.61
1:C:70:ILE:HG22	1:C:388:THR:HG22	1.82	0.61
1:E:413:ILE:HD13	1:E:459:ILE:HG23	1.83	0.61
1:A:491:VAL:HG21	1:A:542:LEU:HD11	1.81	0.61
1:A:697:ALA:HA	1:A:700:ARG:HD3	1.83	0.61
1:C:216:HIS:HB2	1:C:218:TRP:CD1	2.36	0.61
2:D:553:GLU:OE1	3:D:701:NAD:H6N	2.01	0.61
2:F:553:GLU:OE1	3:F:702:NAD:H6N	2.01	0.61
1:A:141:THR:O	1:A:144:ARG:HD2	2.01	0.60
1:A:607:ASN:HB3	1:A:610:ASP:HB2	1.82	0.60
1:C:659:ILE:HD13	1:C:693:LEU:HD21	1.84	0.60
1:A:571:SER:HB2	1:A:589:LYS:HG3	1.83	0.60
1:C:495:VAL:HG21	1:C:501:LEU:HD12	1.83	0.60
1:E:9:MET:O	1:E:13:MET:HG3	2.02	0.60
2:B:458:ARG:HH11	2:B:458:ARG:CG	2.15	0.59
1:E:784:LEU:HD23	1:E:794:PRO:HG3	1.84	0.59
1:A:388:THR:HG21	1:A:395:TYR:CD1	2.37	0.59
2:B:513:ARG:HH11	2:B:513:ARG:HB2	1.66	0.59
1:E:141:THR:HA	1:E:144:ARG:HH11	1.67	0.59
1:E:806:SER:HB2	1:E:813:SER:HB2	1.84	0.59
1:A:9:MET:O	1:A:13:MET:HG3	2.01	0.59
1:A:39:LEU:HB3	1:A:77:LEU:HD21	1.85	0.59
1:E:45:ILE:HD11	1:E:78:TYR:HB3	1.84	0.59
1:E:465:LYS:HD2	1:E:517:CYS:SG	2.43	0.59
1:A:413:ILE:HD13	1:A:459:ILE:HG23	1.84	0.59
1:C:694:HIS:O	1:C:700:ARG:HD3	2.03	0.59
1:C:529:ILE:HG22	1:C:530:VAL:H	1.68	0.58
1:E:578:LYS:HD2	1:E:582:LYS:HD3	1.83	0.58
1:C:150:ARG:HG3	1:C:355:GLN:HE22	1.68	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:546:GLU:HA	1:C:550:ALA:HB3	1.84	0.58
1:C:515:ASP:HB3	1:C:518:VAL:HG12	1.85	0.58
1:C:627:VAL:O	1:C:631:ARG:HG3	2.03	0.58
1:A:404:THR:HG22	1:A:449:PRO:HA	1.85	0.58
1:A:706:ILE:HB	1:A:707:PRO:HD3	1.86	0.58
1:E:385:MET:HG2	1:E:465:LYS:HA	1.86	0.58
1:A:30:HIS:NE2	1:A:130:ASP:HB2	2.19	0.57
1:C:45:ILE:HD11	1:C:78:TYR:HB2	1.86	0.57
1:C:216:HIS:ND1	1:C:321:LYS:HG2	2.19	0.57
1:C:338:ILE:HG23	1:C:342:LEU:HD12	1.85	0.57
1:E:338:ILE:HG23	1:E:342:LEU:HD12	1.84	0.57
1:E:45:ILE:HD11	1:E:78:TYR:CB	2.34	0.57
1:C:216:HIS:HB2	1:C:218:TRP:HD1	1.67	0.57
2:B:473:GLY:HA3	2:B:597:LEU:HD11	1.87	0.57
1:A:279:ASP:HB3	1:A:280:PRO:HD3	1.85	0.57
2:B:537:LEU:HD11	2:B:542:ILE:HG22	1.85	0.57
1:C:406:LYS:HB3	1:C:447:ASP:HB3	1.86	0.57
1:A:388:THR:HG21	1:A:395:TYR:CG	2.39	0.57
1:C:30:HIS:CE1	1:C:130:ASP:HB2	2.40	0.57
1:C:730:LEU:HB2	1:C:799:ASP:HB2	1.85	0.57
1:E:26:ALA:HB2	1:E:128:VAL:HB	1.86	0.57
1:E:391:LYS:HG3	1:E:392:GLY:N	2.18	0.56
1:E:478:MET:O	1:E:479:LYS:C	2.49	0.56
1:E:379:MET:HB2	1:E:402:ALA:HB3	1.87	0.56
1:A:569:SER:O	1:A:720:ALA:HB1	2.05	0.56
1:E:321:LYS:O	1:E:325:ARG:HG3	2.05	0.56
1:C:275:MET:HE2	1:C:276:PHE:CZ	2.40	0.56
1:E:109:VAL:HG21	1:E:138:GLN:HG3	1.87	0.56
1:E:501:LEU:HB3	1:E:502:PRO:HD3	1.87	0.56
1:A:410:LYS:HG2	1:A:430:ALA:HB2	1.87	0.56
1:E:68:ILE:HD12	1:E:390:ASP:HB2	1.87	0.56
1:C:607:ASN:HB2	1:C:610:ASP:HB2	1.88	0.55
1:A:406:LYS:HG2	1:A:447:ASP:HB3	1.88	0.55
1:E:522:MET:HE2	1:E:528:HIS:NE2	2.20	0.55
2:B:530:LEU:HD23	2:B:604:PRO:HD3	1.87	0.55
2:B:535:LEU:HB3	2:B:536:PRO:HA	1.88	0.55
1:C:237:LYS:HA	1:C:240:MET:HB3	1.87	0.55
1:A:627:VAL:O	1:A:631:ARG:HG3	2.07	0.55
1:A:314:LEU:HD22	1:A:318:ALA:HB1	1.88	0.55
1:A:220:PHE:HB3	1:A:328:LEU:HD13	1.89	0.55
1:C:169:VAL:HG22	1:C:173:ASP:HB2	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:435:VAL:HB	1:A:442:VAL:HG13	1.88	0.54
1:A:140:GLU:HG3	1:A:188:ILE:HD13	1.89	0.54
1:C:71:LYS:HB3	1:C:386:VAL:HG23	1.88	0.54
1:E:488:VAL:HG11	1:E:774:VAL:HG21	1.89	0.54
1:E:349:GLN:O	1:E:370:LYS:HA	2.07	0.54
1:E:495:VAL:HG13	1:E:504:LEU:HD22	1.88	0.54
1:E:810:ASP:O	1:E:816:GLY:HA3	2.07	0.54
1:A:338:ILE:O	1:A:342:LEU:HB2	2.07	0.54
1:A:258:THR:HG22	1:A:260:LYS:H	1.71	0.54
1:C:374:PRO:O	1:C:404:THR:HG23	2.07	0.54
1:C:675:PRO:HD3	1:C:714:TYR:CE1	2.43	0.54
1:E:819:VAL:O	1:E:823:ARG:HG2	2.08	0.54
1:A:296:ILE:HB	1:A:297:PRO:HD3	1.90	0.54
1:A:729:PHE:CE2	1:A:774:VAL:HG22	2.43	0.54
1:C:314:LEU:HD22	1:C:318:ALA:HB1	1.88	0.54
1:E:411:VAL:HG11	1:E:469:LEU:HB3	1.90	0.54
1:A:110:ASP:HB3	1:A:536:LEU:HD22	1.90	0.54
1:E:515:ASP:HB3	1:E:518:VAL:HG12	1.90	0.54
1:A:429:LYS:HG3	1:A:462:PHE:CZ	2.43	0.54
1:A:589:LYS:HE3	1:A:689:LEU:HD11	1.90	0.53
1:E:429:LYS:HG3	1:E:462:PHE:CZ	2.43	0.53
1:A:501:LEU:N	1:A:502:PRO:HD2	2.24	0.53
1:C:706:ILE:HB	1:C:707:PRO:HD3	1.90	0.53
1:E:365:ASN:O	1:E:369:ILE:HG12	2.08	0.53
1:E:722:PRO:O	1:E:723:LYS:HD2	2.08	0.53
2:F:513:ARG:HB2	2:F:513:ARG:HH11	1.72	0.53
1:A:26:ALA:HB2	1:A:128:VAL:HB	1.90	0.53
1:A:806:SER:HB2	1:A:813:SER:HB2	1.89	0.53
1:C:10:ARG:HD3	1:C:445:ILE:HD11	1.90	0.53
1:A:111:PHE:O	1:A:115:VAL:HG23	2.08	0.53
1:C:70:ILE:HD12	1:C:437:MET:HE3	1.91	0.53
2:D:537:LEU:HD11	2:D:542:ILE:HG22	1.89	0.53
1:E:207:GLY:O	1:E:337:MET:HG2	2.08	0.53
1:A:109:VAL:CG2	1:A:138:GLN:HG3	2.39	0.53
1:E:410:LYS:HA	1:E:430:ALA:HA	1.91	0.53
1:E:694:HIS:O	1:E:700:ARG:HD3	2.08	0.53
1:E:607:ASN:HB3	1:E:610:ASP:CG	2.34	0.53
1:E:706:ILE:HB	1:E:707:PRO:HD3	1.89	0.53
1:A:237:LYS:HA	1:A:240:MET:HB3	1.91	0.52
1:A:654:GLN:HG2	1:A:655:TYR:CD1	2.44	0.52
1:C:494:GLU:HG2	1:C:495:VAL:H	1.73	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:109:VAL:CG2	1:E:138:GLN:HG3	2.39	0.52
1:E:117:ALA:HA	1:E:481:MET:SD	2.50	0.52
1:A:607:ASN:OD1	1:A:609:ARG:HG2	2.09	0.52
2:B:436:PHE:HB2	2:B:502:TYR:CE2	2.44	0.52
1:C:183:GLU:O	1:C:187:VAL:HG23	2.10	0.52
1:C:283:ARG:HB3	1:C:299:LEU:HD21	1.92	0.52
1:E:419:VAL:HG12	1:E:421:GLY:H	1.74	0.52
2:F:513:ARG:HB2	2:F:513:ARG:NH1	2.24	0.52
1:C:327:PHE:CD2	1:C:328:LEU:HG	2.45	0.52
1:E:155:VAL:HG21	1:E:202:VAL:HG21	1.90	0.52
1:E:296:ILE:O	1:E:300:LEU:HD13	2.10	0.52
1:E:772:LEU:HD12	1:E:773:PRO:HD2	1.91	0.52
1:A:103:ILE:HD12	1:A:122:THR:HG22	1.91	0.52
2:B:464:ALA:O	2:B:467:ARG:HG2	2.10	0.52
1:E:307:LEU:HD12	1:E:312:LYS:HD3	1.91	0.52
2:F:436:PHE:HB2	2:F:502:TYR:CE2	2.45	0.52
1:A:760:ARG:HD3	1:A:763:THR:OG1	2.08	0.52
1:C:240:MET:HE3	1:C:240:MET:HA	1.91	0.52
1:E:369:ILE:HD13	1:E:402:ALA:HB2	1.92	0.52
1:A:435:VAL:HG12	1:A:444:PRO:HA	1.92	0.51
2:F:508:LEU:N	2:F:509:PRO:CD	2.73	0.51
1:A:10:ARG:NH2	1:A:447:ASP:H	2.08	0.51
1:C:699:DDE:HAA3	1:C:699:DDE:HAD2	1.76	0.51
1:E:121:VAL:HG11	1:E:383:SER:OG	2.09	0.51
2:F:511:PHE:HB3	2:F:600:TYR:CD1	2.45	0.51
1:A:223:ARG:HG3	1:A:241:MET:HE1	1.93	0.51
1:E:210:ALA:HB2	1:E:221:THR:HG22	1.92	0.51
1:A:706:ILE:HB	2:B:493:ILE:HD12	1.92	0.51
2:B:538:ARG:HD2	2:B:559:PRO:HG2	1.93	0.51
1:E:381:TYR:O	1:E:398:GLY:HA3	2.10	0.51
1:C:279:ASP:O	1:C:283:ARG:HG2	2.11	0.51
1:C:823:ARG:HE	1:C:832:VAL:HG22	1.75	0.51
1:E:144:ARG:HA	1:E:147:LEU:HD12	1.92	0.51
1:E:26:ALA:CB	1:E:128:VAL:HB	2.41	0.51
1:C:162:ARG:O	1:C:166:GLU:HB2	2.09	0.51
1:E:472:SER:HB3	1:E:475:ALA:HB2	1.91	0.51
1:E:617:ARG:HH21	1:E:617:ARG:CG	2.19	0.51
1:A:487:PRO:HB3	1:A:531:ALA:HB1	1.93	0.51
1:A:694:HIS:CE1	1:A:699:DDE:HD2	2.46	0.51
1:E:226:ALA:O	1:E:230:ALA:HB2	2.11	0.51
1:C:820:LEU:O	1:C:824:LYS:HG3	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:736:PRO:O	1:C:740:VAL:HG23	2.11	0.50
1:E:120:ARG:HG3	1:E:356:LEU:HD22	1.94	0.50
1:E:204:PRO:HA	1:E:209:VAL:HB	1.93	0.50
2:F:537:LEU:HD11	2:F:542:ILE:HG22	1.92	0.50
1:A:656:LEU:O	1:A:659:ILE:HG12	2.11	0.50
2:B:453:GLY:HA3	2:B:456:ARG:HH21	1.75	0.50
1:A:727:PRO:HD3	1:A:801:TRP:CZ3	2.46	0.50
1:C:495:VAL:HG11	1:C:501:LEU:HG	1.94	0.50
1:E:10:ARG:NH2	1:E:449:PRO:HD3	2.27	0.50
1:E:289:MET:HE2	1:E:289:MET:HA	1.93	0.50
1:C:26:ALA:HB2	1:C:128:VAL:HB	1.93	0.50
2:F:423:LEU:HD23	2:F:594:ILE:HD13	1.92	0.50
1:C:413:ILE:HD13	1:C:459:ILE:HG23	1.92	0.50
1:E:31:GLY:HA3	1:E:158:ASN:ND2	2.27	0.50
1:E:538:LEU:O	1:E:542:LEU:HG	2.11	0.50
1:E:836:GLN:H	1:E:836:GLN:NE2	2.03	0.50
1:C:296:ILE:N	1:C:297:PRO:HD2	2.27	0.50
1:E:2:VAL:HG12	1:E:4:PHE:CE1	2.46	0.50
1:E:120:ARG:NH1	1:E:479:LYS:HB3	2.26	0.50
1:E:348:ALA:HA	1:E:351:TYR:CE2	2.47	0.50
1:E:729:PHE:CE2	1:E:774:VAL:HG22	2.46	0.50
1:E:205:ALA:HB2	1:E:245:TRP:HB3	1.94	0.50
1:E:285:PHE:CD1	1:E:320:LEU:HD21	2.47	0.50
1:E:39:LEU:HD23	1:E:335:LEU:HD23	1.94	0.49
1:E:71:LYS:HE3	1:E:387:PRO:HD2	1.94	0.49
1:C:336:GLU:HG2	1:C:340:LEU:HD12	1.94	0.49
1:C:494:GLU:HG2	1:C:495:VAL:N	2.28	0.49
2:D:508:LEU:N	2:D:509:PRO:CD	2.75	0.49
1:A:235:VAL:HG13	1:A:239:LYS:HE3	1.93	0.49
1:A:577:SER:HB3	1:A:712:ALA:HB2	1.94	0.49
1:C:291:PHE:HD1	1:C:315:GLU:HB2	1.77	0.49
1:C:634:TRP:NE1	1:C:648:ASP:HB2	2.27	0.49
1:E:74:ALA:HA	1:E:102:LEU:O	2.12	0.49
1:E:578:LYS:HD3	1:E:582:LYS:HA	1.93	0.49
1:E:823:ARG:HB2	1:E:828:MET:HB2	1.94	0.49
2:F:535:LEU:HB3	2:F:536:PRO:HA	1.94	0.49
1:A:436:LEU:HD23	1:A:454:ILE:CD1	2.43	0.49
1:A:491:VAL:HG12	1:A:559:PRO:HA	1.94	0.49
1:A:757:GLU:HG3	1:A:768:VAL:HG22	1.94	0.49
1:C:24:VAL:HG23	1:C:102:LEU:HD11	1.94	0.49
1:C:529:ILE:HG22	1:C:530:VAL:N	2.27	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:291:PHE:CD1	1:C:315:GLU:HB2	2.47	0.49
1:C:772:LEU:HD12	1:C:773:PRO:HD2	1.95	0.49
1:A:588:LEU:HD12	1:A:588:LEU:C	2.38	0.49
1:C:478:MET:O	1:C:479:LYS:C	2.55	0.49
1:E:757:GLU:HG3	1:E:768:VAL:HG22	1.94	0.49
2:D:538:ARG:HD2	2:D:559:PRO:HG2	1.94	0.49
2:F:570:ALA:HB3	2:F:591:GLU:OE1	2.13	0.49
2:B:458:ARG:CG	2:B:458:ARG:NH1	2.76	0.48
1:A:183:GLU:O	1:A:187:VAL:HG23	2.13	0.48
1:A:746:VAL:O	1:A:750:LYS:HD3	2.13	0.48
2:B:465:ILE:HG13	2:B:466:TRP:CD1	2.48	0.48
1:C:219:ALA:HB3	1:C:330:ALA:HA	1.93	0.48
1:C:472:SER:HB3	1:C:475:ALA:HB2	1.94	0.48
1:C:578:LYS:CD	1:C:582:LYS:HD3	2.41	0.48
2:D:531:ILE:HD12	2:D:533:HIS:CE1	2.49	0.48
1:E:669:TRP:CZ2	2:F:492:ARG:HG3	2.48	0.48
2:B:508:LEU:N	2:B:509:PRO:CD	2.76	0.48
2:B:513:ARG:HB2	2:B:513:ARG:NH1	2.27	0.48
1:C:501:LEU:C	1:C:501:LEU:HD23	2.39	0.48
1:E:249:PHE:CD1	1:E:271:ARG:HA	2.49	0.48
1:A:669:TRP:CZ2	2:B:492:ARG:HB3	2.49	0.48
1:A:828:MET:HE2	2:B:576:ARG:HE	1.79	0.48
1:C:258:THR:HG22	1:C:260:LYS:HG2	1.94	0.48
2:D:467:ARG:HG3	2:D:558:TRP:CD1	2.49	0.48
1:E:69:THR:HG22	1:E:389:SER:HB3	1.95	0.48
1:E:596:GLU:HG2	1:E:623:TYR:HE1	1.79	0.48
1:A:394:PHE:HB2	1:A:460:ASP:HB3	1.95	0.48
1:E:35:LEU:HD22	1:E:334:LEU:HD11	1.96	0.48
1:E:82:SER:O	1:E:86:VAL:HG23	2.14	0.48
1:E:101:ASN:OD1	1:E:453:ILE:HB	2.13	0.48
1:E:588:LEU:C	1:E:588:LEU:HD12	2.39	0.48
1:A:153:PRO:HD2	1:A:200:VAL:HG12	1.95	0.48
1:A:522:MET:HE2	1:A:528:HIS:CE1	2.49	0.48
1:E:578:LYS:HB3	1:E:585:ARG:HG3	1.96	0.48
1:A:707:PRO:O	1:A:711:ARG:HG3	2.14	0.47
1:C:17:THR:HB	1:C:92:LYS:O	2.13	0.47
1:C:220:PHE:HA	1:C:224:GLN:OE1	2.13	0.47
1:E:395:TYR:CE1	1:E:457:VAL:HG13	2.49	0.47
1:A:675:PRO:HD3	1:A:714:TYR:CD1	2.50	0.47
1:C:675:PRO:HD3	1:C:714:TYR:CD1	2.49	0.47
1:E:78:TYR:HE1	1:E:97:SER:HB3	1.80	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:311:GLU:HB3	1:E:322:VAL:HG11	1.97	0.47
1:C:147:LEU:HD11	1:C:189:VAL:HA	1.95	0.47
1:C:759:GLN:CG	1:C:760:ARG:H	2.21	0.47
1:E:281:ILE:HG12	1:E:327:PHE:HE2	1.79	0.47
1:E:510:ARG:HD3	1:E:549:HIS:HA	1.96	0.47
1:C:509:LYS:O	1:C:513:LYS:HG3	2.15	0.47
1:E:664:VAL:O	1:E:668:GLN:HG2	2.14	0.47
1:C:699:DDE:CAB	1:C:699:DDE:CAT	2.88	0.47
2:D:537:LEU:O	2:D:538:ARG:HD3	2.15	0.47
1:E:43:ALA:HB1	1:E:78:TYR:H	1.80	0.47
1:E:150:ARG:HB3	1:E:351:TYR:HE1	1.80	0.47
1:E:307:LEU:HD13	1:E:311:GLU:O	2.15	0.47
1:E:395:TYR:CD1	1:E:457:VAL:HG22	2.49	0.47
1:E:634:TRP:CE3	1:E:660:LYS:HG3	2.50	0.47
1:C:43:ALA:HB1	1:C:78:TYR:O	2.15	0.47
1:C:314:LEU:O	1:C:319:LEU:HD22	2.14	0.47
1:C:501:LEU:HB3	1:C:502:PRO:HD3	1.97	0.47
1:A:222:ILE:HG22	1:A:241:MET:HB2	1.97	0.47
1:C:348:ALA:HA	1:C:351:TYR:CE2	2.50	0.47
1:E:46:ILE:HG22	1:E:47:SER:N	2.30	0.47
1:E:820:LEU:HG	1:E:824:LYS:HE2	1.96	0.47
1:C:140:GLU:HG3	1:C:188:ILE:HD13	1.97	0.47
1:C:508:LEU:HD23	1:C:545:LEU:HD11	1.97	0.47
1:C:828:MET:HE2	2:D:576:ARG:HE	1.80	0.47
1:E:556:ILE:HG22	1:E:557:SER:N	2.28	0.47
2:F:488:ASP:CG	2:F:489:ALA:H	2.23	0.47
1:A:437:MET:SD	1:A:455:GLY:HA3	2.55	0.46
1:A:552:VAL:O	1:A:554:LEU:HG	2.15	0.46
1:A:828:MET:HG2	2:B:576:ARG:NE	2.30	0.46
1:C:172:GLU:HA	1:C:274:ASN:HD21	1.80	0.46
2:F:538:ARG:HA	2:F:538:ARG:HD2	1.60	0.46
1:A:378:LEU:HB3	1:A:471:THR:HG23	1.98	0.46
2:B:537:LEU:O	2:B:538:ARG:HD3	2.15	0.46
1:E:132:ILE:HD12	1:E:132:ILE:N	2.30	0.46
1:E:707:PRO:O	1:E:711:ARG:HG3	2.15	0.46
1:A:118:ALA:O	1:A:122:THR:HG23	2.15	0.46
1:A:478:MET:O	1:A:479:LYS:C	2.59	0.46
1:A:823:ARG:NH2	1:A:833:PRO:HD3	2.31	0.46
1:E:80:GLU:O	1:E:81:MET:HE2	2.16	0.46
1:E:163:ALA:O	1:E:169:VAL:HG12	2.16	0.46
1:E:397:PHE:HD1	1:E:437:MET:HG3	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:405:VAL:O	1:E:447:ASP:HA	2.16	0.46
1:E:540:ILE:HD12	1:E:540:ILE:H	1.79	0.46
2:D:487:PRO:HB2	2:D:491:GLY:HA2	1.97	0.46
1:A:468:THR:HG23	1:A:478:MET:HE2	1.96	0.46
1:C:496:LYS:H	1:C:554:LEU:HD22	1.80	0.46
1:E:129:VAL:HG12	1:E:130:ASP:N	2.31	0.46
1:E:296:ILE:N	1:E:297:PRO:HD2	2.31	0.46
2:B:488:ASP:CG	2:B:492:ARG:HG2	2.40	0.46
2:D:535:LEU:HB3	2:D:536:PRO:HA	1.97	0.46
1:E:20:ARG:NH1	1:E:344:SER:HB3	2.31	0.46
1:E:394:PHE:HB2	1:E:460:ASP:HB3	1.98	0.46
1:E:459:ILE:O	1:E:459:ILE:HG22	2.14	0.46
1:C:396:ALA:HB3	1:C:456:LEU:HB2	1.98	0.46
1:C:494:GLU:HB3	1:C:555:LYS:HB3	1.97	0.46
1:C:759:GLN:HG2	1:C:760:ARG:N	2.29	0.46
1:E:111:PHE:O	1:E:115:VAL:HG23	2.16	0.46
1:E:185:VAL:O	1:E:189:VAL:HG23	2.16	0.46
1:E:288:ILE:HG23	1:E:319:LEU:HD23	1.97	0.46
1:A:235:VAL:HG22	1:A:239:LYS:HE3	1.98	0.46
1:E:17:THR:HB	1:E:93:THR:HA	1.98	0.46
1:E:397:PHE:CD1	1:E:437:MET:HG3	2.51	0.46
1:E:454:ILE:HG13	1:E:455:GLY:N	2.30	0.46
2:F:445:GLU:CD	2:F:494:ARG:HH22	2.24	0.46
1:A:385:MET:HG2	1:A:465:LYS:HA	1.98	0.46
1:E:222:ILE:HD13	1:E:245:TRP:HB2	1.98	0.46
1:E:81:MET:HB3	1:E:85:ASP:HB2	1.98	0.45
1:E:101:ASN:N	1:E:101:ASN:HD22	2.14	0.45
1:E:119:LEU:O	1:E:151:ILE:HD11	2.15	0.45
1:E:123:ASP:OD1	1:E:123:ASP:N	2.48	0.45
1:A:828:MET:HG2	2:B:576:ARG:CZ	2.47	0.45
1:C:588:LEU:C	1:C:588:LEU:HD12	2.41	0.45
1:E:76:SER:C	1:E:77:LEU:HD12	2.41	0.45
2:F:499:LEU:HB3	2:F:566:VAL:CG1	2.46	0.45
1:C:169:VAL:CG2	1:C:173:ASP:HB2	2.46	0.45
1:E:250:PHE:HB3	1:E:275:MET:HE1	1.98	0.45
1:E:552:VAL:O	1:E:554:LEU:HG	2.16	0.45
1:A:195:GLU:H	1:A:195:GLU:CD	2.25	0.45
1:A:334:LEU:O	1:A:338:ILE:HG13	2.16	0.45
1:A:585:ARG:HB2	1:A:692:THR:OG1	2.16	0.45
1:C:25:ILE:HG22	1:C:139:THR:HG23	1.98	0.45
1:C:760:ARG:HD3	1:C:763:THR:OG1	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:360:PRO:HB2	1:E:363:ASP:HB2	1.98	0.45
2:D:511:PHE:HB3	2:D:600:TYR:CD1	2.50	0.45
1:E:581:ASN:C	1:E:581:ASN:HD22	2.22	0.45
1:C:449:PRO:HG2	1:C:452:ASN:ND2	2.31	0.45
1:C:729:PHE:CE2	1:C:774:VAL:HG22	2.52	0.45
1:E:103:ILE:HD12	1:E:103:ILE:N	2.31	0.45
1:E:237:LYS:HA	1:E:240:MET:HB3	1.99	0.45
1:A:724:ILE:HD11	1:A:804:LEU:HD12	1.97	0.45
1:C:77:LEU:HB2	1:C:100:ILE:HB	1.98	0.45
1:C:727:PRO:HB2	1:C:774:VAL:HG21	1.98	0.45
1:E:155:VAL:CG2	1:E:202:VAL:HG21	2.47	0.45
1:E:736:PRO:O	1:E:740:VAL:HG23	2.17	0.45
1:A:30:HIS:CD2	1:A:130:ASP:HB2	2.50	0.45
1:A:117:ALA:HA	1:A:481:MET:SD	2.57	0.45
1:A:727:PRO:HB2	1:A:774:VAL:HG21	1.98	0.45
1:C:464:LEU:HD23	1:C:483:PHE:CE1	2.50	0.45
1:C:487:PRO:HB3	1:C:531:ALA:HB1	1.99	0.45
1:E:212:GLY:HA3	1:E:219:ALA:HA	1.99	0.45
1:E:279:ASP:O	1:E:283:ARG:HG2	2.16	0.45
1:E:755:VAL:HG23	1:E:770:ALA:HA	1.98	0.45
1:A:72:SER:HA	1:A:439:GLY:O	2.17	0.45
1:A:410:LYS:HA	1:A:430:ALA:HA	1.99	0.45
2:D:436:PHE:HB2	2:D:502:TYR:CE2	2.52	0.45
1:E:338:ILE:O	1:E:342:LEU:HB2	2.17	0.45
1:A:14:ASP:OD1	1:A:15:LYS:HG3	2.17	0.44
1:A:564:ARG:HB2	1:A:725:GLN:HB2	1.98	0.44
1:C:699:DDE:CAA	1:C:699:DDE:NAD	2.79	0.44
2:D:470:TYR:CD2	3:D:701:NAD:H2D	2.52	0.44
1:E:46:ILE:N	1:E:46:ILE:HD12	2.32	0.44
1:A:542:LEU:HD13	1:A:556:ILE:HD13	1.98	0.44
1:C:397:PHE:HD1	1:C:437:MET:HG3	1.82	0.44
1:E:21:ASN:HB2	1:E:123:ASP:OD1	2.17	0.44
1:E:352:ARG:O	1:E:356:LEU:HG	2.17	0.44
2:B:423:LEU:HD11	2:B:590:LYS:HD3	1.99	0.44
1:C:155:VAL:HG23	1:C:202:VAL:HG11	1.98	0.44
1:C:223:ARG:HG3	1:C:241:MET:HE1	1.98	0.44
1:C:693:LEU:HB3	1:C:700:ARG:HD2	1.99	0.44
1:E:132:ILE:HD13	1:E:162:ARG:HD3	1.99	0.44
2:F:466:TRP:CE2	2:F:519:ALA:HA	2.52	0.44
2:F:517:THR:HG23	2:F:547:GLU:HA	2.00	0.44
2:B:571:ILE:HA	2:B:572:PRO:HD3	1.78	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:274:ASN:O	1:C:279:ASP:HB2	2.17	0.44
1:E:108:HIS:O	1:E:111:PHE:HD2	2.00	0.44
1:E:744:TYR:CE1	1:E:754:VAL:HG21	2.53	0.44
1:A:82:SER:O	1:A:86:VAL:HG23	2.18	0.44
1:A:510:ARG:HD2	1:A:549:HIS:HA	1.99	0.44
1:A:700:ARG:HB2	1:A:700:ARG:NH2	2.30	0.44
1:C:164:LEU:HD21	1:C:174:LEU:HD22	1.99	0.44
1:A:36:THR:HG23	1:A:102:LEU:HD21	1.98	0.44
1:A:326:LYS:HB2	1:A:326:LYS:HE3	1.80	0.44
1:E:244:LEU:O	1:E:273:PHE:HB2	2.18	0.44
1:E:500:ASP:HB3	1:E:552:VAL:HG21	2.00	0.44
1:A:807:ASP:HA	1:A:808:PRO:HD2	1.83	0.44
1:C:722:PRO:O	1:C:723:LYS:HD2	2.17	0.44
1:E:243:ARG:O	1:E:248:SER:HB2	2.17	0.44
1:E:355:GLN:O	1:E:479:LYS:HG3	2.18	0.44
1:E:807:ASP:HA	1:E:808:PRO:HD2	1.82	0.44
1:C:485:VAL:O	1:C:487:PRO:HD3	2.18	0.44
1:C:491:VAL:HG12	1:C:559:PRO:HA	1.99	0.44
1:E:422:LYS:HA	1:E:422:LYS:HE2	2.00	0.44
1:C:124:GLY:HA3	1:C:342:LEU:HD22	2.00	0.44
2:D:571:ILE:HA	2:D:572:PRO:HD3	1.83	0.44
1:E:39:LEU:HD12	1:E:39:LEU:H	1.83	0.44
2:B:428:GLN:NE2	1:C:651:LYS:HE2	2.33	0.43
1:C:498:ALA:HA	1:C:501:LEU:HB2	2.00	0.43
1:E:111:PHE:HB3	1:E:114:GLU:HG2	2.00	0.43
1:E:156:VAL:CG2	1:E:337:MET:HE1	2.48	0.43
1:E:429:LYS:HG3	1:E:462:PHE:CE2	2.53	0.43
2:D:499:LEU:HB3	2:D:566:VAL:CG1	2.48	0.43
2:D:603:GLN:HG3	2:D:604:PRO:HD2	2.00	0.43
1:E:292:LYS:O	1:E:296:ILE:HG13	2.17	0.43
2:B:570:ALA:HB3	2:B:591:GLU:OE1	2.17	0.43
1:C:72:SER:HA	1:C:439:GLY:O	2.18	0.43
2:D:419:VAL:O	2:D:423:LEU:HG	2.18	0.43
1:E:659:ILE:HD13	1:E:693:LEU:HD21	2.00	0.43
1:A:420:PRO:HG2	1:A:476:HIS:CD2	2.53	0.43
1:A:759:GLN:HB2	1:A:766:PHE:CE1	2.54	0.43
1:E:12:LEU:HA	1:E:15:LYS:HE2	2.00	0.43
1:E:289:MET:HE3	1:E:320:LEU:HB2	2.00	0.43
1:E:728:VAL:HG11	1:E:771:TYR:HB3	2.00	0.43
2:F:435:VAL:HG21	2:F:598:PRO:HG3	2.01	0.43
1:A:212:GLY:HA2	1:A:218:TRP:CZ3	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:159:LYS:HD3	1:C:162:ARG:HE	1.83	0.43
1:C:546:GLU:OE1	1:C:553:PRO:HD3	2.18	0.43
1:C:564:ARG:HB2	1:C:725:GLN:HB2	1.99	0.43
1:C:656:LEU:O	1:C:659:ILE:HG12	2.19	0.43
2:D:479:TYR:CG	2:D:582:LEU:HB2	2.54	0.43
1:E:150:ARG:HA	1:E:197:LEU:HD11	2.00	0.43
1:E:585:ARG:HB2	1:E:692:THR:OG1	2.19	0.43
1:A:243:ARG:C	1:A:245:TRP:H	2.26	0.43
1:A:466:THR:HG21	1:A:481:MET:HE3	2.00	0.43
1:C:152:LYS:HA	1:C:153:PRO:HD3	1.73	0.43
1:C:314:LEU:HD13	1:C:318:ALA:O	2.18	0.43
1:E:459:ILE:HD12	1:E:459:ILE:N	2.33	0.43
1:E:565:GLU:OE1	1:E:674:GLY:HA3	2.18	0.43
1:E:219:ALA:HB3	1:E:330:ALA:HA	2.00	0.43
1:C:288:ILE:HG23	1:C:319:LEU:HD23	2.01	0.43
2:D:574:ASP:HA	2:D:575:PRO:HD2	1.85	0.43
1:E:369:ILE:HD12	1:E:401:PHE:HB3	2.00	0.43
1:A:70:ILE:HD12	1:A:437:MET:HE3	2.00	0.43
2:B:503:VAL:HG12	2:B:564:THR:HG22	2.00	0.43
1:A:634:TRP:CE3	1:A:660:LYS:HG3	2.54	0.43
1:E:30:HIS:HE1	1:E:136:CYS:SG	2.42	0.43
1:E:111:PHE:HZ	1:E:540:ILE:HG12	1.84	0.43
1:E:739:ALA:HB1	1:E:788:THR:HB	2.01	0.42
1:E:814:LYS:O	1:E:818:ILE:HG12	2.19	0.42
1:C:153:PRO:HD2	1:C:200:VAL:HG12	2.01	0.42
1:C:634:TRP:CE3	1:C:660:LYS:HG3	2.54	0.42
2:D:583:ASP:HA	2:D:584:PRO:HD2	1.87	0.42
1:C:515:ASP:O	1:C:518:VAL:HG12	2.19	0.42
1:E:485:VAL:HG23	1:E:517:CYS:HA	2.01	0.42
1:A:32:LYS:NZ	1:A:105:SER:HB2	2.34	0.42
1:A:258:THR:HG22	1:A:259:ASN:N	2.34	0.42
1:C:274:ASN:HA	1:C:278:LEU:HB2	2.01	0.42
1:C:386:VAL:HA	1:C:387:PRO:HD3	1.86	0.42
1:A:260:LYS:HE3	1:A:262:THR:O	2.18	0.42
1:A:454:ILE:HG13	1:A:455:GLY:H	1.85	0.42
1:A:636:PHE:CE1	1:A:645:LEU:HD21	2.54	0.42
1:A:675:PRO:HD3	1:A:714:TYR:CE1	2.54	0.42
2:B:409:PHE:HZ	2:B:451:VAL:HG21	1.84	0.42
1:C:636:PHE:CE1	1:C:645:LEU:HD21	2.54	0.42
1:C:669:TRP:O	1:C:669:TRP:CD1	2.72	0.42
2:D:498:LEU:HA	2:D:498:LEU:HD23	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:461:GLN:H	1:A:461:GLN:CD	2.28	0.42
1:A:576:LEU:HD13	1:A:587:TYR:CE1	2.54	0.42
1:C:13:MET:HB3	1:C:452:ASN:ND2	2.34	0.42
1:C:338:ILE:O	1:C:342:LEU:HB2	2.19	0.42
1:E:71:LYS:HB3	1:E:386:VAL:HG23	2.01	0.42
1:E:619:MET:O	1:E:625:TRP:HB2	2.18	0.42
2:F:517:THR:CG2	2:F:547:GLU:HA	2.49	0.42
1:C:39:LEU:HB3	1:C:77:LEU:HD21	2.02	0.42
1:C:109:VAL:CG2	1:C:138:GLN:HG3	2.49	0.42
1:E:411:VAL:HG13	1:E:470:THR:O	2.20	0.42
1:E:569:SER:O	1:E:592:PRO:HD3	2.20	0.42
1:E:750:LYS:HD2	1:E:776:GLU:O	2.20	0.42
1:A:473:GLU:O	1:A:473:GLU:HG2	2.19	0.42
1:C:607:ASN:HA	1:C:608:PRO:HD3	1.87	0.42
2:D:473:GLY:HA3	2:D:597:LEU:HD11	2.02	0.42
1:E:636:PHE:CE1	1:E:645:LEU:HD21	2.54	0.42
1:E:718:LEU:HA	1:E:722:PRO:HG3	2.00	0.42
1:E:727:PRO:HG2	1:E:774:VAL:HB	2.02	0.42
1:A:236:ASP:OD1	1:A:239:LYS:HG2	2.20	0.42
1:A:365:ASN:O	1:A:369:ILE:HG13	2.20	0.42
1:C:317:LYS:O	1:C:321:LYS:HG3	2.19	0.42
1:E:165:LEU:HD23	1:E:317:LYS:HE2	2.01	0.42
1:E:377:ASP:OD2	1:E:472:SER:HB2	2.20	0.42
1:E:564:ARG:HD3	1:E:801:TRP:CH2	2.55	0.42
1:E:576:LEU:HD12	1:E:577:SER:H	1.84	0.42
1:A:26:ALA:CB	1:A:128:VAL:HB	2.49	0.41
1:A:296:ILE:O	1:A:300:LEU:HD13	2.20	0.41
1:A:703:GLY:HA2	2:B:493:ILE:HD13	2.01	0.41
1:E:46:ILE:HD12	1:E:46:ILE:H	1.85	0.41
1:E:386:VAL:HG12	1:E:395:TYR:O	2.21	0.41
1:E:485:VAL:HG22	1:E:485:VAL:O	2.19	0.41
1:A:393:ARG:HH21	1:A:458:GLY:HA2	1.84	0.41
1:C:614:ALA:O	1:C:618:ILE:HG12	2.20	0.41
1:E:69:THR:CG2	1:E:389:SER:HB3	2.51	0.41
1:E:454:ILE:HG13	1:E:455:GLY:H	1.84	0.41
1:E:565:GLU:O	1:E:681:MET:HA	2.21	0.41
1:C:755:VAL:HG23	1:C:770:ALA:HA	2.02	0.41
1:E:204:PRO:C	1:E:222:ILE:HD12	2.45	0.41
1:E:358:GLU:HB2	1:E:477:ASN:O	2.20	0.41
1:E:488:VAL:CG1	1:E:774:VAL:HG11	2.50	0.41
1:E:501:LEU:HD23	1:E:501:LEU:C	2.45	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:467:ARG:NH2	2:F:536:PRO:HG3	2.36	0.41
1:C:807:ASP:HA	1:C:808:PRO:HD2	1.82	0.41
1:E:225:PHE:CZ	1:E:328:LEU:HD11	2.55	0.41
1:C:277:ILE:O	1:C:280:PRO:HD2	2.20	0.41
1:C:538:LEU:O	1:C:542:LEU:HB2	2.21	0.41
2:D:520:ALA:HA	2:D:521:PRO:HD3	1.95	0.41
1:E:520:THR:HG22	1:E:530:VAL:HG22	2.01	0.41
1:A:380:LEU:HD23	1:A:381:TYR:N	2.36	0.41
1:A:654:GLN:HG2	1:A:655:TYR:CE1	2.56	0.41
1:C:159:LYS:HD3	1:C:162:ARG:NE	2.35	0.41
1:E:731:VAL:O	1:E:731:VAL:HG13	2.20	0.41
1:A:358:GLU:HB2	1:A:477:ASN:O	2.20	0.41
2:B:445:GLU:CD	2:B:494:ARG:HH22	2.29	0.41
1:C:260:LYS:HG3	1:C:262:THR:O	2.21	0.41
1:C:735:CYS:HA	1:C:736:PRO:HD3	1.97	0.41
1:E:358:GLU:CG	1:E:479:LYS:HD2	2.51	0.41
1:A:677:PHE:N	1:A:677:PHE:CD2	2.88	0.41
1:E:486:SER:O	1:E:488:VAL:HG23	2.20	0.41
2:F:442:THR:OG1	2:F:443:PHE:N	2.53	0.41
1:A:627:VAL:HG11	2:F:406:ASP:OD1	2.21	0.41
2:B:583:ASP:HA	2:B:584:PRO:HD2	1.85	0.41
1:C:149:GLU:HA	1:C:355:GLN:OE1	2.21	0.41
1:C:192:TYR:HA	1:C:763:THR:CG2	2.51	0.41
1:C:504:LEU:HD22	1:C:554:LEU:HD13	2.03	0.41
2:D:474:ASP:HA	2:D:475:PRO:HD2	1.90	0.41
1:E:240:MET:O	1:E:244:LEU:HG	2.21	0.41
1:E:677:PHE:CE1	1:E:679:GLU:HG3	2.56	0.41
2:F:470:TYR:CD2	3:F:702:NAD:H2D	2.56	0.41
2:B:474:ASP:HA	2:B:475:PRO:HD2	1.91	0.41
1:E:109:VAL:O	1:E:109:VAL:HG12	2.21	0.41
1:E:174:LEU:O	1:E:177:THR:HB	2.21	0.41
1:E:218:TRP:HZ3	1:E:220:PHE:CD2	2.38	0.41
1:E:487:PRO:HB3	1:E:531:ALA:CB	2.51	0.41
1:E:735:CYS:SG	1:E:739:ALA:HB3	2.61	0.41
2:F:457:ALA:HA	2:F:558:TRP:CE3	2.56	0.41
1:C:501:LEU:N	1:C:502:PRO:CD	2.84	0.40
1:E:21:ASN:ND2	1:E:345:PRO:HG3	2.36	0.40
1:E:222:ILE:CD1	1:E:245:TRP:HB2	2.52	0.40
2:F:471:ILE:HG21	2:F:501:VAL:HG21	2.03	0.40
1:C:39:LEU:HD21	1:C:334:LEU:HB2	2.03	0.40
1:C:731:VAL:HA	1:C:796:MET:HA	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:84:GLU:O	1:E:88:GLU:HG3	2.21	0.40
1:A:216:HIS:HB2	1:A:218:TRP:CD1	2.56	0.40
1:C:284:LEU:HD23	1:C:299:LEU:HD23	2.02	0.40
1:C:636:PHE:HA	1:C:644:ASN:O	2.21	0.40
1:E:110:ASP:HB3	1:E:536:LEU:HD22	2.03	0.40
1:A:267:LYS:HA	1:A:268:PRO:HD3	1.89	0.40
1:E:117:ALA:C	1:E:119:LEU:H	2.30	0.40
1:E:181:THR:O	1:E:185:VAL:HG23	2.21	0.40
1:E:225:PHE:CE2	1:E:328:LEU:HD11	2.56	0.40
1:E:485:VAL:O	1:E:487:PRO:HD3	2.21	0.40
1:A:718:LEU:HA	1:A:722:PRO:HG3	2.03	0.40
1:C:76:SER:C	1:C:77:LEU:HD12	2.47	0.40
1:C:506:GLU:O	1:C:510:ARG:HG3	2.21	0.40
1:C:585:ARG:HD2	1:C:692:THR:OG1	2.21	0.40
1:E:676:ILE:HG22	1:E:677:PHE:HD2	1.87	0.40
1:E:755:VAL:HG22	1:E:771:TYR:CE2	2.57	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	818/842 (97%)	776 (95%)	38 (5%)	4 (0%)	24	60
1	C	818/842 (97%)	767 (94%)	48 (6%)	3 (0%)	30	65
1	E	818/842 (97%)	754 (92%)	61 (8%)	3 (0%)	30	65
2	B	205/207 (99%)	199 (97%)	6 (3%)	0	100	100
2	D	205/207 (99%)	196 (96%)	8 (4%)	1 (0%)	24	60
2	F	205/207 (99%)	198 (97%)	6 (3%)	1 (0%)	24	60
All	All	3069/3147 (98%)	2890 (94%)	167 (5%)	12 (0%)	30	65

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	309	GLY
1	E	479	LYS
1	A	479	LYS
1	A	641	ASN
1	C	446	ASP
1	C	479	LYS
1	E	795	GLN
2	F	453	GLY
1	C	309	GLY
2	D	453	GLY
1	E	556	ILE
1	A	761	PRO

5.3.2 Protein sidechains ⓘ

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	699/714 (98%)	689 (99%)	10 (1%)	59	80
1	C	699/714 (98%)	693 (99%)	6 (1%)	70	85
1	E	699/714 (98%)	692 (99%)	7 (1%)	68	84
2	B	161/161 (100%)	159 (99%)	2 (1%)	63	82
2	D	161/161 (100%)	157 (98%)	4 (2%)	42	72
2	F	161/161 (100%)	156 (97%)	5 (3%)	35	68
All	All	2580/2625 (98%)	2546 (99%)	34 (1%)	61	81

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	144	ARG
1	A	211	PHE
1	A	271	ARG
1	A	452	ASN
1	A	595	GLU

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Mol	Chain	Res	Type
1	A	677	PHE
1	A	698	ILE
1	A	700	ARG
1	A	710	ARG
1	A	734	GLN
2	B	458	ARG
2	B	513	ARG
1	C	386	VAL
1	C	406	LYS
1	C	460	ASP
1	C	530	VAL
1	C	556	ILE
1	C	730	LEU
2	D	462	LEU
2	D	513	ARG
2	D	540	ASP
2	D	603	GLN
1	E	101	ASN
1	E	494	GLU
1	E	581	ASN
1	E	617	ARG
1	E	730	LEU
1	E	800	HIS
1	E	836	GLN
2	F	403	ASP
2	F	462	LEU
2	F	494	ARG
2	F	513	ARG
2	F	547	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	138	GLN
1	A	452	ASN
1	A	497	ASN
1	A	528	HIS
1	A	826	HIS
2	B	428	GLN
1	C	30	HIS
1	C	101	ASN
1	C	145	GLN

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Mol	Chain	Res	Type
1	C	355	GLN
1	C	452	ASN
1	C	649	GLN
2	D	428	GLN
1	E	30	HIS
1	E	259	ASN
1	E	341	HIS
1	E	355	GLN
1	E	371	ASN
1	E	414	GLN
1	E	452	ASN
1	E	547	HIS
1	E	581	ASN
1	E	654	GLN
1	E	791	GLN
1	E	836	GLN
2	F	428	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

3 non-standard protein/DNA/RNA residues are modelled in this entry.

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	$\# Z > 2$
1	DDE	E	699	1	9,10,21	0.44	0	8,12,30	1.00	0
1	DDE	C	699	1	18,20,21	1.24	2 (11%)	17,28,30	1.12	2 (11%)
1	DDE	A	699	1	9,10,21	0.42	0	8,12,30	1.00	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
1	DDE	E	699	1	-	1/5/6/23	0/1/1/1
1	DDE	C	699	1	-	2/20/21/23	0/1/1/1
1	DDE	A	699	1	-	1/5/6/23	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	699	DDE	CG-ND1	-2.81	1.33	1.38
1	C	699	DDE	CBW-NCB	-2.70	1.48	1.54

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	699	DDE	CAU-CBW-CBI	-2.44	106.45	111.22
1	C	699	DDE	CAB-NCB-CBW	2.32	116.07	110.52

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	699	DDE	O-C-CA-CB
1	C	699	DDE	O-C-CA-CB
1	E	699	DDE	O-C-CA-CB
1	C	699	DDE	NAD-CBI-CBW-NCB

There are no ring outliers.

2 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	C	699	DDE	8	0
1	A	699	DDE	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry

3 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAD	F	702	-	46,48,48	0.88	2 (4%)	64,73,73	1.69	10 (15%)
3	NAD	B	700	-	46,48,48	0.87	1 (2%)	64,73,73	1.63	9 (14%)
3	NAD	D	701	-	46,48,48	0.83	1 (2%)	64,73,73	1.58	9 (14%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAD	F	702	-	-	5/30/62/62	0/5/5/5
3	NAD	B	700	-	-	6/30/62/62	0/5/5/5
3	NAD	D	701	-	-	4/30/62/62	0/5/5/5

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	701	NAD	C5A-N7A	-2.28	1.34	1.39
3	F	702	NAD	C5A-N7A	-2.26	1.35	1.39
3	B	700	NAD	C5A-N7A	-2.22	1.35	1.39
3	F	702	NAD	PN-O3	2.14	1.61	1.59

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	F	702	NAD	C5A-C4A-N3A	-5.69	118.89	126.72
3	B	700	NAD	C5A-C4A-N3A	-5.63	118.96	126.72
3	D	701	NAD	C5A-C4A-N3A	-5.59	119.03	126.72
3	B	700	NAD	N3A-C2A-N1A	-4.70	121.47	128.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	701	NAD	N3A-C2A-N1A	-4.62	121.59	128.58
3	F	702	NAD	N3A-C2A-N1A	-4.54	121.71	128.58
3	F	702	NAD	O4B-C1B-N9A	4.52	116.76	108.09
3	F	702	NAD	N3A-C4A-N9A	3.90	133.80	127.17
3	B	700	NAD	N3A-C4A-N9A	3.75	133.54	127.17
3	D	701	NAD	N3A-C4A-N9A	3.71	133.48	127.17
3	B	700	NAD	N9A-C8A-N7A	-3.49	108.98	113.94
3	B	700	NAD	C2A-N3A-C4A	3.48	120.33	111.83
3	D	701	NAD	C2A-N3A-C4A	3.42	120.19	111.83
3	F	702	NAD	C2A-N3A-C4A	3.39	120.12	111.83
3	D	701	NAD	N9A-C8A-N7A	-3.33	109.20	113.94
3	F	702	NAD	N9A-C8A-N7A	-3.22	109.37	113.94
3	B	700	NAD	O4B-C1B-N9A	3.08	114.00	108.09
3	D	701	NAD	O4B-C1B-N9A	2.88	113.63	108.09
3	B	700	NAD	C4A-C5A-N7A	-2.77	107.41	110.58
3	B	700	NAD	C5A-N7A-C8A	2.74	107.76	103.45
3	D	701	NAD	C5A-N7A-C8A	2.71	107.72	103.45
3	D	701	NAD	C4A-C5A-N7A	-2.70	107.49	110.58
3	F	702	NAD	C5A-N7A-C8A	2.63	107.58	103.45
3	F	702	NAD	C4A-C5A-N7A	-2.60	107.61	110.58
3	F	702	NAD	C4B-O4B-C1B	-2.50	103.94	109.47
3	B	700	NAD	C4A-N9A-C8A	2.48	108.34	105.74
3	F	702	NAD	C4A-N9A-C8A	2.28	108.13	105.74
3	D	701	NAD	C4A-N9A-C8A	2.24	108.09	105.74

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	700	NAD	O4D-C4D-C5D-O5D
3	B	700	NAD	C3D-C4D-C5D-O5D
3	D	701	NAD	O4D-C4D-C5D-O5D
3	F	702	NAD	O4D-C4D-C5D-O5D
3	F	702	NAD	C3D-C4D-C5D-O5D
3	B	700	NAD	O4B-C4B-C5B-O5B
3	B	700	NAD	C3B-C4B-C5B-O5B
3	D	701	NAD	O4B-C4B-C5B-O5B
3	D	701	NAD	C3B-C4B-C5B-O5B
3	D	701	NAD	C3D-C4D-C5D-O5D
3	F	702	NAD	PA-O3-PN-O1N
3	B	700	NAD	O4D-C1D-N1N-C6N
3	F	702	NAD	PA-O3-PN-O2N

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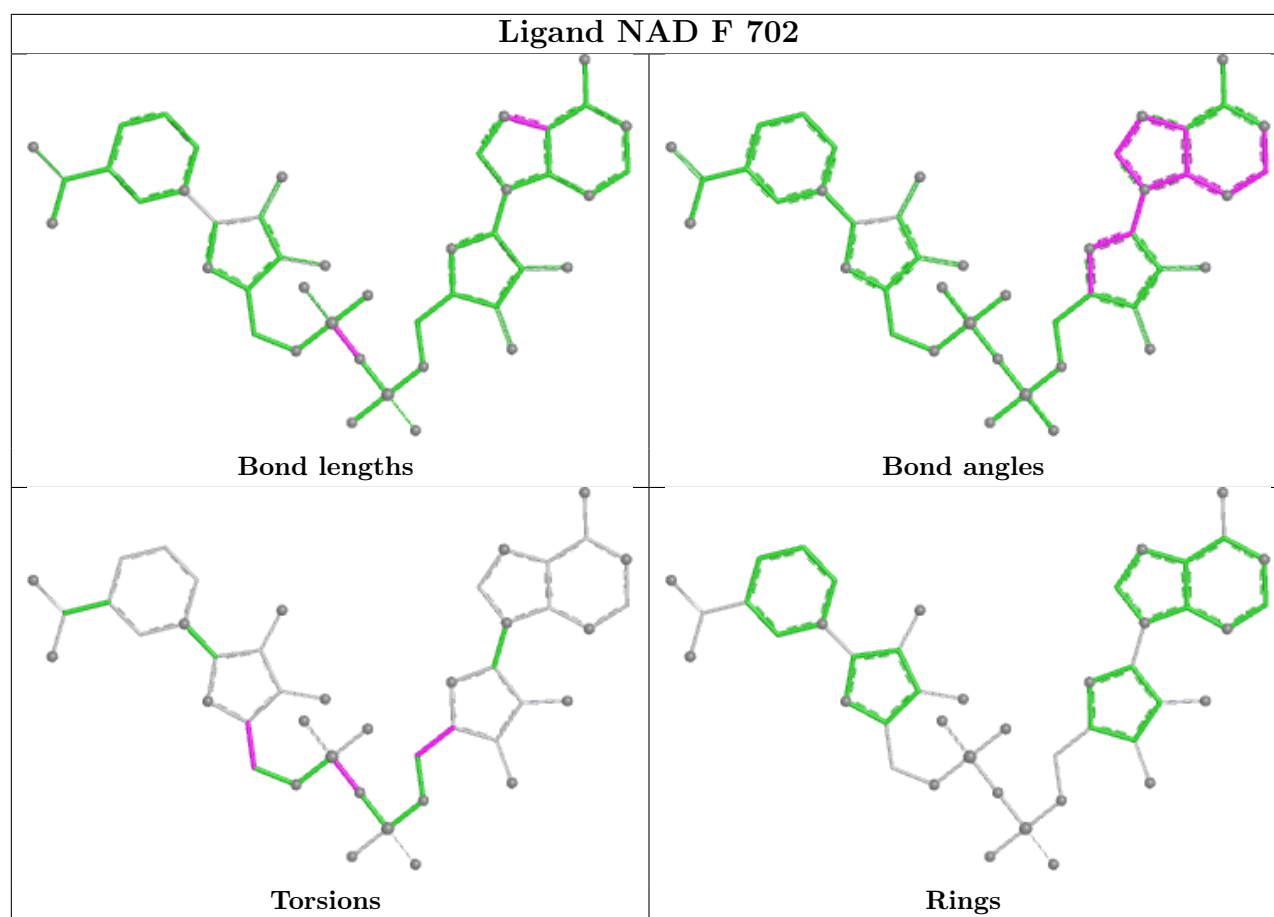
Mol	Chain	Res	Type	Atoms
3	F	702	NAD	O4B-C4B-C5B-O5B
3	B	700	NAD	PA-O3-PN-O2N

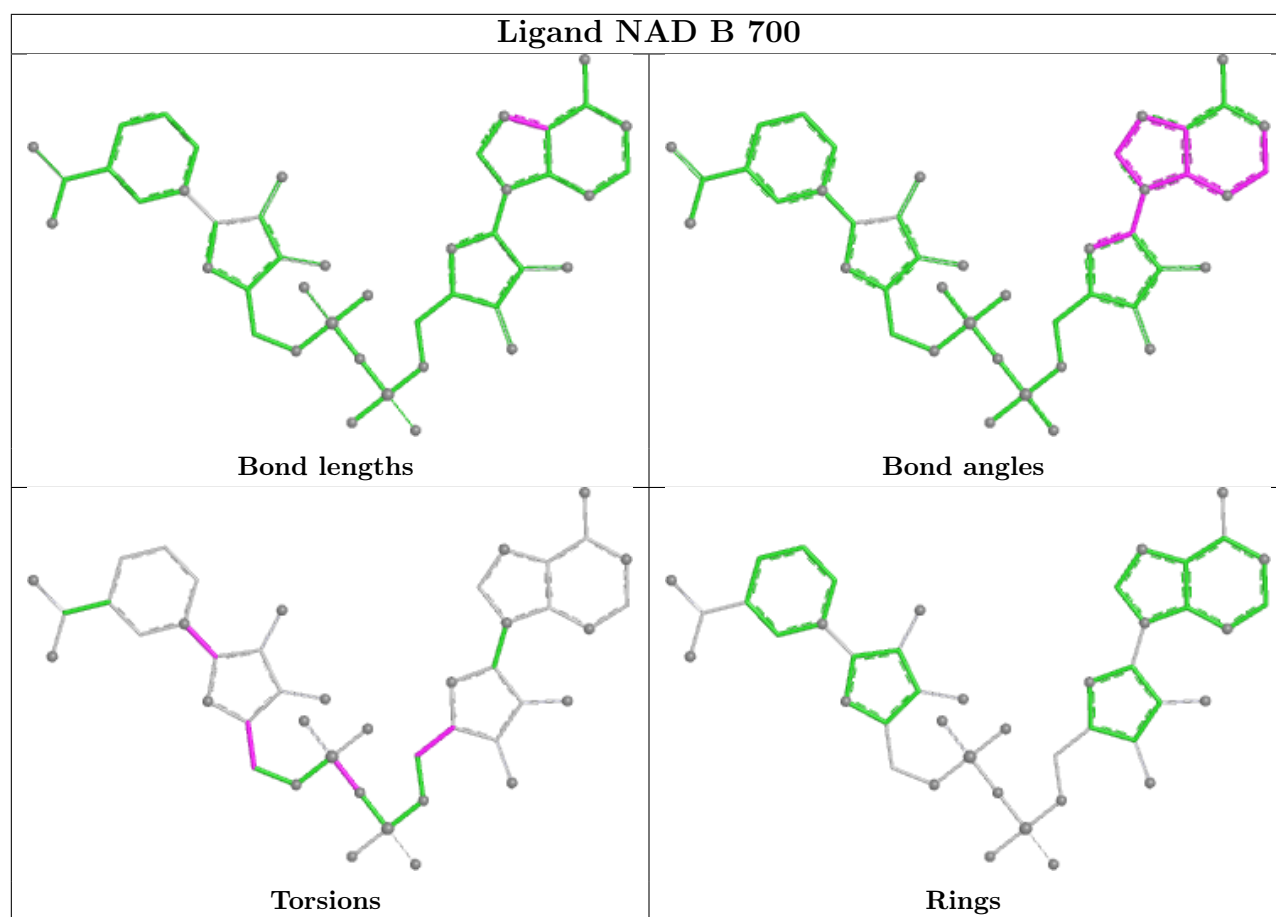
There are no ring outliers.

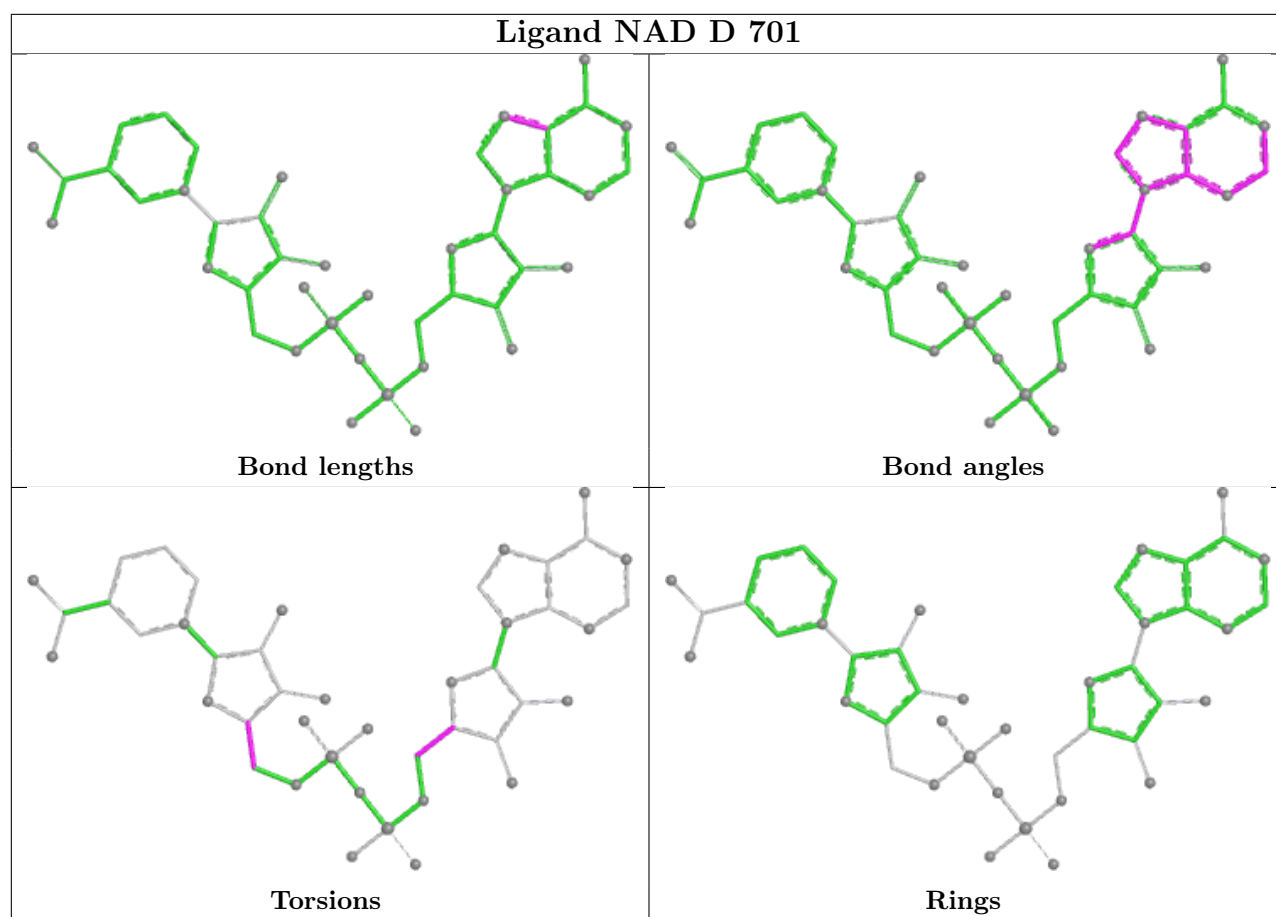
2 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	F	702	NAD	2	0
3	D	701	NAD	4	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 than 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.







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, 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	822/842 (97%)	-0.06	10 (1%)	76	55	18, 85, 143, 217	0
1	C	822/842 (97%)	0.17	26 (3%)	50	29	20, 92, 182, 240	0
1	E	822/842 (97%)	0.63	72 (8%)	15	8	20, 154, 219, 298	0
2	B	207/207 (100%)	-0.56	0	100	100	15, 37, 76, 118	0
2	D	207/207 (100%)	-0.57	0	100	100	17, 34, 75, 113	0
2	F	207/207 (100%)	-0.52	0	100	100	19, 41, 81, 123	0
All	All	3087/3147 (98%)	0.09	108 (3%)	47	27	15, 85, 196, 298	0

All (108) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	504	LEU	5.7
1	E	442	VAL	5.5
1	E	245	TRP	5.2
1	E	743	ILE	5.2
1	E	339	VAL	5.0
1	E	126	LEU	4.6
1	C	493	VAL	4.6
1	E	780	PHE	4.5
1	C	743	ILE	4.4
1	E	368	ALA	4.0
1	E	175	TYR	4.0
1	E	356	LEU	3.8
1	E	338	ILE	3.7
1	E	541	CYS	3.6
1	C	216	HIS	3.6
1	E	781	THR	3.6
1	E	364	ALA	3.5
1	E	554	LEU	3.4
1	E	207	GLY	3.4

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Mol	Chain	Res	Type	RSRZ
1	A	442	VAL	3.3
1	E	747	LEU	3.3
1	E	200	VAL	3.3
1	E	273	PHE	3.3
1	C	323	VAL	3.2
1	E	746	VAL	3.2
1	E	349	GLN	3.2
1	C	469	LEU	3.1
1	E	155	VAL	3.1
1	E	343	PRO	3.1
1	C	505	VAL	3.1
1	E	280	PRO	3.1
1	A	30	HIS	3.1
1	E	763	THR	3.0
1	E	188	ILE	3.0
1	E	127	VAL	3.0
1	E	210	ALA	3.0
1	E	86	VAL	3.0
1	E	209	VAL	3.0
1	E	233	PHE	3.0
1	E	276	PHE	2.9
1	E	335	LEU	2.9
1	E	151	ILE	2.8
1	E	189	VAL	2.8
1	E	196	VAL	2.8
1	E	89	ILE	2.8
1	E	192	TYR	2.8
1	C	109	VAL	2.7
1	C	311	GLU	2.7
1	E	277	ILE	2.7
1	C	48	ALA	2.7
1	C	29	ASP	2.7
1	A	768	VAL	2.6
1	C	30	HIS	2.6
1	E	553	PRO	2.6
1	E	143	LEU	2.6
1	E	784	LEU	2.6
1	A	193	ALA	2.6
1	E	146	ALA	2.6
1	E	99	LEU	2.6
1	A	405	VAL	2.5
1	C	524	GLU	2.4

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Mol	Chain	Res	Type	RSRZ
1	C	327	PHE	2.4
1	C	784	LEU	2.4
1	E	552	VAL	2.4
1	E	20	ARG	2.4
1	C	36	THR	2.4
1	E	281	ILE	2.4
1	E	504	LEU	2.4
1	E	768	VAL	2.4
1	E	742	GLY	2.3
1	E	193	ALA	2.3
1	C	746	VAL	2.3
1	E	48	ALA	2.3
1	E	179	ALA	2.3
1	E	241	MET	2.3
1	A	420	PRO	2.3
1	C	501	LEU	2.3
1	C	747	LEU	2.3
1	E	190	SER	2.3
1	C	495	VAL	2.3
1	E	129	VAL	2.3
1	E	346	VAL	2.3
1	E	296	ILE	2.2
1	E	93	THR	2.2
1	E	323	VAL	2.2
1	E	366	CYS	2.2
1	E	348	ALA	2.2
1	E	376	ALA	2.2
1	C	386	VAL	2.2
1	E	154	VAL	2.2
1	E	70	ILE	2.2
1	E	777	SER	2.2
1	C	780	PHE	2.2
1	E	410	LYS	2.1
1	C	553	PRO	2.1
1	E	21	ASN	2.1
1	E	437	MET	2.1
1	E	764	PRO	2.1
1	A	369	ILE	2.1
1	A	476	HIS	2.1
1	C	740	VAL	2.1
1	A	356	LEU	2.1
1	C	508	LEU	2.1

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Mol	Chain	Res	Type	RSRZ
1	E	340	LEU	2.1
1	C	313	ASP	2.1
1	E	794	PRO	2.1
1	A	763	THR	2.0
1	E	98	PHE	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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, 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
1	DDE	A	699	10/21	0.82	0.11	59,75,77,80	0
1	DDE	C	699	20/21	0.89	0.15	31,88,128,128	0
1	DDE	E	699	10/21	0.92	0.08	36,51,77,82	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

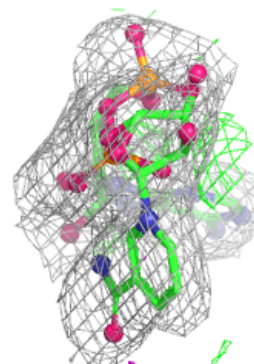
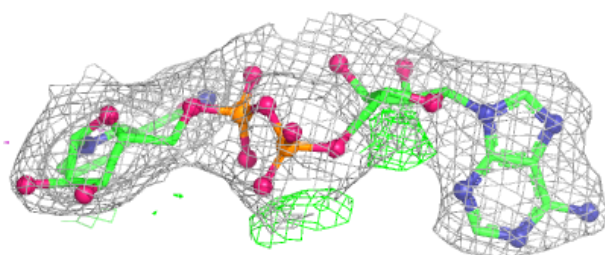
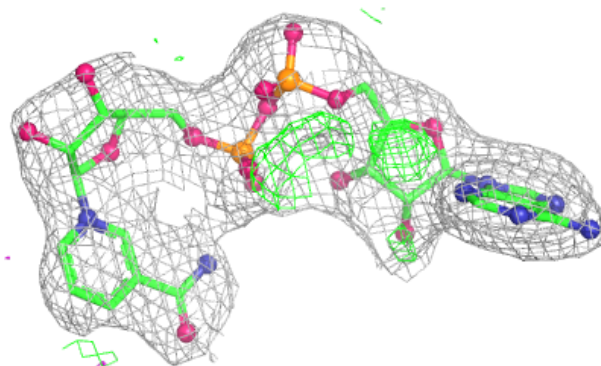
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	NAD	B	700	44/44	0.95	0.08	24,42,55,66	0
3	NAD	D	701	44/44	0.96	0.08	20,43,55,69	0
3	NAD	F	702	44/44	0.96	0.08	23,49,59,71	0

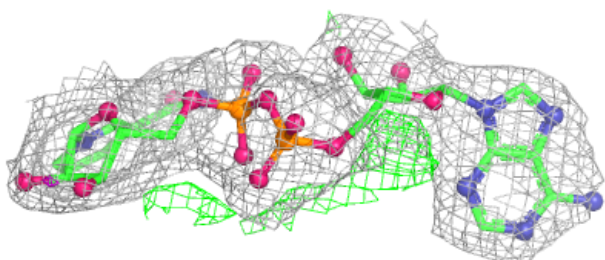
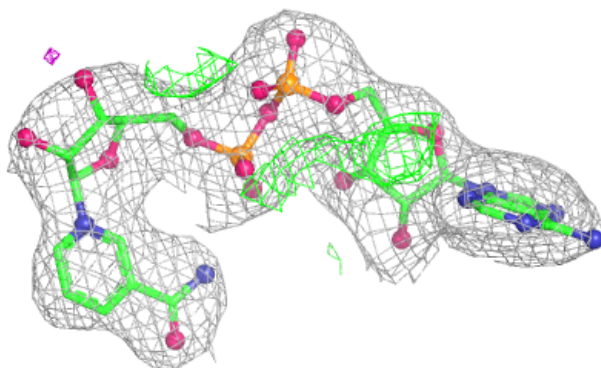
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

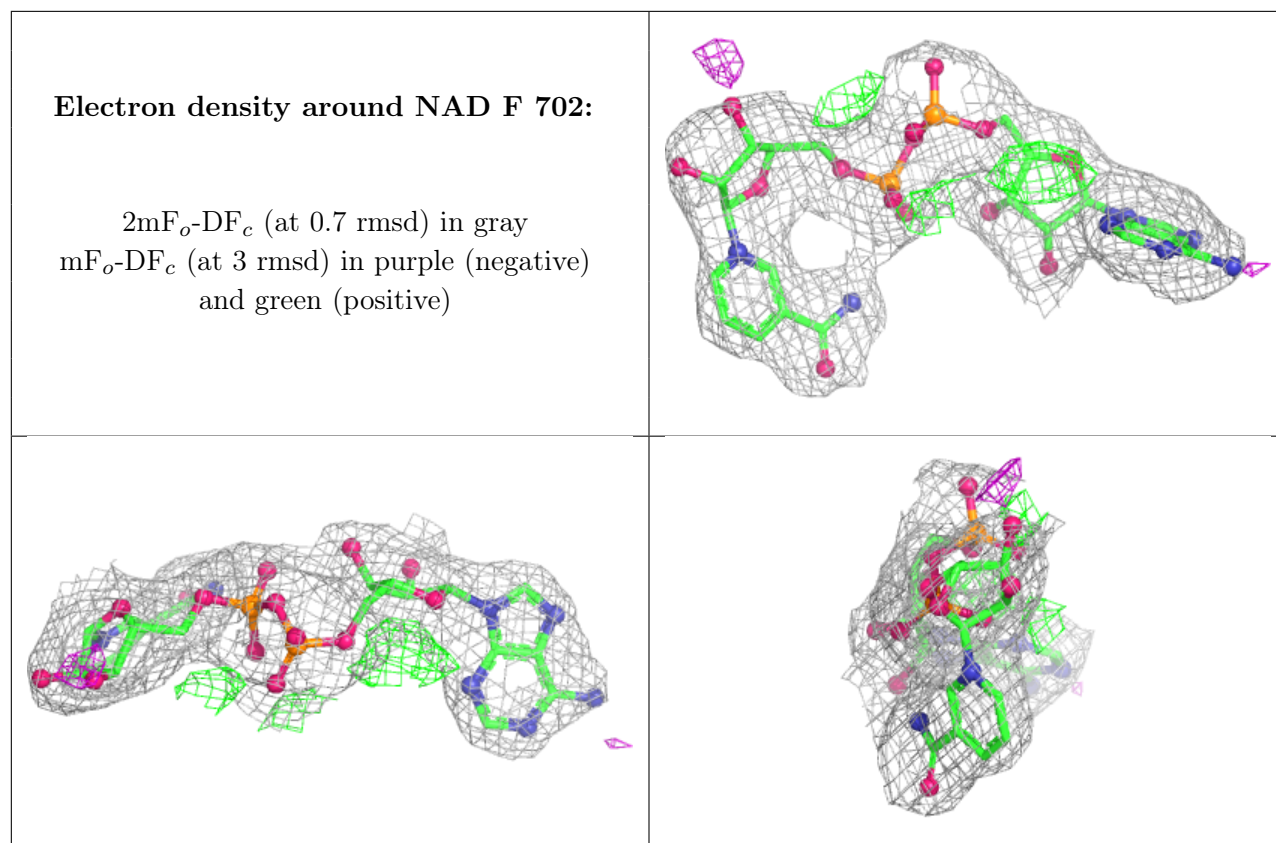
Electron density around NAD B 700:

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

**Electron density around NAD D 701:**

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





6.5 Other polymers ⓘ

There are no such residues in this entry.