



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 18, 2023 – 02:27 PM EDT

PDB ID : 1CHG
Title : CHYMOTRYPSINOGEN,2.5 ANGSTROMS CRYSTAL STRUCTURE,
COMPARISON WITH ALPHA-CHYMOTRYPSIN,AND IMPLICATIONS
FOR ZYMOGEN ACTIVATION
Authors : Freer, S.T.; Kraut, J.; Robertus, J.D.; Wright, H.T.; Xuong, N.H.
Deposited on : 1975-03-01
Resolution : 2.50 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

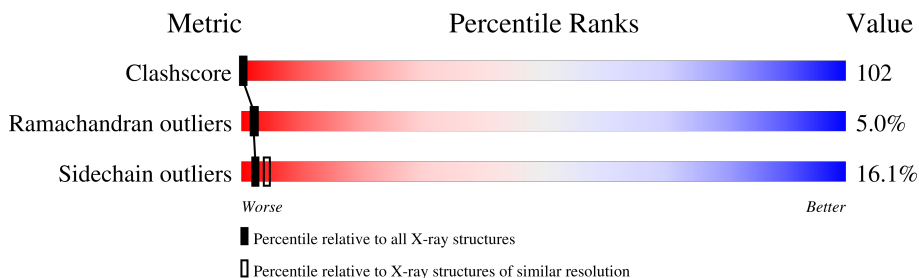
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	245	

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 1643 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 CHYMOTRYPSINOGEN A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	230	1643	1034	279	318	12	0	0	5

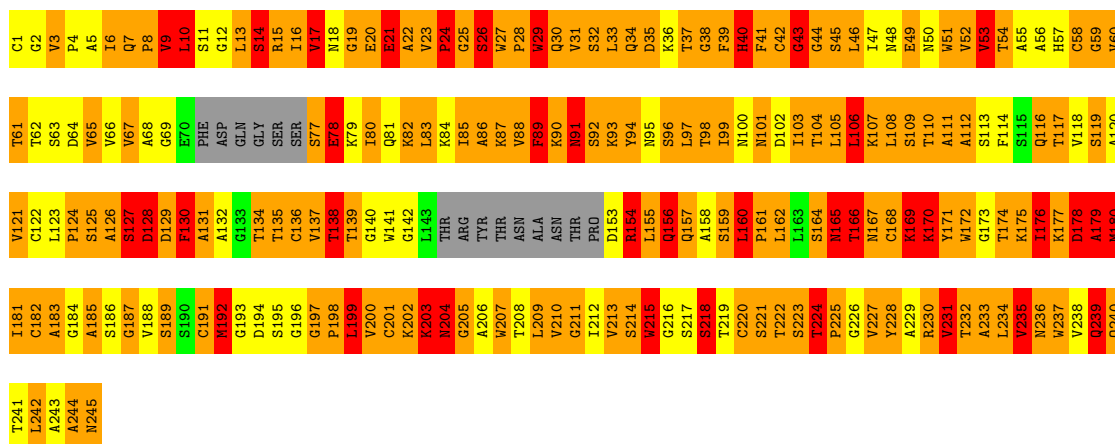
3 Residue-property plots

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. 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. 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.

Note EDS was not executed.

- Molecule 1: CHYMOTRYPSINOGEN A

Chain A: 



4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	52.00Å 63.90Å 77.10Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	(Not available) – 2.50	Depositor
% Data completeness (in resolution range)	(Not available) ((Not available)-2.50)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	unknown	Depositor
R, R_{free}	0.430 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	1643	wwPDB-VP
Average B, all atoms (Å ²)	0.0	wwPDB-VP

5 Model quality i

5.1 Standard geometry i

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	3.88	291/1673 (17.4%)	3.83	380/2277 (16.7%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	9

All (291) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	15	ARG	N-CA	-20.38	1.05	1.46
1	A	127	SER	CB-OG	-18.35	1.18	1.42
1	A	78	GLU	CD-OE1	-16.08	1.07	1.25
1	A	43	GLY	CA-C	15.24	1.76	1.51
1	A	9	VAL	CA-CB	-14.72	1.23	1.54
1	A	20	GLU	CD-OE2	-14.67	1.09	1.25
1	A	141	TRP	CD2-CE2	14.19	1.58	1.41
1	A	126	ALA	N-CA	-13.93	1.18	1.46
1	A	207	TRP	CD2-CE2	-13.89	1.24	1.41
1	A	51	TRP	NE1-CE2	-13.74	1.19	1.37
1	A	207	TRP	NE1-CE2	-13.39	1.20	1.37
1	A	114	PHE	C-O	-12.84	0.98	1.23
1	A	128	ASP	CB-CG	12.58	1.78	1.51
1	A	114	PHE	CG-CD1	-12.41	1.20	1.38
1	A	54	THR	C-N	-12.35	1.05	1.34
1	A	21	GLU	CD-OE1	12.12	1.39	1.25
1	A	19	GLY	CA-C	12.02	1.71	1.51
1	A	53	VAL	N-CA	-11.82	1.22	1.46
1	A	241	THR	C-O	-11.68	1.01	1.23
1	A	235	VAL	CB-CG2	-11.64	1.28	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	9	VAL	N-CA	11.58	1.69	1.46
1	A	29	TRP	CD1-NE1	11.54	1.57	1.38
1	A	218	SER	CB-OG	-11.32	1.27	1.42
1	A	160	LEU	N-CA	11.26	1.68	1.46
1	A	125	SER	CA-C	11.03	1.81	1.52
1	A	117	THR	C-O	-11.01	1.02	1.23
1	A	207	TRP	C-O	-10.94	1.02	1.23
1	A	91	ASN	N-CA	-10.56	1.25	1.46
1	A	53	VAL	C-O	-10.55	1.03	1.23
1	A	27	TRP	CD2-CE2	-10.42	1.28	1.41
1	A	204	ASN	CG-OD1	-10.19	1.01	1.24
1	A	106	LEU	CA-CB	10.18	1.77	1.53
1	A	49	GLU	CD-OE1	-9.94	1.14	1.25
1	A	242	LEU	N-CA	-9.88	1.26	1.46
1	A	204	ASN	C-O	-9.78	1.04	1.23
1	A	141	TRP	NE1-CE2	-9.73	1.25	1.37
1	A	60	VAL	C-O	-9.72	1.04	1.23
1	A	178	ASP	CG-OD2	9.67	1.47	1.25
1	A	155	LEU	C-O	-9.57	1.05	1.23
1	A	130	PHE	CE1-CZ	9.54	1.55	1.37
1	A	128	ASP	CG-OD2	-9.33	1.03	1.25
1	A	124	PRO	CA-CB	9.31	1.72	1.53
1	A	141	TRP	CZ2-CH2	9.30	1.55	1.37
1	A	123	LEU	C-O	-9.20	1.05	1.23
1	A	194	ASP	CB-CG	9.18	1.71	1.51
1	A	64	ASP	CA-CB	-9.18	1.33	1.53
1	A	142	GLY	C-O	9.16	1.38	1.23
1	A	59	GLY	CA-C	9.06	1.66	1.51
1	A	127	SER	C-O	-8.98	1.06	1.23
1	A	89	PHE	CB-CG	8.93	1.66	1.51
1	A	89	PHE	CE2-CZ	8.92	1.54	1.37
1	A	77	SER	C-O	-8.90	1.06	1.23
1	A	215	TRP	CG-CD2	-8.83	1.28	1.43
1	A	221	SER	CB-OG	-8.78	1.30	1.42
1	A	112	ALA	C-N	-8.75	1.14	1.34
1	A	59	GLY	C-O	-8.72	1.09	1.23
1	A	220	CYS	C-N	8.59	1.53	1.34
1	A	3	VAL	C-O	-8.58	1.07	1.23
1	A	5	ALA	C-O	-8.52	1.07	1.23
1	A	194	ASP	CG-OD1	-8.50	1.05	1.25
1	A	12	GLY	C-O	8.36	1.37	1.23
1	A	185	ALA	C-O	-8.35	1.07	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	130	PHE	CG-CD1	-8.32	1.26	1.38
1	A	182	CYS	CB-SG	-8.31	1.68	1.82
1	A	22	ALA	CA-CB	8.28	1.69	1.52
1	A	142	GLY	C-N	-8.24	1.15	1.34
1	A	198	PRO	N-CD	8.23	1.59	1.47
1	A	173	GLY	N-CA	-8.22	1.33	1.46
1	A	19	GLY	N-CA	-8.22	1.33	1.46
1	A	236	ASN	C-O	-8.18	1.07	1.23
1	A	235	VAL	CB-CG1	8.15	1.70	1.52
1	A	242	LEU	C-N	-8.09	1.15	1.34
1	A	61	THR	C-O	-8.02	1.08	1.23
1	A	160	LEU	C-N	-7.91	1.19	1.34
1	A	59	GLY	C-N	-7.91	1.15	1.34
1	A	239	GLN	C-O	-7.87	1.08	1.23
1	A	30	GLN	CD-OE1	-7.86	1.06	1.24
1	A	94	TYR	CZ-OH	7.86	1.51	1.37
1	A	58	CYS	C-O	7.85	1.38	1.23
1	A	113	SER	CA-CB	-7.84	1.41	1.52
1	A	204	ASN	CA-CB	7.80	1.73	1.53
1	A	9	VAL	C-N	-7.78	1.16	1.34
1	A	89	PHE	CG-CD2	-7.77	1.27	1.38
1	A	131	ALA	C-N	-7.73	1.16	1.34
1	A	224	THR	C-O	7.64	1.37	1.23
1	A	236	ASN	N-CA	-7.62	1.31	1.46
1	A	44	GLY	C-O	-7.60	1.11	1.23
1	A	191	CYS	CB-SG	7.56	1.95	1.82
1	A	82	LYS	CD-CE	7.53	1.70	1.51
1	A	38	GLY	C-N	-7.53	1.16	1.34
1	A	242	LEU	C-O	7.47	1.37	1.23
1	A	130	PHE	N-CA	7.45	1.61	1.46
1	A	210	VAL	CB-CG1	7.40	1.68	1.52
1	A	205	GLY	C-N	-7.38	1.17	1.34
1	A	27	TRP	CA-CB	7.37	1.70	1.53
1	A	211	GLY	CA-C	7.36	1.63	1.51
1	A	164	SER	C-O	7.35	1.37	1.23
1	A	29	TRP	CD2-CE3	-7.33	1.29	1.40
1	A	168	CYS	C-O	-7.33	1.09	1.23
1	A	134	THR	N-CA	-7.33	1.31	1.46
1	A	222	THR	CB-OG1	-7.32	1.28	1.43
1	A	34	GLN	CD-NE2	-7.32	1.14	1.32
1	A	32	SER	C-N	-7.31	1.17	1.34
1	A	221	SER	N-CA	-7.31	1.31	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	139	THR	C-O	-7.30	1.09	1.23
1	A	154	ARG	CD-NE	7.29	1.58	1.46
1	A	156	GLN	C-O	-7.29	1.09	1.23
1	A	171	TYR	CZ-OH	7.26	1.50	1.37
1	A	94	TYR	C-N	-7.23	1.17	1.34
1	A	29	TRP	CB-CG	-7.21	1.37	1.50
1	A	203	LYS	CE-NZ	7.21	1.67	1.49
1	A	32	SER	CB-OG	7.21	1.51	1.42
1	A	92	SER	C-O	-7.19	1.09	1.23
1	A	38	GLY	N-CA	7.19	1.56	1.46
1	A	209	LEU	C-N	-7.12	1.17	1.34
1	A	67	VAL	N-CA	-7.09	1.32	1.46
1	A	194	ASP	C-N	-7.07	1.17	1.34
1	A	226	GLY	C-O	-7.05	1.12	1.23
1	A	209	LEU	CA-C	6.99	1.71	1.52
1	A	237	TRP	CD2-CE2	-6.98	1.32	1.41
1	A	93	LYS	CA-C	6.96	1.71	1.52
1	A	7	GLN	CD-NE2	6.95	1.50	1.32
1	A	245	ASN	CB-CG	6.94	1.67	1.51
1	A	51	TRP	CD2-CE3	6.94	1.50	1.40
1	A	191	CYS	C-N	-6.94	1.18	1.34
1	A	237	TRP	CZ3-CH2	-6.92	1.28	1.40
1	A	20	GLU	CB-CG	6.91	1.65	1.52
1	A	137	VAL	N-CA	6.90	1.60	1.46
1	A	223	SER	N-CA	6.89	1.60	1.46
1	A	237	TRP	N-CA	-6.88	1.32	1.46
1	A	218	SER	C-O	6.88	1.36	1.23
1	A	165	ASN	C-N	-6.86	1.18	1.34
1	A	172	TRP	CD1-NE1	-6.86	1.26	1.38
1	A	86	ALA	C-O	-6.84	1.10	1.23
1	A	175	LYS	C-N	-6.83	1.18	1.34
1	A	125	SER	C-O	-6.83	1.10	1.23
1	A	27	TRP	CZ3-CH2	-6.80	1.29	1.40
1	A	20	GLU	CD-OE1	-6.78	1.18	1.25
1	A	104	THR	C-N	-6.77	1.18	1.34
1	A	239	GLN	C-N	-6.76	1.18	1.34
1	A	203	LYS	C-O	-6.76	1.10	1.23
1	A	172	TRP	CZ3-CH2	-6.75	1.29	1.40
1	A	209	LEU	C-O	-6.73	1.10	1.23
1	A	30	GLN	C-O	-6.72	1.10	1.23
1	A	202	LYS	CB-CG	6.69	1.70	1.52
1	A	20	GLU	N-CA	-6.58	1.33	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	106	LEU	C-O	-6.55	1.10	1.23
1	A	202	LYS	C-N	-6.53	1.19	1.34
1	A	159	SER	CB-OG	-6.50	1.33	1.42
1	A	67	VAL	C-N	-6.49	1.19	1.34
1	A	27	TRP	CE3-CZ3	-6.48	1.27	1.38
1	A	117	THR	CA-C	6.48	1.69	1.52
1	A	224	THR	CB-OG1	-6.46	1.30	1.43
1	A	201	CYS	C-O	-6.46	1.11	1.23
1	A	239	GLN	CD-OE1	-6.44	1.09	1.24
1	A	205	GLY	CA-C	6.41	1.62	1.51
1	A	160	LEU	C-O	6.41	1.35	1.23
1	A	14	SER	CA-CB	-6.40	1.43	1.52
1	A	124	PRO	N-CA	-6.38	1.36	1.47
1	A	68	ALA	C-O	-6.38	1.11	1.23
1	A	207	TRP	CG-CD1	-6.38	1.27	1.36
1	A	43	GLY	C-N	-6.38	1.21	1.33
1	A	69	GLY	N-CA	-6.37	1.36	1.46
1	A	18	ASN	C-O	-6.36	1.11	1.23
1	A	138	THR	C-O	-6.35	1.11	1.23
1	A	37	THR	C-O	-6.34	1.11	1.23
1	A	114	PHE	CA-C	6.32	1.69	1.52
1	A	102	ASP	CA-CB	6.29	1.67	1.53
1	A	198	PRO	N-CA	-6.27	1.36	1.47
1	A	245	ASN	C-O	-6.25	1.11	1.23
1	A	20	GLU	C-O	-6.24	1.11	1.23
1	A	104	THR	C-O	6.23	1.35	1.23
1	A	21	GLU	C-O	-6.19	1.11	1.23
1	A	202	LYS	CE-NZ	6.19	1.64	1.49
1	A	109	SER	N-CA	-6.19	1.33	1.46
1	A	222	THR	N-CA	-6.18	1.33	1.46
1	A	194	ASP	CA-CB	-6.13	1.40	1.53
1	A	236	ASN	CA-CB	6.13	1.69	1.53
1	A	46	LEU	C-O	-6.10	1.11	1.23
1	A	121	VAL	CB-CG2	-6.10	1.40	1.52
1	A	213	VAL	C-O	-6.10	1.11	1.23
1	A	215	TRP	CD2-CE2	6.08	1.48	1.41
1	A	141	TRP	CD1-NE1	6.08	1.48	1.38
1	A	94	TYR	CB-CG	6.06	1.60	1.51
1	A	244	ALA	CA-CB	6.06	1.65	1.52
1	A	92	SER	N-CA	-6.05	1.34	1.46
1	A	64	ASP	CB-CG	6.05	1.64	1.51
1	A	80	ILE	C-N	-6.04	1.20	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	21	GLU	CG-CD	6.03	1.61	1.51
1	A	191	CYS	C-O	-6.03	1.11	1.23
1	A	197	GLY	N-CA	-6.02	1.37	1.46
1	A	189	SER	N-CA	-6.02	1.34	1.46
1	A	24	PRO	N-CA	-6.01	1.37	1.47
1	A	24	PRO	C-O	-6.00	1.11	1.23
1	A	101	ASN	N-CA	-5.98	1.34	1.46
1	A	236	ASN	CB-CG	5.97	1.64	1.51
1	A	51	TRP	CD1-NE1	5.96	1.48	1.38
1	A	153	ASP	C-O	-5.94	1.12	1.23
1	A	93	LYS	C-O	-5.93	1.12	1.23
1	A	43	GLY	N-CA	-5.92	1.37	1.46
1	A	32	SER	N-CA	-5.92	1.34	1.46
1	A	107	LYS	CA-CB	-5.90	1.41	1.53
1	A	141	TRP	CZ3-CH2	-5.88	1.30	1.40
1	A	113	SER	C-N	-5.84	1.20	1.34
1	A	101	ASN	C-O	-5.81	1.12	1.23
1	A	45	SER	CA-CB	-5.80	1.44	1.52
1	A	165	ASN	CG-ND2	-5.79	1.18	1.32
1	A	220	CYS	CB-SG	-5.76	1.72	1.81
1	A	18	ASN	CG-OD1	-5.76	1.11	1.24
1	A	159	SER	CA-C	5.75	1.68	1.52
1	A	215	TRP	C-N	5.75	1.43	1.33
1	A	157	GLN	C-O	-5.74	1.12	1.23
1	A	57	HIS	C-O	5.74	1.34	1.23
1	A	78	GLU	C-O	-5.73	1.12	1.23
1	A	180	MET	C-O	-5.72	1.12	1.23
1	A	245	ASN	C-OXT	-5.72	1.12	1.23
1	A	94	TYR	CD1-CE1	-5.69	1.30	1.39
1	A	6	ILE	CB-CG1	-5.69	1.38	1.54
1	A	186	SER	CB-OG	5.67	1.49	1.42
1	A	85	ILE	CA-CB	5.66	1.67	1.54
1	A	37	THR	CA-CB	-5.62	1.38	1.53
1	A	141	TRP	CD2-CE3	-5.62	1.31	1.40
1	A	141	TRP	CE2-CZ2	-5.61	1.30	1.39
1	A	85	ILE	N-CA	5.61	1.57	1.46
1	A	21	GLU	CB-CG	-5.59	1.41	1.52
1	A	1	CYS	CB-SG	5.56	1.91	1.82
1	A	52	VAL	C-O	5.54	1.33	1.23
1	A	92	SER	C-N	-5.54	1.21	1.34
1	A	69	GLY	CA-C	5.53	1.60	1.51
1	A	41	PHE	CB-CG	5.52	1.60	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	155	LEU	C-N	5.52	1.46	1.34
1	A	113	SER	N-CA	5.51	1.57	1.46
1	A	94	TYR	CA-CB	-5.46	1.42	1.53
1	A	203	LYS	C-N	-5.46	1.21	1.34
1	A	130	PHE	CB-CG	5.46	1.60	1.51
1	A	82	LYS	C-O	-5.44	1.13	1.23
1	A	132	ALA	C-O	5.43	1.33	1.23
1	A	64	ASP	CG-OD2	-5.43	1.12	1.25
1	A	67	VAL	C-O	-5.41	1.13	1.23
1	A	51	TRP	CA-C	5.41	1.67	1.52
1	A	44	GLY	N-CA	5.41	1.54	1.46
1	A	24	PRO	N-CD	5.39	1.55	1.47
1	A	27	TRP	C-N	-5.36	1.24	1.34
1	A	112	ALA	CA-C	5.36	1.66	1.52
1	A	126	ALA	CA-CB	5.35	1.63	1.52
1	A	228	TYR	CE2-CZ	-5.35	1.31	1.38
1	A	83	LEU	C-O	-5.34	1.13	1.23
1	A	24	PRO	CA-C	5.34	1.63	1.52
1	A	117	THR	N-CA	-5.33	1.35	1.46
1	A	94	TYR	CA-C	5.33	1.66	1.52
1	A	167	ASN	CG-OD1	-5.33	1.12	1.24
1	A	5	ALA	N-CA	5.33	1.57	1.46
1	A	88	VAL	C-N	-5.33	1.21	1.34
1	A	123	LEU	CA-CB	-5.33	1.41	1.53
1	A	187	GLY	C-N	-5.33	1.21	1.34
1	A	81	GLN	N-CA	5.28	1.56	1.46
1	A	178	ASP	C-O	5.26	1.33	1.23
1	A	68	ALA	CA-CB	5.24	1.63	1.52
1	A	158	ALA	CA-CB	-5.24	1.41	1.52
1	A	40	HIS	C-O	-5.23	1.13	1.23
1	A	124	PRO	CA-C	5.23	1.63	1.52
1	A	237	TRP	C-N	-5.18	1.22	1.34
1	A	91	ASN	CA-C	5.17	1.66	1.52
1	A	82	LYS	C-N	-5.17	1.22	1.34
1	A	57	HIS	CB-CG	5.14	1.59	1.50
1	A	65	VAL	CA-CB	-5.13	1.44	1.54
1	A	17	VAL	CA-CB	5.13	1.65	1.54
1	A	207	TRP	CB-CG	5.13	1.59	1.50
1	A	41	PHE	C-N	-5.12	1.22	1.34
1	A	89	PHE	C-N	-5.12	1.22	1.34
1	A	22	ALA	C-N	-5.12	1.22	1.34
1	A	114	PHE	CD1-CE1	-5.11	1.29	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	210	VAL	N-CA	5.10	1.56	1.46
1	A	207	TRP	CZ2-CH2	-5.10	1.27	1.37
1	A	215	TRP	CE3-CZ3	5.10	1.47	1.38
1	A	170	LYS	C-N	-5.10	1.22	1.34
1	A	89	PHE	CE1-CZ	-5.09	1.27	1.37
1	A	87	LYS	CB-CG	5.09	1.66	1.52
1	A	26	SER	C-N	-5.07	1.22	1.34
1	A	241	THR	CA-C	5.07	1.66	1.52
1	A	34	GLN	C-N	-5.06	1.22	1.34
1	A	83	LEU	CA-C	5.06	1.66	1.52
1	A	231	VAL	C-O	-5.06	1.13	1.23
1	A	234	LEU	CB-CG	5.06	1.67	1.52
1	A	25	GLY	CA-C	-5.05	1.43	1.51
1	A	27	TRP	CZ2-CH2	5.04	1.47	1.37
1	A	134	THR	CB-OG1	-5.04	1.33	1.43
1	A	131	ALA	N-CA	-5.03	1.36	1.46
1	A	97	LEU	C-N	-5.03	1.22	1.34
1	A	114	PHE	CE2-CZ	-5.03	1.27	1.37
1	A	16	ILE	C-N	-5.01	1.22	1.34

All (380) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	9	VAL	CB-CA-C	20.59	150.53	111.40
1	A	9	VAL	CA-CB-CG1	-20.34	80.39	110.90
1	A	55	ALA	CB-CA-C	16.21	134.42	110.10
1	A	89	PHE	CZ-CE2-CD2	-15.26	101.79	120.10
1	A	94	TYR	CB-CG-CD1	-15.22	111.87	121.00
1	A	215	TRP	CB-CG-CD1	-14.77	107.80	127.00
1	A	195	SER	N-CA-CB	-13.78	89.83	110.50
1	A	132	ALA	CB-CA-C	13.33	130.10	110.10
1	A	141	TRP	CD1-NE1-CE2	13.08	120.77	109.00
1	A	215	TRP	CD1-CG-CD2	13.04	116.73	106.30
1	A	171	TYR	CB-CG-CD1	-12.89	113.27	121.00
1	A	83	LEU	CB-CG-CD2	-12.74	89.35	111.00
1	A	114	PHE	O-C-N	12.72	143.06	122.70
1	A	200	VAL	CA-CB-CG1	12.61	129.81	110.90
1	A	55	ALA	N-CA-CB	-12.56	92.51	110.10
1	A	94	TYR	N-CA-CB	12.47	133.04	110.60
1	A	185	ALA	CB-CA-C	-12.45	91.43	110.10
1	A	59	GLY	O-C-N	12.30	142.38	122.70
1	A	194	ASP	CB-CG-OD1	-12.14	107.38	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	230	ARG	CA-C-N	-12.13	90.51	117.20
1	A	34	GLN	O-C-N	12.12	142.10	122.70
1	A	32	SER	N-CA-CB	11.49	127.74	110.50
1	A	59	GLY	CA-C-N	-11.41	92.09	117.20
1	A	107	LYS	N-CA-CB	11.36	131.05	110.60
1	A	96	SER	CB-CA-C	-11.26	88.71	110.10
1	A	155	LEU	CB-CG-CD2	-11.21	91.95	111.00
1	A	86	ALA	O-C-N	11.19	140.60	122.70
1	A	89	PHE	N-CA-CB	11.12	130.62	110.60
1	A	130	PHE	N-CA-CB	11.10	130.58	110.60
1	A	125	SER	O-C-N	10.64	139.72	122.70
1	A	169	LYS	CB-CA-C	10.59	131.58	110.40
1	A	168	CYS	CA-CB-SG	-10.53	95.04	114.00
1	A	138	THR	CB-CA-C	10.51	139.99	111.60
1	A	231	VAL	CB-CA-C	10.40	131.16	111.40
1	A	123	LEU	CB-CG-CD2	10.37	128.63	111.00
1	A	159	SER	CA-C-N	-10.37	94.38	117.20
1	A	230	ARG	N-CA-C	10.32	138.88	111.00
1	A	53	VAL	CG1-CB-CG2	-10.26	94.49	110.90
1	A	130	PHE	CA-C-N	-10.22	94.72	117.20
1	A	29	TRP	CE3-CZ3-CH2	-10.17	110.02	121.20
1	A	17	VAL	C-N-CA	9.98	146.66	121.70
1	A	159	SER	O-C-N	9.92	138.57	122.70
1	A	204	ASN	CB-CA-C	9.84	130.09	110.40
1	A	54	THR	N-CA-CB	9.57	128.48	110.30
1	A	27	TRP	CB-CG-CD2	9.55	139.01	126.60
1	A	68	ALA	CB-CA-C	9.49	124.34	110.10
1	A	68	ALA	N-CA-CB	-9.47	96.84	110.10
1	A	203	LYS	CA-C-N	-9.47	96.37	117.20
1	A	183	ALA	CB-CA-C	-9.44	95.94	110.10
1	A	93	LYS	N-CA-CB	9.40	127.52	110.60
1	A	207	TRP	CG-CD1-NE1	-9.39	100.71	110.10
1	A	222	THR	CA-C-N	-9.34	96.65	117.20
1	A	129	ASP	N-CA-CB	-9.26	93.94	110.60
1	A	8	PRO	C-N-CA	9.25	144.82	121.70
1	A	230	ARG	CA-C-O	9.24	139.51	120.10
1	A	209	LEU	O-C-N	9.23	137.47	122.70
1	A	227	VAL	CA-CB-CG2	-9.12	97.22	110.90
1	A	32	SER	CB-CA-C	-9.10	92.82	110.10
1	A	200	VAL	N-CA-CB	-9.07	91.54	111.50
1	A	185	ALA	N-CA-CB	9.03	122.74	110.10
1	A	178	ASP	CB-CG-OD1	9.03	126.42	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	141	TRP	CG-CD1-NE1	-8.93	101.17	110.10
1	A	141	TRP	CG-CD2-CE3	8.91	141.92	133.90
1	A	111	ALA	N-CA-CB	-8.87	97.68	110.10
1	A	10	LEU	CB-CA-C	-8.87	93.36	110.20
1	A	242	LEU	CB-CA-C	-8.85	93.39	110.20
1	A	237	TRP	CE2-CD2-CG	8.82	114.36	107.30
1	A	237	TRP	CE3-CZ3-CH2	-8.81	111.51	121.20
1	A	180	MET	CB-CA-C	8.80	128.00	110.40
1	A	34	GLN	CB-CG-CD	-8.79	88.73	111.60
1	A	18	ASN	CA-CB-CG	-8.79	94.06	113.40
1	A	110	THR	CA-CB-CG2	-8.78	100.10	112.40
1	A	119	SER	N-CA-CB	8.68	123.52	110.50
1	A	9	VAL	CG1-CB-CG2	8.66	124.76	110.90
1	A	97	LEU	CB-CA-C	8.66	126.66	110.20
1	A	49	GLU	CA-C-O	8.66	138.29	120.10
1	A	107	LYS	CB-CA-C	-8.63	93.14	110.40
1	A	158	ALA	CB-CA-C	-8.55	97.27	110.10
1	A	35	ASP	CB-CG-OD2	-8.48	110.67	118.30
1	A	112	ALA	O-C-N	8.43	136.19	122.70
1	A	218	SER	O-C-N	-8.43	109.21	122.70
1	A	93	LYS	CB-CA-C	8.42	127.24	110.40
1	A	207	TRP	CG-CD2-CE3	-8.42	126.32	133.90
1	A	94	TYR	CD1-CE1-CZ	8.41	127.37	119.80
1	A	67	VAL	O-C-N	8.40	136.14	122.70
1	A	227	VAL	CG1-CB-CG2	8.39	124.32	110.90
1	A	237	TRP	CZ3-CH2-CZ2	8.37	131.65	121.60
1	A	29	TRP	CD1-CG-CD2	8.37	112.99	106.30
1	A	88	VAL	CB-CA-C	8.34	127.25	111.40
1	A	105	LEU	CB-CG-CD1	-8.31	96.88	111.00
1	A	174	THR	CB-CA-C	8.30	134.00	111.60
1	A	186	SER	CB-CA-C	8.25	125.78	110.10
1	A	215	TRP	CG-CD2-CE3	8.24	141.32	133.90
1	A	204	ASN	CA-C-N	-8.17	99.85	116.20
1	A	89	PHE	CG-CD1-CE1	-8.16	111.82	120.80
1	A	61	THR	N-CA-CB	8.16	125.80	110.30
1	A	228	TYR	CZ-CE2-CD2	8.14	127.12	119.80
1	A	91	ASN	N-CA-CB	-8.11	96.00	110.60
1	A	27	TRP	CB-CG-CD1	-8.10	116.47	127.00
1	A	171	TYR	CB-CA-C	-8.06	94.27	110.40
1	A	22	ALA	N-CA-C	8.05	132.74	111.00
1	A	20	GLU	N-CA-CB	-8.04	96.13	110.60
1	A	194	ASP	OD1-CG-OD2	8.01	138.51	123.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	164	SER	CB-CA-C	-7.97	94.96	110.10
1	A	162	LEU	CB-CA-C	-7.96	95.07	110.20
1	A	88	VAL	CA-CB-CG2	7.96	122.84	110.90
1	A	160	LEU	CB-CA-C	-7.94	95.11	110.20
1	A	94	TYR	CG-CD2-CE2	-7.90	114.98	121.30
1	A	117	THR	CA-CB-CG2	-7.88	101.36	112.40
1	A	42	CYS	C-N-CA	-7.88	105.76	122.30
1	A	214	SER	N-CA-CB	7.86	122.29	110.50
1	A	162	LEU	CB-CG-CD2	7.77	124.21	111.00
1	A	179	ALA	CA-C-N	7.76	134.28	117.20
1	A	58	CYS	N-CA-CB	7.73	124.51	110.60
1	A	77	SER	O-C-N	7.71	135.04	122.70
1	A	202	LYS	O-C-N	-7.71	110.37	122.70
1	A	161	PRO	O-C-N	-7.68	110.41	122.70
1	A	155	LEU	CB-CG-CD1	7.66	124.02	111.00
1	A	171	TYR	N-CA-CB	7.60	124.28	110.60
1	A	34	GLN	CA-C-N	-7.59	100.51	117.20
1	A	177	LYS	N-CA-CB	-7.58	96.95	110.60
1	A	27	TRP	CB-CA-C	7.56	125.52	110.40
1	A	241	THR	O-C-N	7.56	134.79	122.70
1	A	52	VAL	N-CA-C	-7.54	90.64	111.00
1	A	9	VAL	CA-C-O	-7.52	104.30	120.10
1	A	29	TRP	CA-C-O	-7.50	104.34	120.10
1	A	159	SER	C-N-CA	-7.50	102.95	121.70
1	A	94	TYR	CG-CD1-CE1	-7.49	115.31	121.30
1	A	228	TYR	N-CA-CB	-7.49	97.11	110.60
1	A	139	THR	CA-CB-CG2	-7.47	101.94	112.40
1	A	52	VAL	CA-C-O	7.47	135.78	120.10
1	A	88	VAL	N-CA-CB	-7.44	95.13	111.50
1	A	50	ASN	N-CA-CB	-7.42	97.23	110.60
1	A	132	ALA	N-CA-CB	-7.42	99.72	110.10
1	A	137	VAL	CB-CA-C	-7.42	97.31	111.40
1	A	112	ALA	N-CA-CB	7.41	120.47	110.10
1	A	135	THR	CA-CB-OG1	7.37	124.48	109.00
1	A	240	GLN	CB-CA-C	-7.32	95.77	110.40
1	A	57	HIS	CA-CB-CG	-7.31	101.17	113.60
1	A	14	SER	N-CA-CB	7.24	121.35	110.50
1	A	194	ASP	CA-C-N	7.23	133.10	117.20
1	A	83	LEU	CB-CG-CD1	7.22	123.28	111.00
1	A	64	ASP	O-C-N	7.21	134.23	122.70
1	A	192	MET	CA-CB-CG	7.20	125.53	113.30
1	A	142	GLY	CA-C-O	-7.16	107.71	120.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	34	GLN	CA-CB-CG	7.15	129.13	113.40
1	A	166	THR	CA-CB-CG2	7.14	122.40	112.40
1	A	159	SER	N-CA-CB	-7.14	99.79	110.50
1	A	229	ALA	O-C-N	7.14	134.12	122.70
1	A	213	VAL	CB-CA-C	-7.14	97.84	111.40
1	A	206	ALA	CB-CA-C	7.13	120.80	110.10
1	A	20	GLU	CA-CB-CG	7.10	129.02	113.40
1	A	245	ASN	N-CA-CB	-7.10	97.82	110.60
1	A	199	LEU	CB-CG-CD2	-7.08	98.97	111.00
1	A	89	PHE	CG-CD2-CE2	7.06	128.57	120.80
1	A	123	LEU	CB-CA-C	7.05	123.60	110.20
1	A	223	SER	N-CA-CB	-7.04	99.95	110.50
1	A	124	PRO	CB-CA-C	-7.01	94.47	112.00
1	A	13	LEU	CB-CA-C	7.00	123.49	110.20
1	A	134	THR	N-CA-CB	6.98	123.57	110.30
1	A	32	SER	C-N-CA	-6.98	104.25	121.70
1	A	85	ILE	N-CA-CB	-6.97	94.76	110.80
1	A	116	GLN	CB-CA-C	-6.97	96.46	110.40
1	A	41	PHE	CG-CD2-CE2	-6.97	113.14	120.80
1	A	220	CYS	CB-CA-C	-6.94	96.51	110.40
1	A	138	THR	CA-CB-CG2	6.92	122.09	112.40
1	A	202	LYS	CA-C-N	6.90	132.38	117.20
1	A	181	ILE	CB-CA-C	-6.89	97.82	111.60
1	A	85	ILE	CA-CB-CG2	-6.87	97.15	110.90
1	A	200	VAL	CB-CA-C	6.87	124.46	111.40
1	A	30	GLN	N-CA-CB	6.87	122.96	110.60
1	A	128	ASP	O-C-N	-6.86	111.72	122.70
1	A	141	TRP	CD2-CE3-CZ3	6.83	127.68	118.80
1	A	162	LEU	O-C-N	6.82	133.61	122.70
1	A	207	TRP	CA-C-O	6.79	134.35	120.10
1	A	124	PRO	CA-N-CD	6.78	121.20	111.70
1	A	106	LEU	CB-CA-C	-6.74	97.39	110.20
1	A	154	ARG	NE-CZ-NH2	-6.74	116.93	120.30
1	A	124	PRO	N-CA-CB	-6.74	95.19	102.60
1	A	195	SER	CB-CA-C	6.69	122.82	110.10
1	A	240	GLN	N-CA-CB	6.69	122.64	110.60
1	A	130	PHE	CZ-CE2-CD2	6.68	128.11	120.10
1	A	229	ALA	CA-C-N	-6.65	102.57	117.20
1	A	41	PHE	CB-CG-CD1	-6.61	116.17	120.80
1	A	91	ASN	CB-CA-C	-6.61	97.18	110.40
1	A	20	GLU	CB-CG-CD	-6.60	96.37	114.20
1	A	238	VAL	CA-CB-CG2	-6.58	101.03	110.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	175	LYS	N-CA-CB	-6.58	98.75	110.60
1	A	29	TRP	CD1-NE1-CE2	-6.58	103.08	109.00
1	A	80	ILE	N-CA-CB	-6.56	95.71	110.80
1	A	237	TRP	O-C-N	6.55	133.19	122.70
1	A	125	SER	N-CA-CB	6.55	120.32	110.50
1	A	131	ALA	O-C-N	-6.55	112.22	122.70
1	A	233	ALA	N-CA-CB	6.54	119.26	110.10
1	A	9	VAL	CA-C-N	6.53	131.56	117.20
1	A	89	PHE	CA-CB-CG	-6.51	98.26	113.90
1	A	17	VAL	CA-CB-CG2	-6.51	101.14	110.90
1	A	90	LYS	O-C-N	-6.51	112.29	122.70
1	A	229	ALA	N-CA-CB	-6.48	101.02	110.10
1	A	54	THR	O-C-N	6.48	133.07	122.70
1	A	194	ASP	CA-CB-CG	6.46	127.61	113.40
1	A	224	THR	OG1-CB-CG2	6.46	124.85	110.00
1	A	89	PHE	CB-CG-CD1	-6.45	116.29	120.80
1	A	155	LEU	C-N-CA	-6.44	105.59	121.70
1	A	174	THR	N-CA-CB	-6.44	98.06	110.30
1	A	43	GLY	N-CA-C	-6.44	97.01	113.10
1	A	53	VAL	O-C-N	-6.44	112.40	122.70
1	A	154	ARG	CD-NE-CZ	-6.43	114.60	123.60
1	A	27	TRP	CG-CD2-CE3	-6.42	128.12	133.90
1	A	50	ASN	CB-CA-C	6.42	123.24	110.40
1	A	88	VAL	O-C-N	6.41	132.96	122.70
1	A	228	TYR	CB-CG-CD1	-6.41	117.15	121.00
1	A	53	VAL	CA-C-N	6.41	131.31	117.20
1	A	215	TRP	CB-CG-CD2	6.41	134.93	126.60
1	A	235	VAL	CA-CB-CG1	-6.40	101.29	110.90
1	A	130	PHE	CD1-CE1-CZ	-6.39	112.43	120.10
1	A	80	ILE	O-C-N	6.35	132.86	122.70
1	A	178	ASP	N-CA-CB	6.35	122.03	110.60
1	A	68	ALA	CA-C-N	-6.34	103.53	116.20
1	A	212	ILE	N-CA-C	-6.33	93.90	111.00
1	A	113	SER	N-CA-CB	6.33	120.00	110.50
1	A	129	ASP	C-N-CA	-6.32	105.89	121.70
1	A	114	PHE	CA-C-N	-6.31	103.33	117.20
1	A	203	LYS	O-C-N	6.30	132.79	122.70
1	A	191	CYS	O-C-N	6.29	132.76	122.70
1	A	29	TRP	CD2-CE2-CZ2	-6.27	114.77	122.30
1	A	194	ASP	O-C-N	-6.25	112.70	122.70
1	A	234	LEU	CB-CG-CD1	-6.24	100.39	111.00
1	A	162	LEU	N-CA-CB	6.24	122.88	110.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	220	CYS	CA-CB-SG	-6.23	102.79	114.00
1	A	141	TRP	CD1-CG-CD2	6.20	111.26	106.30
1	A	87	LYS	CA-CB-CG	-6.19	99.77	113.40
1	A	191	CYS	CA-C-O	-6.19	107.10	120.10
1	A	17	VAL	CA-CB-CG1	-6.18	101.64	110.90
1	A	171	TYR	CB-CG-CD2	6.17	124.70	121.00
1	A	29	TRP	O-C-N	6.17	132.57	122.70
1	A	242	LEU	CB-CG-CD1	6.16	121.47	111.00
1	A	88	VAL	CA-CB-CG1	-6.12	101.72	110.90
1	A	103	ILE	CG1-CB-CG2	6.11	124.85	111.40
1	A	160	LEU	O-C-N	-6.09	109.53	121.10
1	A	244	ALA	CB-CA-C	-6.09	100.97	110.10
1	A	230	ARG	NE-CZ-NH1	-6.08	117.26	120.30
1	A	125	SER	CA-C-O	-6.06	107.37	120.10
1	A	237	TRP	CH2-CZ2-CE2	-6.06	111.34	117.40
1	A	22	ALA	O-C-N	6.04	132.37	122.70
1	A	29	TRP	CD2-CE3-CZ3	6.03	126.64	118.80
1	A	237	TRP	CB-CA-C	6.03	122.46	110.40
1	A	237	TRP	CA-C-O	-6.03	107.45	120.10
1	A	9	VAL	N-CA-C	-6.02	94.74	111.00
1	A	229	ALA	N-CA-C	6.02	127.25	111.00
1	A	234	LEU	CA-CB-CG	-6.00	101.49	115.30
1	A	8	PRO	CA-N-CD	5.98	120.07	111.70
1	A	154	ARG	N-CA-CB	5.98	121.36	110.60
1	A	131	ALA	CA-C-N	5.97	130.34	117.20
1	A	221	SER	N-CA-CB	-5.97	101.55	110.50
1	A	87	LYS	CB-CA-C	5.96	122.33	110.40
1	A	60	VAL	N-CA-CB	-5.96	98.38	111.50
1	A	244	ALA	O-C-N	5.96	132.23	122.70
1	A	141	TRP	NE1-CE2-CD2	-5.95	101.36	107.30
1	A	80	ILE	CB-CA-C	5.93	123.45	111.60
1	A	169	LYS	N-CA-C	-5.92	95.01	111.00
1	A	176	ILE	N-CA-CB	-5.92	97.18	110.80
1	A	201	CYS	CA-C-N	-5.91	104.19	117.20
1	A	43	GLY	CA-C-N	5.91	128.01	116.20
1	A	136	CYS	C-N-CA	-5.91	106.93	121.70
1	A	222	THR	CA-C-O	5.89	132.48	120.10
1	A	195	SER	C-N-CA	5.88	134.64	122.30
1	A	129	ASP	O-C-N	5.87	132.09	122.70
1	A	16	ILE	N-CA-CB	-5.87	97.30	110.80
1	A	192	MET	N-CA-CB	5.87	121.16	110.60
1	A	228	TYR	CG-CD2-CE2	-5.86	116.61	121.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	7	GLN	N-CA-CB	-5.84	100.08	110.60
1	A	107	LYS	CA-CB-CG	5.84	126.25	113.40
1	A	33	LEU	CB-CA-C	5.84	121.29	110.20
1	A	207	TRP	CA-C-N	-5.83	104.36	117.20
1	A	29	TRP	CZ3-CH2-CZ2	5.83	128.59	121.60
1	A	108	LEU	N-CA-CB	-5.82	98.76	110.40
1	A	51	TRP	CH2-CZ2-CE2	5.82	123.22	117.40
1	A	27	TRP	NE1-CE2-CD2	5.80	113.10	107.30
1	A	124	PRO	CA-C-N	-5.79	104.46	117.20
1	A	210	VAL	CA-CB-CG1	-5.79	102.22	110.90
1	A	170	LYS	CD-CE-NZ	-5.76	98.46	111.70
1	A	237	TRP	CG-CD1-NE1	-5.75	104.35	110.10
1	A	170	LYS	N-CA-CB	-5.74	100.26	110.60
1	A	49	GLU	OE1-CD-OE2	5.74	130.18	123.30
1	A	206	ALA	N-CA-C	-5.72	95.56	111.00
1	A	203	LYS	CA-CB-CG	-5.70	100.86	113.40
1	A	208	THR	N-CA-CB	-5.69	99.49	110.30
1	A	51	TRP	O-C-N	5.68	131.79	122.70
1	A	129	ASP	CA-C-N	-5.68	104.71	117.20
1	A	89	PHE	CD1-CG-CD2	5.68	125.68	118.30
1	A	208	THR	CA-CB-OG1	5.67	120.91	109.00
1	A	179	ALA	CA-C-O	-5.67	108.20	120.10
1	A	111	ALA	CA-C-N	-5.66	104.74	117.20
1	A	212	ILE	CA-CB-CG1	5.66	121.75	111.00
1	A	108	LEU	CB-CA-C	5.65	120.93	110.20
1	A	230	ARG	N-CA-CB	-5.64	100.44	110.60
1	A	61	THR	O-C-N	5.64	131.73	122.70
1	A	17	VAL	O-C-N	-5.63	113.69	122.70
1	A	114	PHE	CG-CD1-CE1	5.63	126.99	120.80
1	A	49	GLU	CB-CG-CD	-5.61	99.05	114.20
1	A	130	PHE	CG-CD1-CE1	5.61	126.97	120.80
1	A	23	VAL	CA-CB-CG2	5.60	119.31	110.90
1	A	58	CYS	CB-CA-C	-5.60	99.20	110.40
1	A	49	GLU	CA-C-N	-5.58	104.91	117.20
1	A	114	PHE	CB-CG-CD2	-5.58	116.89	120.80
1	A	130	PHE	O-C-N	5.58	131.62	122.70
1	A	61	THR	C-N-CA	-5.57	107.76	121.70
1	A	155	LEU	CB-CA-C	-5.57	99.62	110.20
1	A	218	SER	CA-C-O	5.56	131.77	120.10
1	A	99	ILE	O-C-N	-5.55	113.81	122.70
1	A	21	GLU	CG-CD-OE2	5.55	129.40	118.30
1	A	13	LEU	C-N-CA	5.54	135.55	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	202	LYS	CD-CE-NZ	-5.53	98.98	111.70
1	A	93	LYS	N-CA-C	-5.53	96.08	111.00
1	A	104	THR	O-C-N	5.53	131.54	122.70
1	A	67	VAL	C-N-CA	-5.52	107.89	121.70
1	A	97	LEU	N-CA-C	-5.52	96.10	111.00
1	A	202	LYS	C-N-CA	5.50	135.46	121.70
1	A	245	ASN	CB-CA-C	5.50	121.40	110.40
1	A	97	LEU	N-CA-CB	-5.50	99.40	110.40
1	A	44	GLY	O-C-N	5.48	131.47	122.70
1	A	52	VAL	CB-CA-C	5.47	121.80	111.40
1	A	138	THR	N-CA-C	-5.47	96.24	111.00
1	A	225	PRO	N-CA-CB	5.46	109.85	103.30
1	A	61	THR	CA-C-N	-5.46	105.19	117.20
1	A	13	LEU	O-C-N	-5.46	113.97	122.70
1	A	27	TRP	CE3-CZ3-CH2	5.44	127.19	121.20
1	A	192	MET	CA-C-O	5.44	131.52	120.10
1	A	54	THR	CA-CB-OG1	5.40	120.34	109.00
1	A	31	VAL	C-N-CA	5.39	135.19	121.70
1	A	130	PHE	CA-C-O	5.39	131.41	120.10
1	A	89	PHE	CE1-CZ-CE2	5.38	129.69	120.00
1	A	218	SER	C-N-CA	5.38	135.14	121.70
1	A	107	LYS	CA-C-O	-5.38	108.81	120.10
1	A	237	TRP	NE1-CE2-CD2	-5.37	101.93	107.30
1	A	242	LEU	N-CA-CB	5.37	121.14	110.40
1	A	82	LYS	N-CA-C	-5.36	96.52	111.00
1	A	158	ALA	CA-C-O	-5.36	108.84	120.10
1	A	231	VAL	CA-CB-CG2	5.35	118.92	110.90
1	A	215	TRP	CE3-CZ3-CH2	-5.34	115.33	121.20
1	A	23	VAL	CB-CA-C	-5.33	101.27	111.40
1	A	23	VAL	CA-CB-CG1	-5.33	102.91	110.90
1	A	39	PHE	CB-CG-CD2	-5.31	117.08	120.80
1	A	171	TYR	CG-CD2-CE2	-5.31	117.05	121.30
1	A	207	TRP	CD1-NE1-CE2	5.30	113.77	109.00
1	A	10	LEU	CB-CG-CD2	5.29	120.00	111.00
1	A	43	GLY	CA-C-O	-5.28	111.09	120.60
1	A	189	SER	CA-C-O	5.28	131.20	120.10
1	A	207	TRP	CE2-CD2-CG	5.27	111.52	107.30
1	A	244	ALA	N-CA-C	5.26	125.21	111.00
1	A	167	ASN	CB-CG-ND2	-5.26	104.08	116.70
1	A	178	ASP	CB-CA-C	-5.25	99.89	110.40
1	A	7	GLN	CA-C-O	5.24	131.11	120.10
1	A	232	THR	CB-CA-C	5.24	125.74	111.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	200	VAL	CA-C-O	5.22	131.06	120.10
1	A	57	HIS	O-C-N	-5.22	114.35	122.70
1	A	98	THR	CA-CB-OG1	5.22	119.95	109.00
1	A	205	GLY	O-C-N	5.21	131.03	122.70
1	A	138	THR	CA-C-N	-5.20	105.76	117.20
1	A	52	VAL	CA-C-N	-5.19	105.78	117.20
1	A	23	VAL	N-CA-CB	-5.19	100.09	111.50
1	A	241	THR	CA-CB-CG2	-5.18	105.14	112.40
1	A	135	THR	N-CA-CB	-5.17	100.47	110.30
1	A	65	VAL	N-CA-CB	-5.17	100.13	111.50
1	A	93	LYS	CA-C-N	-5.13	105.91	117.20
1	A	191	CYS	CB-CA-C	-5.12	100.16	110.40
1	A	6	ILE	O-C-N	-5.12	114.51	122.70
1	A	54	THR	CA-C-O	-5.10	109.39	120.10
1	A	194	ASP	CB-CA-C	5.09	120.57	110.40
1	A	230	ARG	NE-CZ-NH2	5.08	122.84	120.30
1	A	53	VAL	N-CA-C	-5.06	97.34	111.00
1	A	199	LEU	CB-CA-C	5.06	119.81	110.20
1	A	174	THR	CA-CB-CG2	-5.05	105.33	112.40
1	A	211	GLY	N-CA-C	-5.02	100.55	113.10
1	A	49	GLU	N-CA-CB	-5.01	101.58	110.60
1	A	86	ALA	CA-C-O	-5.01	109.58	120.10
1	A	166	THR	CA-CB-OG1	5.01	119.52	109.00
1	A	195	SER	O-C-N	-5.00	114.69	123.20
1	A	224	THR	CA-CB-CG2	-5.00	105.39	112.40

There are no chirality outliers.

All (9) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	154	ARG	Sidechain
1	A	160	LEU	Mainchain
1	A	179	ALA	Mainchain
1	A	242	LEU	Mainchain
1	A	29	TRP	Mainchain
1	A	32	SER	Mainchain
1	A	43	GLY	Mainchain
1	A	53	VAL	Mainchain
1	A	9	VAL	Mainchain

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	1643	0	1590	330	52
All	All	1643	0	1590	330	52

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 102.

All (330) 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:106:LEU:CB	1:A:106:LEU:CA	1.77	1.59
1:A:160:LEU:N	1:A:160:LEU:CA	1.68	1.53
1:A:9:VAL:N	1:A:9:VAL:CA	1.69	1.52
1:A:128:ASP:CG	1:A:128:ASP:CB	1.78	1.51
1:A:43:GLY:C	1:A:43:GLY:CA	1.76	1.47
1:A:125:SER:C	1:A:125:SER:CA	1.81	1.47
1:A:174:THR:O	1:A:177:LYS:NZ	1.58	1.32
1:A:54:THR:OG1	1:A:196:GLY:HA3	1.28	1.28
1:A:25:GLY:O	1:A:28:PRO:HD3	1.32	1.26
1:A:23:VAL:O	1:A:26:SER:CB	1.86	1.23
1:A:162:LEU:HD13	1:A:181:ILE:HD11	1.24	1.13
1:A:35:ASP:OD1	1:A:39:PHE:HB3	1.50	1.11
1:A:34:GLN:OE1	1:A:38:GLY:HA2	1.52	1.08
1:A:136:CYS:HB3	1:A:200:VAL:O	1.50	1.08
1:A:20:GLU:O	1:A:156:GLN:HG3	1.53	1.08
1:A:23:VAL:O	1:A:26:SER:HB2	0.93	1.08
1:A:165:ASN:O	1:A:169:LYS:HE3	1.53	1.08
1:A:20:GLU:C	1:A:156:GLN:HG3	1.74	1.06
1:A:224:THR:CG2	1:A:225:PRO:HD2	1.86	1.05
1:A:239:GLN:HA	1:A:239:GLN:OE1	1.49	1.05
1:A:2:GLY:O	1:A:4:PRO:HD3	1.56	1.05
1:A:224:THR:HG22	1:A:225:PRO:HD2	1.39	1.00
1:A:243:ALA:CA	1:A:244:ALA:N	2.25	1.00
1:A:165:ASN:O	1:A:169:LYS:HB2	1.63	0.99
1:A:11:SER:OG	1:A:20:GLU:OE1	1.80	0.99
1:A:95:ASN:O	1:A:99:ILE:N	1.96	0.97

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:87:LYS:HG2	1:A:88:VAL:H	1.28	0.97
1:A:131:ALA:HB3	1:A:134:THR:OG1	1.64	0.97
1:A:46:LEU:HD23	1:A:52:VAL:CG2	1.95	0.96
1:A:159:SER:C	1:A:160:LEU:CA	2.33	0.96
1:A:54:THR:OG1	1:A:196:GLY:CA	2.13	0.95
1:A:34:GLN:HA	1:A:39:PHE:O	1.66	0.94
1:A:20:GLU:O	1:A:156:GLN:CG	2.16	0.94
1:A:172:TRP:HB2	1:A:176:ILE:CD1	1.98	0.93
1:A:16:ILE:HG22	1:A:17:VAL:HG23	1.51	0.92
1:A:27:TRP:CG	1:A:139:THR:HG21	2.03	0.92
1:A:171:TYR:CD2	1:A:225:PRO:HG3	2.05	0.91
1:A:34:GLN:HE22	1:A:82:LYS:HE3	1.35	0.91
1:A:46:LEU:HD23	1:A:52:VAL:HG22	1.53	0.91
1:A:16:ILE:CG2	1:A:17:VAL:HG23	2.00	0.91
1:A:87:LYS:HG2	1:A:88:VAL:N	1.83	0.90
1:A:23:VAL:C	1:A:26:SER:HB2	1.92	0.90
1:A:20:GLU:C	1:A:156:GLN:CG	2.40	0.90
1:A:15:ARG:O	1:A:188:VAL:HB	1.71	0.89
1:A:34:GLN:NE2	1:A:82:LYS:HE3	1.90	0.86
1:A:9:VAL:N	1:A:9:VAL:CB	2.38	0.86
1:A:189:SER:O	1:A:192:MET:CE	2.23	0.85
1:A:22:ALA:HB2	1:A:157:GLN:OE1	1.76	0.84
1:A:27:TRP:CB	1:A:139:THR:HG21	2.06	0.84
1:A:177:LYS:O	1:A:178:ASP:C	2.13	0.84
1:A:65:VAL:HG11	1:A:82:LYS:HG2	1.57	0.84
1:A:25:GLY:O	1:A:28:PRO:CD	2.22	0.83
1:A:65:VAL:CG1	1:A:82:LYS:HG2	2.10	0.82
1:A:108:LEU:N	1:A:108:LEU:HD12	1.95	0.81
1:A:26:SER:O	1:A:28:PRO:HD2	1.80	0.81
1:A:134:THR:O	1:A:161:PRO:HA	1.81	0.81
1:A:172:TRP:HB2	1:A:176:ILE:HD13	1.62	0.81
1:A:54:THR:HG1	1:A:196:GLY:HA3	1.46	0.81
1:A:100:ASN:ND2	1:A:177:LYS:HB2	1.96	0.80
1:A:203:LYS:HG3	1:A:204:ASN:OD1	1.80	0.80
1:A:44:GLY:HA2	1:A:196:GLY:O	1.81	0.79
1:A:164:SER:HB3	1:A:167:ASN:HB2	1.65	0.79
1:A:10:LEU:N	1:A:10:LEU:HD23	1.97	0.79
1:A:11:SER:O	1:A:14:SER:HB2	1.82	0.79
1:A:2:GLY:C	1:A:4:PRO:HD3	2.02	0.79
1:A:43:GLY:C	1:A:43:GLY:N	2.35	0.78
1:A:106:LEU:CB	1:A:106:LEU:C	2.52	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:35:ASP:CG	1:A:39:PHE:HB3	2.03	0.78
1:A:47:ILE:CA	1:A:120:ALA:HB1	2.15	0.77
1:A:172:TRP:HB2	1:A:176:ILE:HD11	1.67	0.76
1:A:235:VAL:O	1:A:239:GLN:HG2	1.85	0.76
1:A:224:THR:HG23	1:A:225:PRO:HD2	1.67	0.76
1:A:61:THR:OG1	1:A:62:THR:N	2.18	0.76
1:A:200:VAL:HG13	1:A:207:TRP:HB3	1.66	0.75
1:A:175:LYS:O	1:A:180:MET:SD	2.44	0.75
1:A:159:SER:C	1:A:160:LEU:HA	2.05	0.75
1:A:6:ILE:HD11	1:A:116:GLN:HB3	1.69	0.75
1:A:174:THR:O	1:A:177:LYS:CE	2.36	0.74
1:A:224:THR:CG2	1:A:225:PRO:CD	2.65	0.74
1:A:47:ILE:C	1:A:120:ALA:HB1	2.07	0.74
1:A:160:LEU:N	1:A:160:LEU:HA	1.98	0.74
1:A:185:ALA:HB2	1:A:225:PRO:N	2.03	0.73
1:A:224:THR:HG22	1:A:225:PRO:CD	2.17	0.73
1:A:9:VAL:N	1:A:9:VAL:C	2.41	0.73
1:A:202:LYS:O	1:A:203:LYS:HB2	1.89	0.73
1:A:49:GLU:HA	1:A:112:ALA:HB3	1.70	0.73
1:A:91:ASN:HB2	1:A:237:TRP:CZ2	2.24	0.73
1:A:172:TRP:CB	1:A:176:ILE:CD1	2.66	0.73
1:A:162:LEU:HD13	1:A:181:ILE:CD1	2.13	0.72
1:A:189:SER:O	1:A:192:MET:HE1	1.89	0.72
1:A:2:GLY:O	1:A:4:PRO:CD	2.37	0.72
1:A:164:SER:HB3	1:A:167:ASN:H	1.53	0.72
1:A:160:LEU:HB3	1:A:184:GLY:HA2	1.71	0.71
1:A:176:ILE:C	1:A:177:LYS:HD3	2.09	0.71
1:A:127:SER:O	1:A:128:ASP:C	2.23	0.71
1:A:35:ASP:OD1	1:A:39:PHE:CB	2.36	0.71
1:A:7:GLN:O	1:A:9:VAL:HG23	1.91	0.70
1:A:26:SER:C	1:A:28:PRO:CD	2.60	0.70
1:A:87:LYS:CG	1:A:88:VAL:H	2.02	0.70
1:A:218:SER:C	1:A:220:CYS:H	1.93	0.70
1:A:85:ILE:HG21	1:A:88:VAL:CG2	2.21	0.70
1:A:30:GLN:NE2	1:A:198:PRO:CD	2.55	0.70
1:A:52:VAL:O	1:A:106:LEU:N	2.25	0.69
1:A:46:LEU:CD2	1:A:52:VAL:CG2	2.70	0.68
1:A:136:CYS:CB	1:A:200:VAL:O	2.36	0.68
1:A:164:SER:HB3	1:A:167:ASN:CB	2.23	0.68
1:A:164:SER:CB	1:A:167:ASN:HB2	2.24	0.68
1:A:199:LEU:HD23	1:A:211:GLY:HA3	1.74	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:92:SER:C	1:A:94:TYR:H	1.97	0.68
1:A:178:ASP:OD2	1:A:179:ALA:HB2	1.94	0.67
1:A:51:TRP:HZ2	1:A:245:ASN:O	1.76	0.67
1:A:181:ILE:HG23	1:A:181:ILE:O	1.93	0.67
1:A:53:VAL:HG13	1:A:53:VAL:O	1.94	0.67
1:A:165:ASN:O	1:A:169:LYS:CE	2.38	0.67
1:A:228:TYR:CD1	1:A:228:TYR:N	2.62	0.66
1:A:98:THR:O	1:A:99:ILE:HB	1.94	0.66
1:A:8:PRO:HA	1:A:26:SER:OG	1.96	0.66
1:A:6:ILE:N	1:A:6:ILE:HD12	2.11	0.66
1:A:16:ILE:HG23	1:A:17:VAL:HG23	1.77	0.66
1:A:24:PRO:C	1:A:26:SER:H	1.99	0.66
1:A:239:GLN:OE1	1:A:239:GLN:CA	2.35	0.66
1:A:10:LEU:N	1:A:10:LEU:CD2	2.59	0.65
1:A:171:TYR:CD1	1:A:225:PRO:HD3	2.31	0.65
1:A:45:SER:O	1:A:53:VAL:HG12	1.95	0.65
1:A:27:TRP:CG	1:A:139:THR:CG2	2.80	0.65
1:A:89:PHE:N	1:A:89:PHE:CD2	2.60	0.65
1:A:8:PRO:HB2	1:A:10:LEU:HD21	1.79	0.65
1:A:125:SER:CA	1:A:126:ALA:N	2.57	0.65
1:A:9:VAL:HB	1:A:23:VAL:HG21	1.79	0.64
1:A:46:LEU:HD23	1:A:52:VAL:HG23	1.77	0.64
1:A:172:TRP:CB	1:A:176:ILE:HD11	2.24	0.64
1:A:172:TRP:CZ3	1:A:215:TRP:NE1	2.65	0.64
1:A:162:LEU:CD1	1:A:181:ILE:HD11	2.15	0.64
1:A:203:LYS:C	1:A:205:GLY:N	2.46	0.64
1:A:201:CYS:SG	1:A:210:VAL:HG21	2.38	0.64
1:A:218:SER:C	1:A:220:CYS:N	2.51	0.64
1:A:244:ALA:HB1	1:A:245:ASN:OD1	1.97	0.63
1:A:21:GLU:N	1:A:156:GLN:HG3	2.12	0.63
1:A:66:VAL:HG21	1:A:108:LEU:HD21	1.80	0.63
1:A:67:VAL:HG22	1:A:82:LYS:HG3	1.80	0.63
1:A:125:SER:CA	1:A:125:SER:O	2.38	0.63
1:A:33:LEU:N	1:A:42:CYS:O	2.31	0.62
1:A:53:VAL:O	1:A:53:VAL:CG1	2.44	0.62
1:A:108:LEU:N	1:A:108:LEU:CD1	2.60	0.62
1:A:52:VAL:HB	1:A:106:LEU:HG	1.82	0.62
1:A:27:TRP:CD1	1:A:139:THR:CG2	2.82	0.62
1:A:16:ILE:O	1:A:19:GLY:HA2	1.98	0.62
1:A:26:SER:C	1:A:28:PRO:HD2	2.19	0.62
1:A:47:ILE:C	1:A:120:ALA:CB	2.68	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:106:LEU:CB	1:A:106:LEU:N	2.58	0.62
1:A:47:ILE:HA	1:A:120:ALA:HB1	1.79	0.62
1:A:233:ALA:C	1:A:234:LEU:HG	2.20	0.62
1:A:127:SER:O	1:A:128:ASP:O	2.18	0.61
1:A:159:SER:O	1:A:160:LEU:HA	2.01	0.61
1:A:171:TYR:CG	1:A:225:PRO:HG3	2.35	0.61
1:A:178:ASP:CG	1:A:179:ALA:N	2.50	0.61
1:A:79:LYS:HD3	1:A:117:THR:HG21	1.83	0.61
1:A:236:ASN:HA	1:A:239:GLN:HB2	1.82	0.61
1:A:91:ASN:OD1	1:A:91:ASN:C	2.39	0.61
1:A:33:LEU:O	1:A:41:PHE:CD2	2.54	0.60
1:A:217:SER:O	1:A:220:CYS:HA	2.01	0.60
1:A:86:ALA:HB2	1:A:109:SER:HA	1.84	0.60
1:A:244:ALA:HB3	1:A:245:ASN:ND2	2.16	0.60
1:A:52:VAL:O	1:A:105:LEU:HA	2.02	0.59
1:A:125:SER:C	1:A:125:SER:N	2.55	0.59
1:A:140:GLY:CA	1:A:155:LEU:HD12	2.32	0.59
1:A:191:CYS:C	1:A:193:GLY:H	1.98	0.59
1:A:25:GLY:C	1:A:28:PRO:HD3	2.20	0.59
1:A:79:LYS:O	1:A:79:LYS:HG2	2.00	0.59
1:A:177:LYS:N	1:A:177:LYS:CD	2.65	0.59
1:A:230:ARG:NH1	1:A:230:ARG:HG3	2.18	0.59
1:A:77:SER:C	1:A:78:GLU:CG	2.71	0.59
1:A:178:ASP:OD2	1:A:179:ALA:N	2.35	0.59
1:A:203:LYS:CG	1:A:204:ASN:OD1	2.50	0.58
1:A:136:CYS:HB3	1:A:200:VAL:C	2.21	0.58
1:A:166:THR:HA	1:A:169:LYS:HB2	1.86	0.58
1:A:191:CYS:C	1:A:193:GLY:N	2.48	0.58
1:A:39:PHE:HE2	1:A:41:PHE:HB3	1.68	0.58
1:A:218:SER:O	1:A:220:CYS:N	2.38	0.57
1:A:27:TRP:HB2	1:A:139:THR:HG21	1.85	0.57
1:A:87:LYS:HD3	1:A:89:PHE:CE1	2.39	0.57
1:A:201:CYS:O	1:A:207:TRP:HA	2.03	0.57
1:A:100:ASN:HD22	1:A:177:LYS:HB2	1.67	0.57
1:A:107:LYS:C	1:A:108:LEU:HD12	2.24	0.57
1:A:185:ALA:HB2	1:A:224:THR:C	2.24	0.57
1:A:9:VAL:HG12	1:A:9:VAL:O	2.05	0.56
1:A:27:TRP:CD1	1:A:139:THR:HG21	2.40	0.56
1:A:41:PHE:HE1	1:A:58:CYS:O	1.88	0.56
1:A:221:SER:C	1:A:223:SER:H	1.91	0.56
1:A:95:ASN:O	1:A:99:ILE:CA	2.54	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:27:TRP:N	1:A:28:PRO:CD	2.69	0.56
1:A:168:CYS:O	1:A:169:LYS:C	2.44	0.56
1:A:235:VAL:HG13	1:A:236:ASN:N	2.20	0.56
1:A:230:ARG:HH11	1:A:230:ARG:CG	2.19	0.56
1:A:34:GLN:HE22	1:A:82:LYS:CE	2.14	0.56
1:A:66:VAL:HB	1:A:83:LEU:HB2	1.88	0.56
1:A:137:VAL:HG12	1:A:138:THR:N	2.21	0.56
1:A:199:LEU:HD22	1:A:228:TYR:CD2	2.41	0.55
1:A:30:GLN:NE2	1:A:198:PRO:HD2	2.21	0.55
1:A:177:LYS:HD3	1:A:177:LYS:N	2.21	0.55
1:A:172:TRP:CE3	1:A:215:TRP:CZ2	2.95	0.55
1:A:87:LYS:CG	1:A:88:VAL:N	2.60	0.54
1:A:127:SER:C	1:A:128:ASP:O	2.45	0.54
1:A:244:ALA:HB3	1:A:245:ASN:CG	2.28	0.54
1:A:34:GLN:CD	1:A:38:GLY:HA2	2.26	0.54
1:A:47:ILE:O	1:A:120:ALA:CB	2.56	0.54
1:A:35:ASP:N	1:A:39:PHE:O	2.40	0.54
1:A:77:SER:C	1:A:78:GLU:HG2	2.28	0.54
1:A:20:GLU:C	1:A:156:GLN:HG2	2.28	0.54
1:A:26:SER:O	1:A:28:PRO:CD	2.53	0.54
1:A:27:TRP:CD1	1:A:139:THR:HG22	2.43	0.54
1:A:83:LEU:CD2	1:A:110:THR:O	2.56	0.54
1:A:171:TYR:CG	1:A:225:PRO:CG	2.92	0.53
1:A:235:VAL:CG1	1:A:236:ASN:N	2.71	0.53
1:A:43:GLY:CA	1:A:43:GLY:O	2.51	0.53
1:A:95:ASN:OD1	1:A:98:THR:OG1	2.25	0.53
1:A:93:LYS:O	1:A:101:ASN:HB2	2.09	0.53
1:A:131:ALA:HB3	1:A:134:THR:HG1	1.73	0.53
1:A:8:PRO:HB3	1:A:27:TRP:CZ2	2.44	0.53
1:A:26:SER:C	1:A:28:PRO:HD3	2.29	0.53
1:A:9:VAL:N	1:A:9:VAL:CG2	2.73	0.52
1:A:49:GLU:O	1:A:112:ALA:N	2.39	0.52
1:A:30:GLN:OE1	1:A:155:LEU:HD11	2.09	0.52
1:A:90:LYS:HA	1:A:104:THR:OG1	2.10	0.52
1:A:189:SER:O	1:A:192:MET:HE3	2.08	0.52
1:A:83:LEU:HB3	1:A:108:LEU:HD23	1.90	0.51
1:A:30:GLN:HE22	1:A:198:PRO:HD2	1.76	0.51
1:A:65:VAL:HG12	1:A:82:LYS:HG2	1.89	0.51
1:A:33:LEU:HD21	1:A:106:LEU:HD11	1.91	0.51
1:A:124:PRO:O	1:A:235:VAL:HG21	2.11	0.51
1:A:125:SER:C	1:A:125:SER:CB	2.71	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:175:LYS:O	1:A:180:MET:CE	2.59	0.51
1:A:85:ILE:HG21	1:A:88:VAL:HG23	1.92	0.50
1:A:3:VAL:HG12	1:A:3:VAL:O	2.11	0.50
1:A:181:ILE:O	1:A:181:ILE:CG2	2.59	0.50
1:A:230:ARG:HG3	1:A:230:ARG:HH11	1.76	0.50
1:A:125:SER:O	1:A:125:SER:N	2.44	0.50
1:A:182:CYS:SG	1:A:227:VAL:HG22	2.52	0.50
1:A:9:VAL:HB	1:A:23:VAL:CG2	2.41	0.49
1:A:39:PHE:CE2	1:A:41:PHE:HB3	2.47	0.49
1:A:60:VAL:O	1:A:60:VAL:HG13	2.12	0.49
1:A:66:VAL:HG21	1:A:108:LEU:CD2	2.41	0.49
1:A:200:VAL:HG22	1:A:209:LEU:HA	1.93	0.49
1:A:39:PHE:CD2	1:A:39:PHE:C	2.86	0.49
1:A:140:GLY:C	1:A:155:LEU:HD12	2.33	0.48
1:A:6:ILE:HD12	1:A:6:ILE:H	1.78	0.48
1:A:24:PRO:C	1:A:26:SER:N	2.65	0.48
1:A:199:LEU:C	1:A:200:VAL:HG23	2.34	0.48
1:A:66:VAL:O	1:A:83:LEU:N	2.40	0.48
1:A:171:TYR:CD1	1:A:225:PRO:CD	2.96	0.48
1:A:90:LYS:HG2	1:A:91:ASN:N	2.29	0.48
1:A:230:ARG:NH1	1:A:230:ARG:CG	2.75	0.48
1:A:197:GLY:O	1:A:213:VAL:HG23	2.14	0.47
1:A:244:ALA:CB	1:A:245:ASN:OD1	2.61	0.47
1:A:83:LEU:HD21	1:A:110:THR:O	2.15	0.47
1:A:91:ASN:OD1	1:A:93:LYS:N	2.48	0.47
1:A:199:LEU:HD22	1:A:228:TYR:CG	2.50	0.47
1:A:47:ILE:O	1:A:120:ALA:HB1	2.13	0.46
1:A:51:TRP:CE3	1:A:105:LEU:HD22	2.50	0.46
1:A:14:SER:HB3	1:A:159:SER:HB2	1.97	0.46
1:A:244:ALA:CB	1:A:245:ASN:CG	2.84	0.46
1:A:95:ASN:OD1	1:A:98:THR:N	2.48	0.46
1:A:124:PRO:CG	1:A:231:VAL:HG12	2.46	0.46
1:A:22:ALA:HB1	1:A:26:SER:HB3	1.97	0.45
1:A:85:ILE:CG2	1:A:88:VAL:HG23	2.47	0.45
1:A:91:ASN:HB2	1:A:237:TRP:CE2	2.50	0.45
1:A:188:VAL:HG22	1:A:189:SER:N	2.32	0.45
1:A:7:GLN:HA	1:A:8:PRO:HD3	1.42	0.45
1:A:100:ASN:HD21	1:A:177:LYS:HB2	1.77	0.45
1:A:22:ALA:HB1	1:A:26:SER:CB	2.47	0.45
1:A:29:TRP:HB3	1:A:119:SER:O	2.17	0.45
1:A:103:ILE:HG21	1:A:234:LEU:HD13	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:213:VAL:CG1	1:A:214:SER:N	2.75	0.45
1:A:221:SER:C	1:A:223:SER:N	2.55	0.45
1:A:31:VAL:HG23	1:A:33:LEU:CD1	2.47	0.45
1:A:129:ASP:O	1:A:130:PHE:CG	2.70	0.45
1:A:79:LYS:O	1:A:79:LYS:CG	2.65	0.44
1:A:56:ALA:O	1:A:59:GLY:N	2.43	0.44
1:A:139:THR:OG1	1:A:198:PRO:HG2	2.16	0.44
1:A:138:THR:O	1:A:157:GLN:HA	2.18	0.44
1:A:200:VAL:CG1	1:A:207:TRP:HB3	2.40	0.44
1:A:165:ASN:HA	1:A:168:CYS:HB3	1.99	0.44
1:A:230:ARG:O	1:A:231:VAL:C	2.56	0.44
1:A:9:VAL:CB	1:A:23:VAL:HG21	2.45	0.44
1:A:99:ILE:HG22	1:A:99:ILE:O	2.18	0.44
1:A:98:THR:O	1:A:99:ILE:CB	2.56	0.44
1:A:47:ILE:HG13	1:A:48:ASN:HD22	1.82	0.44
1:A:51:TRP:CZ3	1:A:89:PHE:CE2	3.06	0.43
1:A:172:TRP:HB3	1:A:176:ILE:CD1	2.48	0.43
1:A:20:GLU:O	1:A:157:GLN:N	2.37	0.43
1:A:23:VAL:HA	1:A:24:PRO:HD2	1.58	0.43
1:A:61:THR:HG23	1:A:63:SER:H	1.84	0.43
1:A:20:GLU:O	1:A:156:GLN:HG2	2.09	0.43
1:A:91:ASN:O	1:A:94:TYR:N	2.51	0.43
1:A:160:LEU:HD22	1:A:184:GLY:HA3	2.00	0.43
1:A:171:TYR:CE1	1:A:225:PRO:HD3	2.54	0.43
1:A:224:THR:HA	1:A:225:PRO:HD3	1.89	0.43
1:A:21:GLU:HB2	1:A:156:GLN:NE2	2.34	0.43
1:A:121:VAL:HG22	1:A:122:CYS:H	1.84	0.42
1:A:9:VAL:N	1:A:9:VAL:HG23	2.34	0.42
1:A:51:TRP:CZ2	1:A:245:ASN:O	2.66	0.42
1:A:187:GLY:O	1:A:222:THR:HB	2.18	0.42
1:A:188:VAL:HG22	1:A:189:SER:H	1.84	0.42
1:A:23:VAL:O	1:A:24:PRO:C	2.58	0.42
1:A:29:TRP:CD2	1:A:121:VAL:HB	2.54	0.42
1:A:65:VAL:HG11	1:A:82:LYS:CG	2.39	0.42
1:A:129:ASP:C	1:A:130:PHE:CD1	2.92	0.42
1:A:21:GLU:HA	1:A:156:GLN:HA	2.01	0.42
1:A:166:THR:HA	1:A:169:LYS:CB	2.50	0.42
1:A:183:ALA:HB3	1:A:228:TYR:CE1	2.55	0.42
1:A:230:ARG:O	1:A:233:ALA:N	2.35	0.42
1:A:28:PRO:O	1:A:118:VAL:HA	2.19	0.42
1:A:13:LEU:HD23	1:A:13:LEU:HA	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:167:ASN:O	1:A:170:LYS:HB3	2.20	0.42
1:A:235:VAL:HG22	1:A:239:GLN:HG2	2.01	0.41
1:A:175:LYS:H	1:A:175:LYS:HG3	1.52	0.41
1:A:30:GLN:HE21	1:A:198:PRO:HD3	1.86	0.41
1:A:106:LEU:HB2	1:A:108:LEU:HD11	2.02	0.41
1:A:215:TRP:CD1	1:A:216:GLY:N	2.88	0.41
1:A:31:VAL:CG1	1:A:46:LEU:HG	2.51	0.41
1:A:172:TRP:CE3	1:A:215:TRP:HZ2	2.37	0.41
1:A:85:ILE:HD11	1:A:106:LEU:HD13	2.02	0.41
1:A:95:ASN:CG	1:A:98:THR:HG1	2.25	0.41
1:A:21:GLU:CA	1:A:156:GLN:HG3	2.50	0.40
1:A:13:LEU:O	1:A:16:ILE:N	2.49	0.40
1:A:39:PHE:CE2	1:A:40:HIS:O	2.75	0.40
1:A:221:SER:HB3	1:A:224:THR:OG1	2.21	0.40
1:A:16:ILE:HG22	1:A:17:VAL:CG2	2.37	0.40
1:A:169:LYS:O	1:A:171:TYR:N	2.54	0.40
1:A:6:ILE:CD1	1:A:116:GLN:O	2.69	0.40

All (52) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:36:LYS:C	1:A:174:THR:OG1[3_655]	0.73	1.47
1:A:78:GLU:OE2	1:A:99:ILE:CA[3_655]	0.89	1.31
1:A:36:LYS:O	1:A:174:THR:CA[3_655]	1.02	1.18
1:A:78:GLU:N	1:A:94:TYR:CE2[3_655]	1.05	1.15
1:A:65:VAL:CG1	1:A:175:LYS:NZ[3_655]	1.23	0.97
1:A:36:LYS:CA	1:A:174:THR:CB[3_655]	1.25	0.95
1:A:37:THR:N	1:A:174:THR:OG1[3_655]	1.26	0.94
1:A:78:GLU:CD	1:A:99:ILE:CA[3_655]	1.29	0.91
1:A:80:ILE:CD1	1:A:97:LEU:CD2[3_655]	1.30	0.90
1:A:80:ILE:CD1	1:A:97:LEU:CG[3_655]	1.33	0.87
1:A:36:LYS:C	1:A:174:THR:CB[3_655]	1.34	0.86
1:A:36:LYS:O	1:A:174:THR:CB[3_655]	1.35	0.85
1:A:78:GLU:OE1	1:A:99:ILE:C[3_655]	1.36	0.84
1:A:78:GLU:OE2	1:A:99:ILE:N[3_655]	1.41	0.79
1:A:77:SER:C	1:A:94:TYR:CD2[3_655]	1.45	0.75
1:A:36:LYS:CA	1:A:174:THR:OG1[3_655]	1.47	0.73
1:A:65:VAL:CG2	1:A:175:LYS:CE[3_655]	1.48	0.72
1:A:79:LYS:N	1:A:96:SER:OG[3_655]	1.55	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:78:GLU:OE1	1:A:99:ILE:CA[3_655]	1.62	0.58
1:A:36:LYS:O	1:A:174:THR:OG1[3_655]	1.70	0.50
1:A:80:ILE:CG2	1:A:96:SER:O[3_655]	1.73	0.47
1:A:77:SER:C	1:A:94:TYR:CG[3_655]	1.74	0.46
1:A:65:VAL:CB	1:A:175:LYS:NZ[3_655]	1.80	0.40
1:A:78:GLU:N	1:A:94:TYR:CZ[3_655]	1.84	0.36
1:A:78:GLU:OE2	1:A:99:ILE:CB[3_655]	1.84	0.36
1:A:80:ILE:CG2	1:A:96:SER:C[3_655]	1.84	0.36
1:A:78:GLU:CG	1:A:94:TYR:CE1[3_655]	1.85	0.35
1:A:65:VAL:CG2	1:A:175:LYS:NZ[3_655]	1.87	0.33
1:A:78:GLU:N	1:A:94:TYR:CD2[3_655]	1.87	0.33
1:A:77:SER:C	1:A:94:TYR:CE2[3_655]	1.88	0.32
1:A:77:SER:O	1:A:94:TYR:O[3_655]	1.89	0.31
1:A:78:GLU:C	1:A:96:SER:OG[3_655]	1.90	0.30
1:A:36:LYS:O	1:A:174:THR:C[3_655]	1.92	0.28
1:A:78:GLU:OE1	1:A:100:ASN:N[3_655]	1.92	0.28
1:A:78:GLU:CB	1:A:96:SER:CA[3_655]	1.92	0.28
1:A:80:ILE:CG2	1:A:97:LEU:N[3_655]	1.92	0.28
1:A:78:GLU:CA	1:A:96:SER:OG[3_655]	1.95	0.25
1:A:84:LYS:NZ	1:A:172:TRP:CZ3[3_655]	1.95	0.25
1:A:78:GLU:CD	1:A:99:ILE:C[3_655]	1.96	0.24
1:A:36:LYS:N	1:A:174:THR:OG1[3_655]	1.97	0.23
1:A:13:LEU:CD2	1:A:240:GLN:CB[2_564]	1.98	0.22
1:A:80:ILE:CG2	1:A:97:LEU:CA[3_655]	2.01	0.19
1:A:78:GLU:CD	1:A:99:ILE:N[3_655]	2.06	0.14
1:A:80:ILE:CB	1:A:96:SER:CB[3_655]	2.06	0.14
1:A:78:GLU:CD	1:A:95:ASN:O[3_655]	2.07	0.13
1:A:110:THR:OG1	1:A:218:SER:OG[3_655]	2.09	0.11
1:A:35:ASP:O	1:A:174:THR:OG1[3_655]	2.10	0.10
1:A:84:LYS:NZ	1:A:172:TRP:CE3[3_655]	2.10	0.10
1:A:36:LYS:C	1:A:174:THR:CA[3_655]	2.15	0.05
1:A:78:GLU:CG	1:A:94:TYR:CZ[3_655]	2.16	0.04
1:A:36:LYS:CA	1:A:174:THR:CG2[3_655]	2.17	0.03
1:A:17:VAL:CG2	1:A:243:ALA:CA[2_564]	2.19	0.01

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	222/245 (91%)	181 (82%)	30 (14%)	11 (5%)	2 2

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	111	ALA
1	A	128	ASP
1	A	178	ASP
1	A	17	VAL
1	A	28	PRO
1	A	170	LYS
1	A	218	SER
1	A	231	VAL
1	A	219	THR
1	A	24	PRO
1	A	235	VAL

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	180/200 (90%)	151 (84%)	29 (16%)	2 4

All (29) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	10	LEU
1	A	14	SER
1	A	21	GLU
1	A	26	SER
1	A	40	HIS
1	A	78	GLU

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Mol	Chain	Res	Type
1	A	89	PHE
1	A	91	ASN
1	A	106	LEU
1	A	127	SER
1	A	130	PHE
1	A	135	THR
1	A	138	THR
1	A	154	ARG
1	A	156	GLN
1	A	160	LEU
1	A	165	ASN
1	A	166	THR
1	A	169	LYS
1	A	176	ILE
1	A	180	MET
1	A	192	MET
1	A	199	LEU
1	A	203	LYS
1	A	204	ASN
1	A	215	TRP
1	A	224	THR
1	A	232	THR
1	A	239	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	156	GLN
1	A	165	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	22

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	80:ILE	C	81:GLN	N	1.20
1	A	67:VAL	C	68:ALA	N	1.19
1	A	160:LEU	C	161:PRO	N	1.19
1	A	202:LYS	C	203:LYS	N	1.19
1	A	104:THR	C	105:LEU	N	1.18
1	A	165:ASN	C	166:THR	N	1.18
1	A	175:LYS	C	176:ILE	N	1.18
1	A	191:CYS	C	192:MET	N	1.18
1	A	239:GLN	C	240:GLN	N	1.18
1	A	32:SER	C	33:LEU	N	1.17
1	A	94:TYR	C	95:ASN	N	1.17
1	A	194:ASP	C	195:SER	N	1.17
1	A	205:GLY	C	206:ALA	N	1.17
1	A	209:LEU	C	210:VAL	N	1.17
1	A	9:VAL	C	10:LEU	N	1.16
1	A	38:GLY	C	39:PHE	N	1.16
1	A	131:ALA	C	132:ALA	N	1.16
1	A	59:GLY	C	60:VAL	N	1.15
1	A	142:GLY	C	143:LEU	N	1.15
1	A	242:LEU	C	243:ALA	N	1.15

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	112:ALA	C	113:SER	N	1.13
1	A	54:THR	C	55:ALA	N	1.05

6 Fit of model and data [i](#)

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

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.