Full wwPDB NMR Structure Validation Report (i)

Dec 25, 2024 – 02:48 AM EST

PDB ID	:	2RV8
BMRB ID	:	11590
Title	:	Solution Structure of the PhoP DNA-Binding Domain from Mycobacterium tuberculosis
Authors	:	Macdonald, R.; Sarkar, D.; Amer, B.R.; Clubb, R.T.
Deposited on	:	2015-04-17

This is a Full wwPDB NMR 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/NMRValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

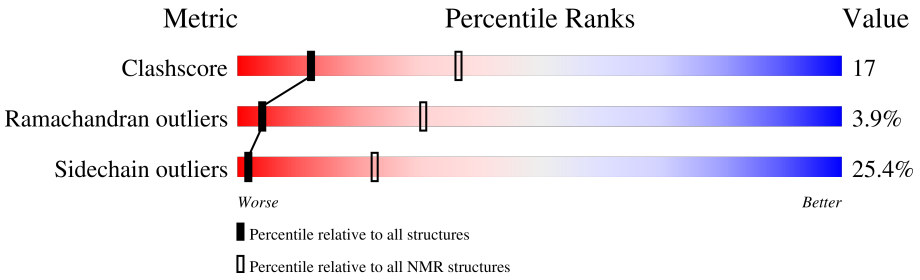
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
wwPDB-RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
wwPDB-ShiftChecker	:	v1.2
BMRB Restraints Analysis	:	v1.2
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
SOLUTION NMR

The overall completeness of chemical shifts assignment is 82%.

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)	NMR archive (#Entries)
Clashscore	210492	14027
Ramachandran outliers	207382	12486
Sidechain outliers	206894	12463

The table below summarises the geometric issues observed across the polymeric chains and their fit to the experimental data. The red, orange, yellow and green segments indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria. A cyan segment indicates the fraction of residues that are not part of the well-defined cores, and a grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Mol	Chain	Length	Quality of chain
1	A	128	42% 25% 5% 27%

2 Ensemble composition and analysis (i)

This entry contains 30 models. Model 7 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *lowest energy*.

The following residues are included in the computation of the global validation metrics.

Well-defined (core) protein residues			
Well-defined core	**Residue range (total)**	**Backbone RMSD (Å)**	**Medoid model**
1	A:149-A:205, A:210-A:245 (93)	0.59	7

Ill-defined regions of proteins are excluded from the global statistics.

Ligands and non-protein polymers are included in the analysis.

The models can be grouped into 4 clusters and 4 single-model clusters were found.

Cluster number	Models
1	3, 4, 6, 7, 10, 11, 12, 17, 18, 19, 20, 22, 27, 29
2	2, 8, 14, 21, 23, 24, 26, 28
3	15, 25
4	9, 16
Single-model clusters	1; 5; 13; 30

3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 2076 atoms, of which 1036 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called DNA-binding response regulator.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	128	2076	657	1036	195	186	2	0

There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	120	MET	-	expression tag	UNP R4MFJ2
A	121	GLY	-	expression tag	UNP R4MFJ2
A	122	SER	-	expression tag	UNP R4MFJ2
A	123	SER	-	expression tag	UNP R4MFJ2
A	124	HIS	-	expression tag	UNP R4MFJ2
A	125	HIS	-	expression tag	UNP R4MFJ2
A	126	HIS	-	expression tag	UNP R4MFJ2
A	127	HIS	-	expression tag	UNP R4MFJ2
A	128	HIS	-	expression tag	UNP R4MFJ2
A	129	HIS	-	expression tag	UNP R4MFJ2
A	130	SER	-	expression tag	UNP R4MFJ2
A	131	SER	-	expression tag	UNP R4MFJ2
A	132	GLY	-	expression tag	UNP R4MFJ2
A	133	LEU	-	expression tag	UNP R4MFJ2
A	134	VAL	-	expression tag	UNP R4MFJ2
A	135	PRO	-	expression tag	UNP R4MFJ2
A	136	ARG	-	expression tag	UNP R4MFJ2
A	137	GLY	-	expression tag	UNP R4MFJ2
A	138	SER	-	expression tag	UNP R4MFJ2
A	139	HIS	-	expression tag	UNP R4MFJ2
A	140	MET	-	expression tag	UNP R4MFJ2
A	141	LYS	-	expression tag	UNP R4MFJ2

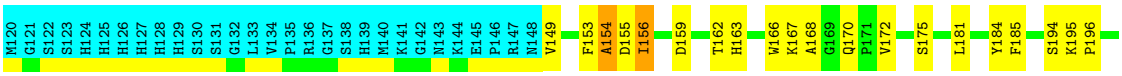
4 Residue-property plots

4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic is the same as shown in the summary in section 1 of this report. The second graphic shows the sequence where residues are colour-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 outliers are shown as green connectors. Residues which are classified as ill-defined in the NMR ensemble, are shown in cyan with an underline colour-coded according to the previous scheme. Residues which were present in the experimental sample, but not modelled in the final structure are shown in grey.

• Molecule 1: DNA-binding response regulator

Chain A:



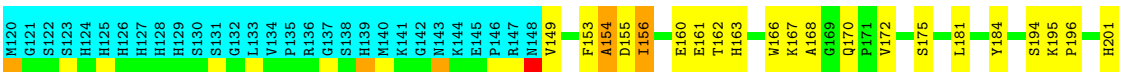
4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

• Molecule 1: DNA-binding response regulator

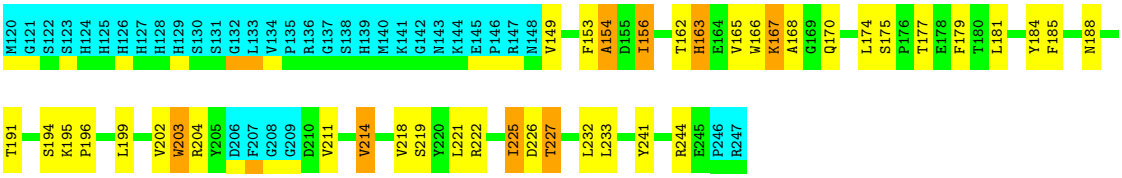
Chain A:



4.2.2 Score per residue for model 2

• Molecule 1: DNA-binding response regulator

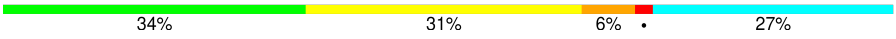
Chain A:

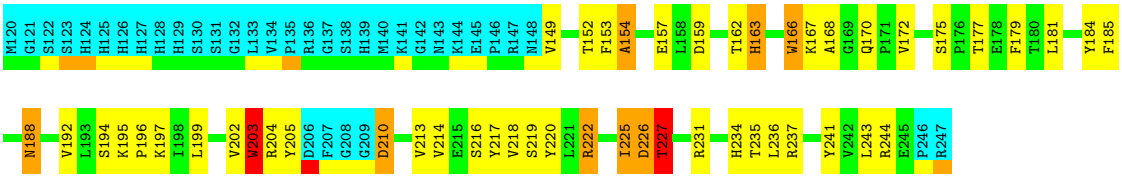


4.2.3 Score per residue for model 3

• Molecule 1: DNA-binding response regulator

Chain A:

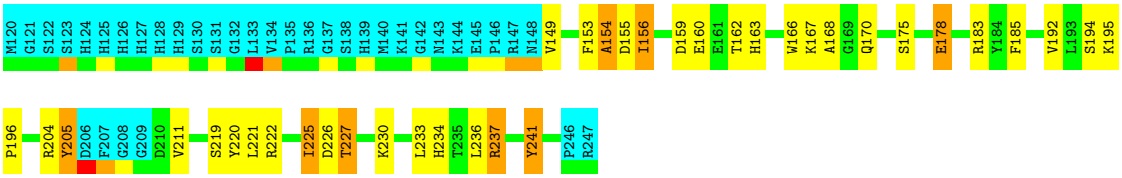




4.2.4 Score per residue for model 4

• Molecule 1: DNA-binding response regulator

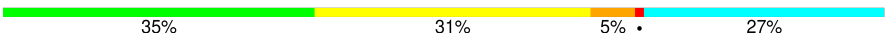
Chain A:

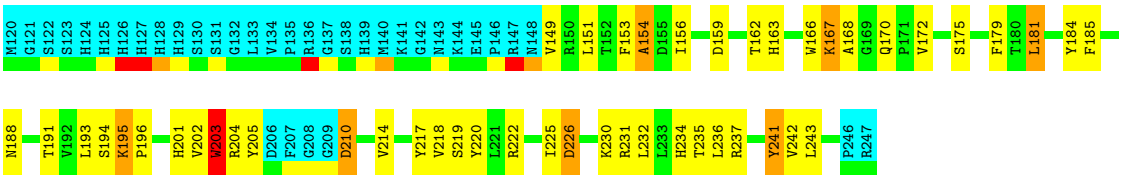


4.2.5 Score per residue for model 5

• Molecule 1: DNA-binding response regulator

Chain A:

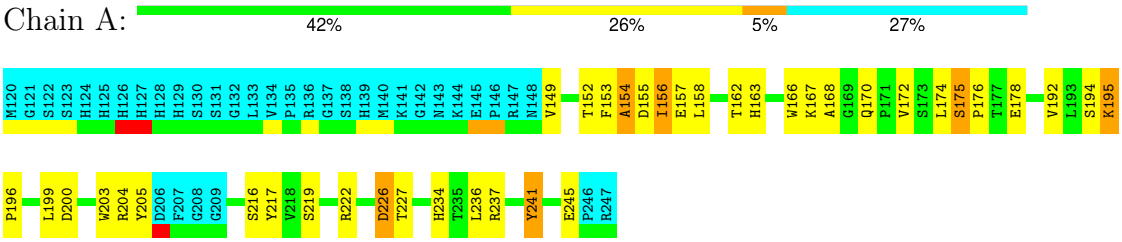




4.2.6 Score per residue for model 6

• Molecule 1: DNA-binding response regulator

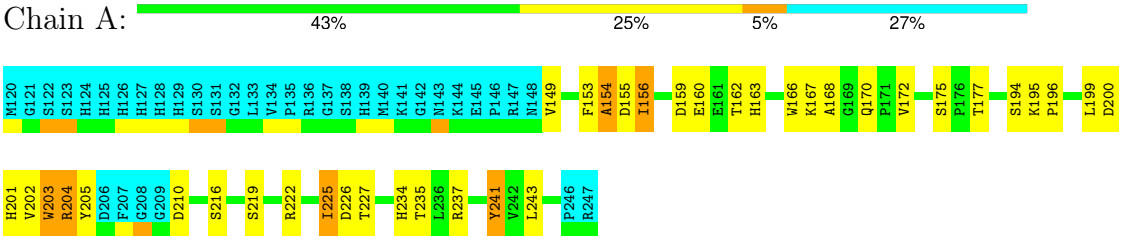
Chain A:



4.2.7 Score per residue for model 7 (medoid)

• Molecule 1: DNA-binding response regulator

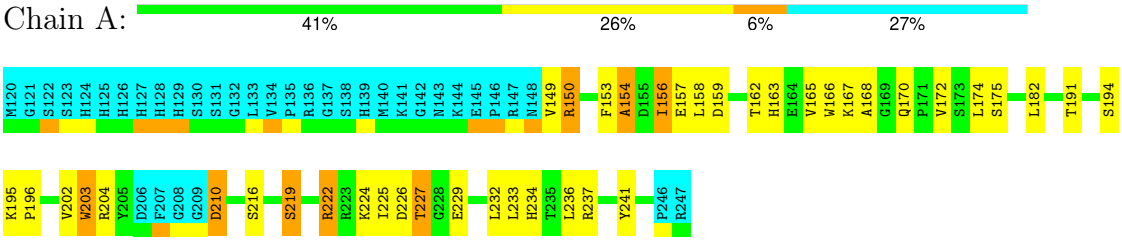
Chain A:



4.2.8 Score per residue for model 8

• Molecule 1: DNA-binding response regulator

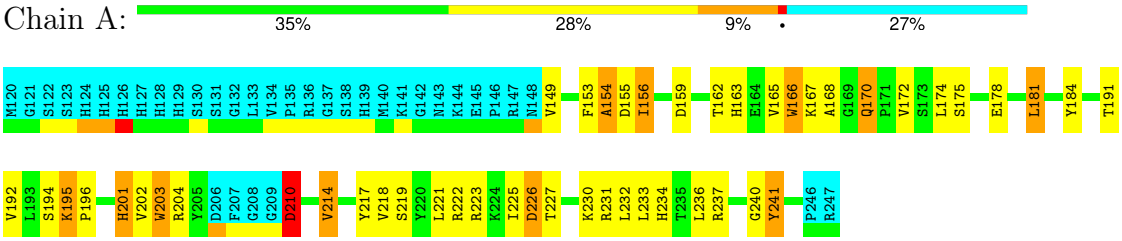
Chain A:



4.2.9 Score per residue for model 9

• Molecule 1: DNA-binding response regulator

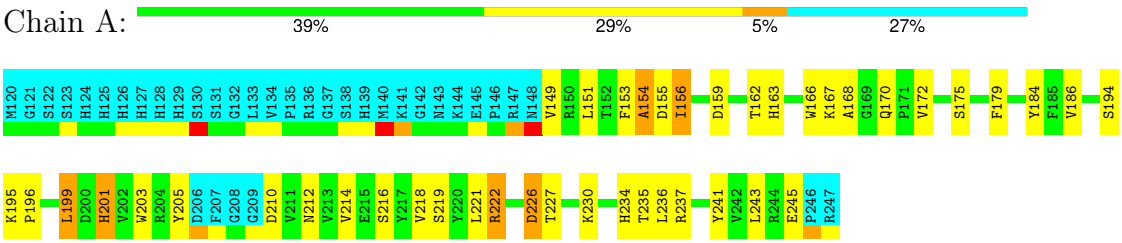
Chain A:



4.2.10 Score per residue for model 10

• Molecule 1: DNA-binding response regulator

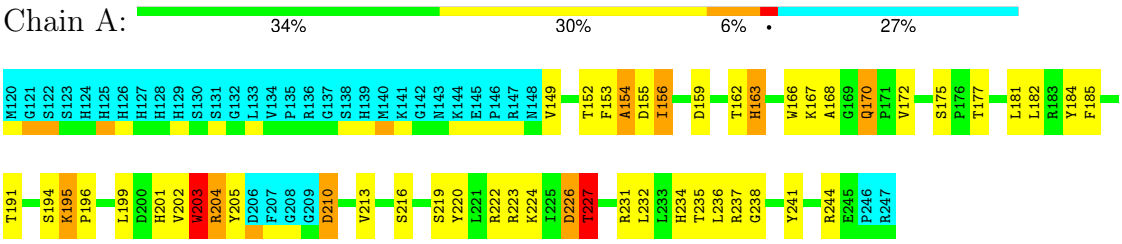
Chain A:



4.2.11 Score per residue for model 11

• Molecule 1: DNA-binding response regulator

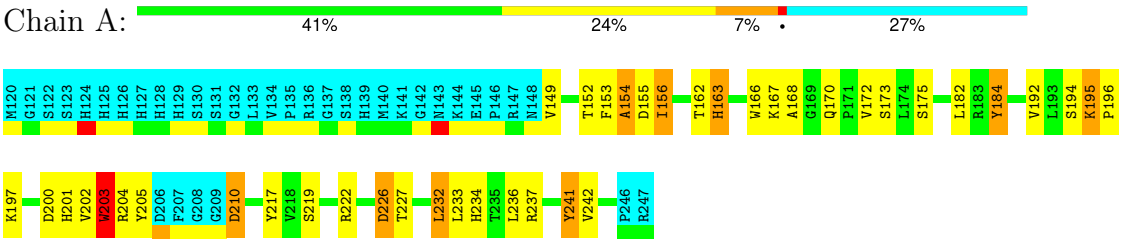
Chain A:



4.2.12 Score per residue for model 12

• Molecule 1: DNA-binding response regulator

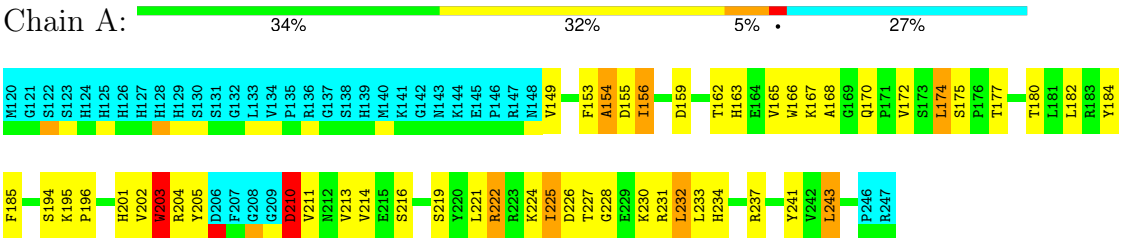
Chain A:



4.2.13 Score per residue for model 13

• Molecule 1: DNA-binding response regulator

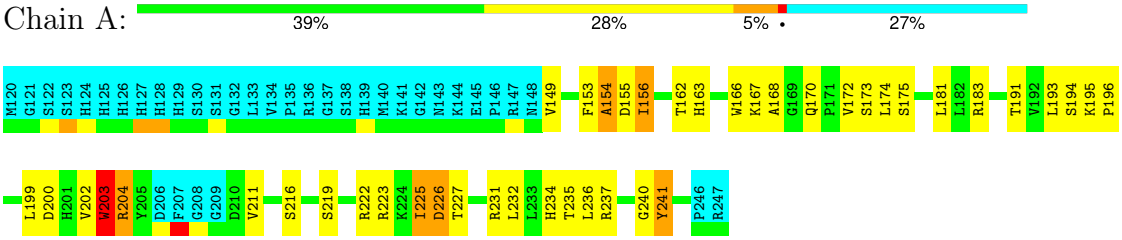
Chain A:



4.2.14 Score per residue for model 14

• Molecule 1: DNA-binding response regulator

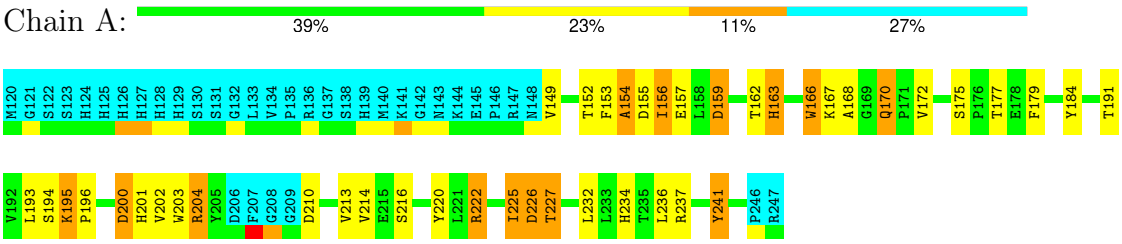
Chain A:



4.2.15 Score per residue for model 15

• Molecule 1: DNA-binding response regulator

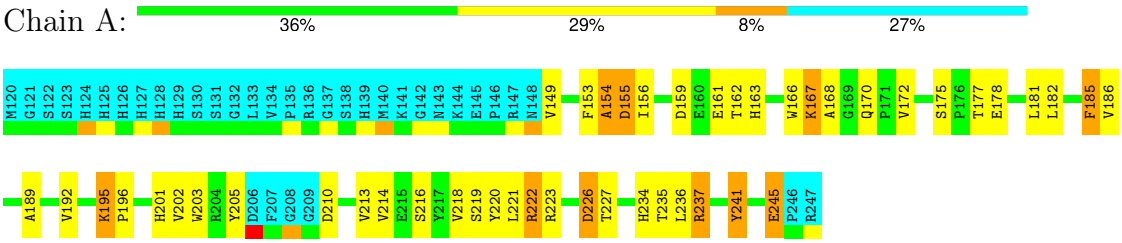
Chain A:



4.2.16 Score per residue for model 16

• Molecule 1: DNA-binding response regulator

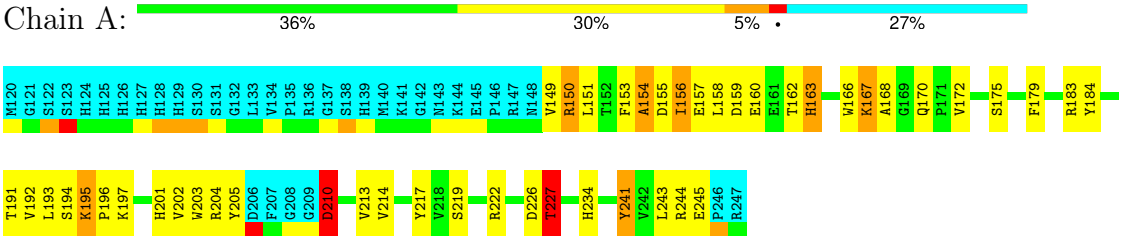
Chain A:



4.2.17 Score per residue for model 17

• Molecule 1: DNA-binding response regulator

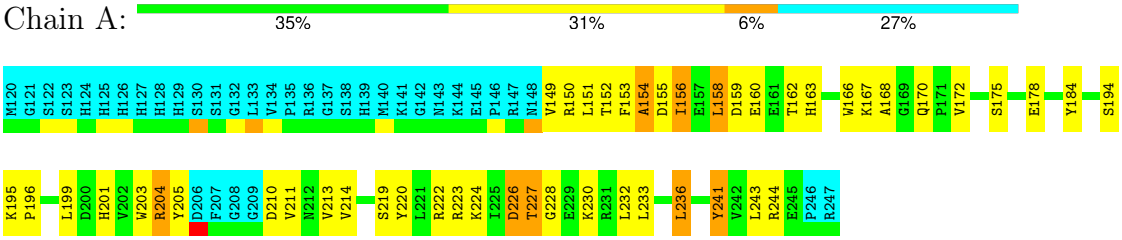
Chain A:



4.2.18 Score per residue for model 18

• Molecule 1: DNA-binding response regulator

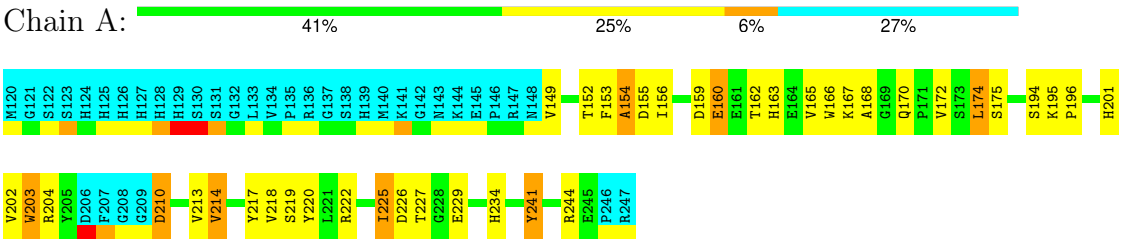
Chain A:



4.2.19 Score per residue for model 19

• Molecule 1: DNA-binding response regulator

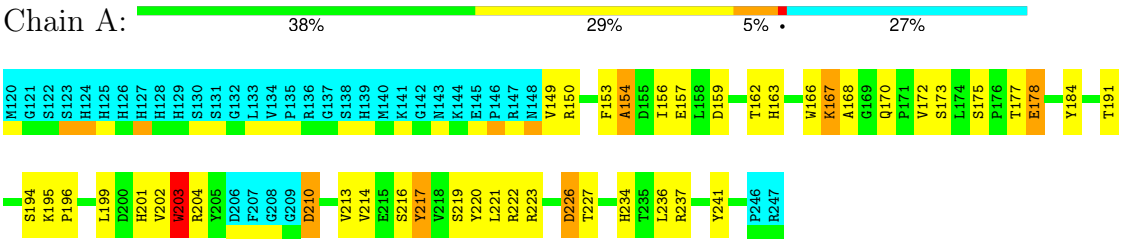
Chain A:



4.2.20 Score per residue for model 20

• Molecule 1: DNA-binding response regulator

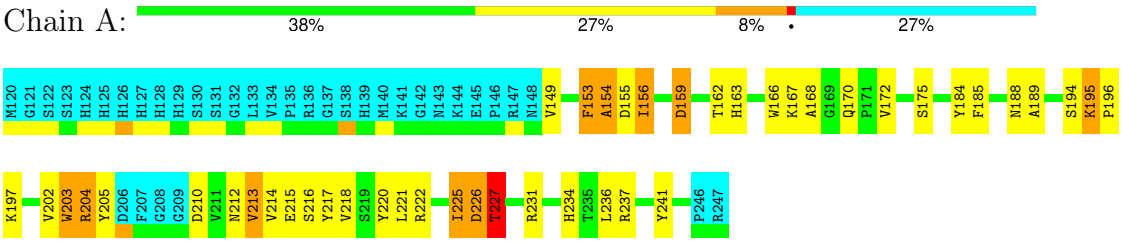
Chain A:



4.2.21 Score per residue for model 21

• Molecule 1: DNA-binding response regulator

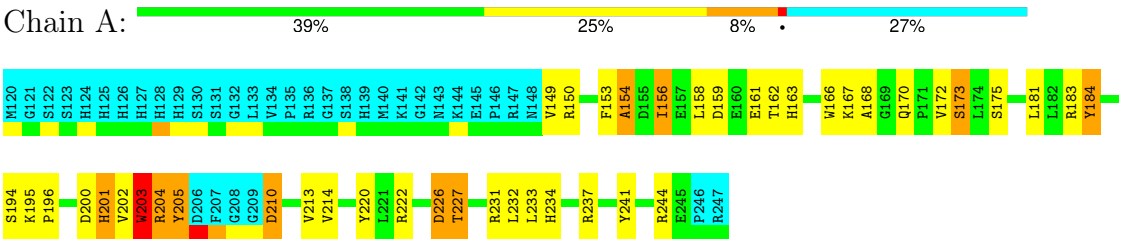
Chain A:



4.2.22 Score per residue for model 22

• Molecule 1: DNA-binding response regulator

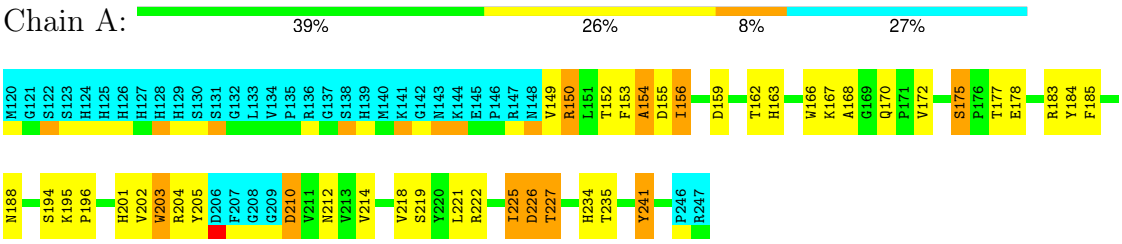
Chain A:



4.2.23 Score per residue for model 23

• Molecule 1: DNA-binding response regulator

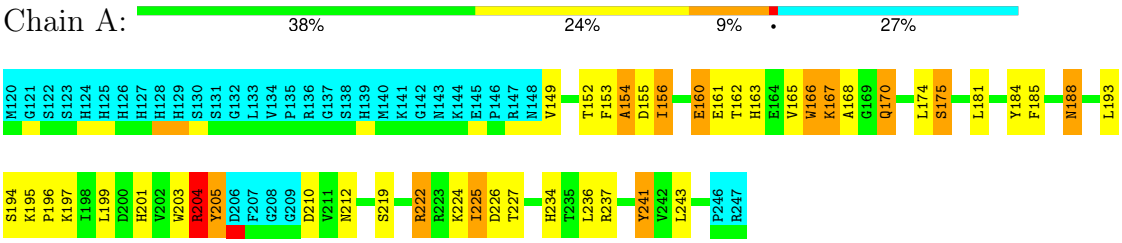
Chain A:



4.2.24 Score per residue for model 24

• Molecule 1: DNA-binding response regulator

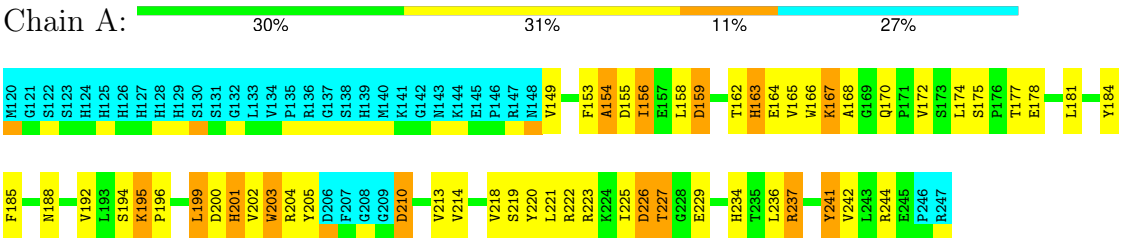
Chain A:



4.2.25 Score per residue for model 25

• Molecule 1: DNA-binding response regulator

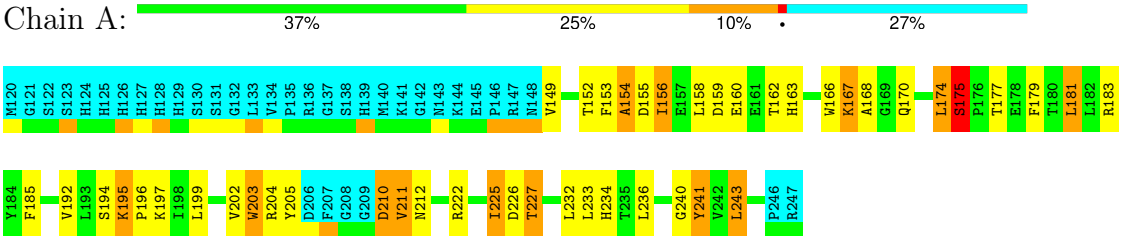
Chain A:



4.2.26 Score per residue for model 26

• Molecule 1: DNA-binding response regulator

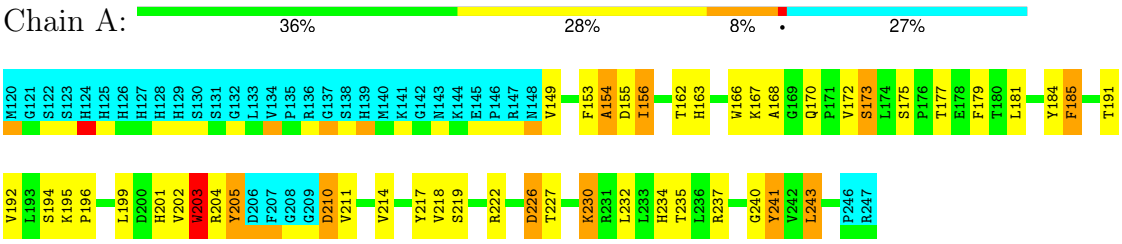
Chain A:



4.2.27 Score per residue for model 27

• Molecule 1: DNA-binding response regulator

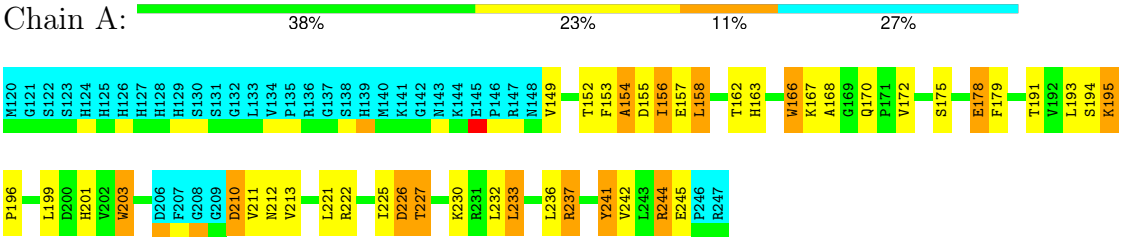
Chain A:



4.2.28 Score per residue for model 28

• Molecule 1: DNA-binding response regulator

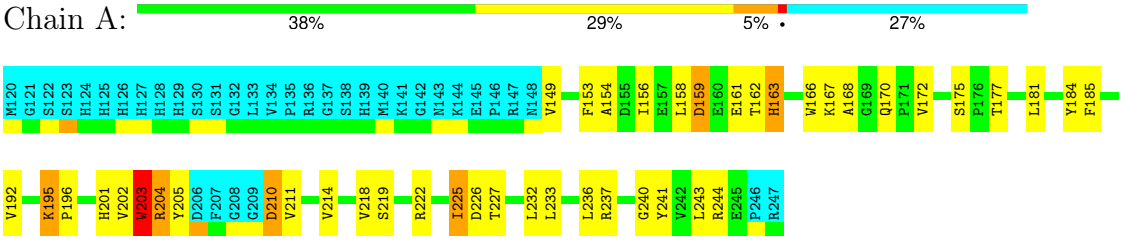
Chain A:



4.2.29 Score per residue for model 29

• Molecule 1: DNA-binding response regulator

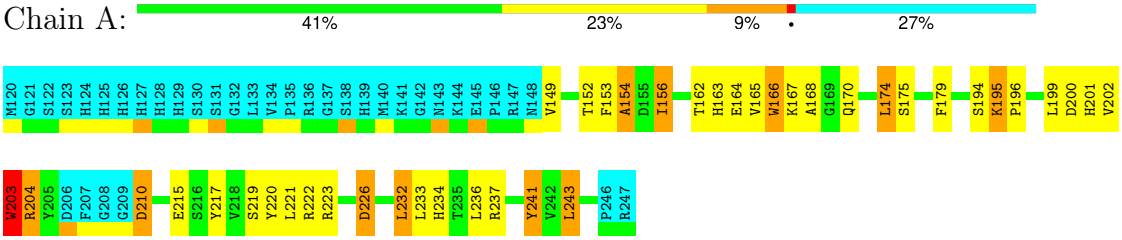
Chain A:



4.2.30 Score per residue for model 30

• Molecule 1: DNA-binding response regulator

Chain A:



5 Refinement protocol and experimental data overview

The models were refined using the following method: *simulated annealing.*

Of the 200 calculated structures, 30 were deposited, based on the following criterion: *structures with the lowest energy.*

The following table shows the software used for structure solution, optimisation and refinement.

Software name	Classification	Version
X-PLOR NIH	refinement	2.25
UNIO	structure solution	

The following table shows chemical shift validation statistics as aggregates over all chemical shift files. Detailed validation can be found in section 7 of this report.

Chemical shift file(s)	working_cs.cif
Number of chemical shift lists	1
Total number of shifts	1224
Number of shifts mapped to atoms	1224
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	82%

6 Model quality

6.1 Standard geometry

There are no covalent bond-length or bond-angle outliers.

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

6.2 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 each 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 averaged over the ensemble.

Mol	Chain	Non-H	H(model)	H(added)	Clashes
1	A	768	782	779	26±5
All	All	23040	23460	23370	784

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 17.

All unique clashes are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:174:LEU:HD23	1:A:174:LEU:N	0.85	1.85	13	2
1:A:158:LEU:HD12	1:A:158:LEU:N	0.82	1.90	18	1
1:A:155:ASP:O	1:A:156:ILE:HD13	0.81	1.74	16	1
1:A:225:ILE:O	1:A:225:ILE:HD12	0.79	1.75	7	1
1:A:231:ARG:O	1:A:232:LEU:HD23	0.78	1.78	14	1
1:A:174:LEU:H	1:A:174:LEU:HD12	0.77	1.39	19	1
1:A:165:VAL:HG21	1:A:174:LEU:HD12	0.74	1.57	9	5
1:A:236:LEU:N	1:A:236:LEU:HD22	0.74	1.97	18	1
1:A:214:VAL:O	1:A:218:VAL:HG23	0.73	1.83	25	13
1:A:174:LEU:HD12	1:A:174:LEU:N	0.71	2.00	26	2
1:A:174:LEU:HD12	1:A:174:LEU:H	0.71	1.44	26	1
1:A:151:LEU:HD23	1:A:183:ARG:HH12	0.70	1.46	17	1
1:A:184:TYR:CZ	1:A:201:HIS:NE2	0.69	2.60	10	2
1:A:241:TYR:N	1:A:241:TYR:CD1	0.69	2.61	9	13

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:184:TYR:CD1	1:A:201:HIS:NE2	0.69	2.60	22	7
1:A:184:TYR:CE1	1:A:201:HIS:NE2	0.69	2.61	24	10
1:A:232:LEU:O	1:A:243:LEU:HD23	0.65	1.91	27	4
1:A:184:TYR:CZ	1:A:201:HIS:CD2	0.64	2.86	1	3
1:A:153:PHE:CE2	1:A:243:LEU:HD21	0.63	2.28	17	5
1:A:231:ARG:C	1:A:232:LEU:HD12	0.63	2.13	22	3
1:A:232:LEU:N	1:A:232:LEU:HD23	0.63	2.08	30	4
1:A:225:ILE:HD12	1:A:225:ILE:C	0.63	2.14	7	1
1:A:163:HIS:CE1	1:A:179:PHE:CE1	0.62	2.88	28	1
1:A:157:GLU:C	1:A:158:LEU:HD12	0.62	2.14	6	1
1:A:167:LYS:O	1:A:170:GLN:N	0.61	2.33	14	30
1:A:222:ARG:O	1:A:226:ASP:N	0.61	2.33	24	30
1:A:163:HIS:CE1	1:A:179:PHE:CD2	0.61	2.88	2	2
1:A:192:VAL:HG13	1:A:192:VAL:O	0.61	1.96	25	10
1:A:158:LEU:HD12	1:A:158:LEU:H	0.61	1.56	18	1
1:A:163:HIS:N	1:A:163:HIS:ND1	0.60	2.48	12	2
1:A:181:LEU:HD12	1:A:202:VAL:HG21	0.60	1.73	9	3
1:A:174:LEU:H	1:A:174:LEU:CD1	0.60	2.05	19	1
1:A:241:TYR:CD1	1:A:242:VAL:N	0.60	2.69	5	1
1:A:211:VAL:HG12	1:A:211:VAL:O	0.60	1.97	14	2
1:A:195:LYS:NZ	1:A:211:VAL:O	0.59	2.35	18	1
1:A:185:PHE:CZ	1:A:241:TYR:CE2	0.59	2.90	29	1
1:A:163:HIS:NE2	1:A:179:PHE:CE2	0.59	2.70	3	1
1:A:203:TRP:O	1:A:205:TYR:N	0.59	2.36	18	5
1:A:160:GLU:OE2	1:A:161:GLU:N	0.59	2.36	24	1
1:A:160:GLU:OE2	1:A:183:ARG:NH1	0.59	2.36	4	1
1:A:211:VAL:HG22	1:A:211:VAL:O	0.59	1.98	29	4
1:A:233:LEU:H	1:A:233:LEU:HD12	0.59	1.58	28	1
1:A:195:LYS:NZ	1:A:241:TYR:OH	0.58	2.36	3	2
1:A:188:ASN:N	1:A:188:ASN:ND2	0.58	2.51	24	2
1:A:178:GLU:OE2	1:A:221:LEU:HD11	0.58	1.98	16	1
1:A:225:ILE:HD13	1:A:225:ILE:O	0.57	1.99	26	13
1:A:153:PHE:CD1	1:A:154:ALA:N	0.57	2.73	21	4
1:A:174:LEU:N	1:A:174:LEU:CD2	0.56	2.59	13	2
1:A:202:VAL:O	1:A:204:ARG:N	0.56	2.38	22	23
1:A:185:PHE:CG	1:A:241:TYR:OH	0.56	2.57	29	1
1:A:185:PHE:CE2	1:A:241:TYR:CZ	0.56	2.93	29	1
1:A:158:LEU:N	1:A:158:LEU:CD1	0.56	2.60	18	1
1:A:153:PHE:O	1:A:155:ASP:N	0.56	2.39	7	19
1:A:163:HIS:NE2	1:A:179:PHE:CD2	0.56	2.74	3	1
1:A:212:ASN:O	1:A:215:GLU:N	0.56	2.39	21	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:210:ASP:OD1	1:A:213:VAL:HG23	0.55	2.01	3	1
1:A:184:TYR:CD1	1:A:201:HIS:CE1	0.55	2.95	27	4
1:A:184:TYR:CE1	1:A:201:HIS:CD2	0.55	2.94	1	2
1:A:181:LEU:O	1:A:181:LEU:HD23	0.55	2.02	16	1
1:A:150:ARG:CZ	1:A:159:ASP:OD2	0.55	2.55	23	1
1:A:191:THR:O	1:A:193:LEU:HD12	0.55	2.02	5	4
1:A:153:PHE:CZ	1:A:245:GLU:OE2	0.55	2.59	28	2
1:A:153:PHE:O	1:A:156:ILE:N	0.54	2.40	7	25
1:A:195:LYS:N	1:A:196:PRO:CD	0.54	2.70	2	10
1:A:151:LEU:HD23	1:A:183:ARG:NH1	0.54	2.15	17	1
1:A:236:LEU:HD22	1:A:236:LEU:H	0.54	1.58	18	1
1:A:162:THR:C	1:A:163:HIS:CG	0.54	2.81	27	3
1:A:184:TYR:CE2	1:A:188:ASN:ND2	0.54	2.76	5	4
1:A:199:LEU:HD23	1:A:199:LEU:O	0.54	2.02	24	3
1:A:236:LEU:N	1:A:240:GLY:O	0.54	2.41	29	3
1:A:244:ARG:O	1:A:244:ARG:NE	0.54	2.38	28	1
1:A:199:LEU:O	1:A:203:TRP:N	0.54	2.41	11	4
1:A:235:THR:HG23	1:A:241:TYR:CE2	0.53	2.39	10	1
1:A:200:ASP:O	1:A:204:ARG:CG	0.53	2.56	15	2
1:A:161:GLU:OE1	1:A:161:GLU:N	0.53	2.41	29	1
1:A:162:THR:C	1:A:163:HIS:CD2	0.53	2.81	16	1
1:A:184:TYR:CG	1:A:201:HIS:NE2	0.53	2.77	18	2
1:A:155:ASP:C	1:A:156:ILE:HD13	0.53	2.22	16	1
1:A:178:GLU:CD	1:A:178:GLU:H	0.53	2.06	28	1
1:A:188:ASN:HD22	1:A:188:ASN:N	0.53	2.01	3	1
1:A:162:THR:O	1:A:163:HIS:CB	0.53	2.55	11	5
1:A:199:LEU:CD1	1:A:210:ASP:O	0.53	2.57	7	1
1:A:203:TRP:CZ2	1:A:213:VAL:HG11	0.53	2.39	21	1
1:A:167:LYS:O	1:A:170:GLN:CB	0.52	2.58	18	16
1:A:158:LEU:HD21	1:A:179:PHE:CZ	0.52	2.39	28	1
1:A:232:LEU:N	1:A:232:LEU:CD2	0.52	2.72	30	2
1:A:163:HIS:NE2	1:A:179:PHE:CG	0.52	2.77	2	1
1:A:236:LEU:N	1:A:236:LEU:CD2	0.52	2.69	18	1
1:A:203:TRP:C	1:A:205:TYR:N	0.52	2.63	24	10
1:A:159:ASP:N	1:A:159:ASP:OD1	0.52	2.42	15	3
1:A:163:HIS:CE1	1:A:179:PHE:CD1	0.52	2.98	28	1
1:A:218:VAL:HG21	1:A:241:TYR:CE2	0.51	2.40	23	2
1:A:217:TYR:O	1:A:221:LEU:HD13	0.51	2.05	21	1
1:A:222:ARG:O	1:A:226:ASP:O	0.51	2.29	15	13
1:A:220:TYR:OH	1:A:224:LYS:NZ	0.51	2.44	18	1
1:A:153:PHE:CZ	1:A:243:LEU:HD22	0.51	2.41	26	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:155:ASP:OD1	1:A:155:ASP:N	0.51	2.42	12	2
1:A:182:LEU:O	1:A:186:VAL:HG23	0.51	2.06	16	1
1:A:232:LEU:O	1:A:244:ARG:O	0.51	2.29	18	4
1:A:201:HIS:ND1	1:A:202:VAL:HG23	0.51	2.20	15	1
1:A:233:LEU:H	1:A:233:LEU:CD1	0.51	2.16	28	1
1:A:210:ASP:O	1:A:213:VAL:HG12	0.51	2.06	11	3
1:A:205:TYR:O	1:A:205:TYR:CD2	0.51	2.64	3	2
1:A:184:TYR:CD2	1:A:188:ASN:OD1	0.51	2.64	24	1
1:A:155:ASP:N	1:A:155:ASP:OD1	0.50	2.43	15	3
1:A:165:VAL:HG21	1:A:174:LEU:HD21	0.50	1.84	13	1
1:A:202:VAL:C	1:A:204:ARG:N	0.50	2.65	26	23
1:A:153:PHE:CZ	1:A:243:LEU:HD21	0.50	2.42	10	1
1:A:202:VAL:C	1:A:204:ARG:H	0.50	2.09	22	23
1:A:184:TYR:CE1	1:A:201:HIS:CE1	0.50	3.00	29	4
1:A:185:PHE:CD2	1:A:241:TYR:OH	0.50	2.65	29	2
1:A:213:VAL:CG1	1:A:214:VAL:N	0.49	2.75	25	10
1:A:178:GLU:CD	1:A:178:GLU:N	0.49	2.63	23	3
1:A:241:TYR:CD1	1:A:241:TYR:C	0.49	2.86	29	2
1:A:199:LEU:HG	1:A:214:VAL:HG21	0.49	1.85	25	1
1:A:184:TYR:OH	1:A:201:HIS:NE2	0.49	2.45	10	1
1:A:226:ASP:C	1:A:227:THR:HG22	0.49	2.28	11	1
1:A:160:GLU:N	1:A:160:GLU:CD	0.49	2.66	1	1
1:A:203:TRP:C	1:A:205:TYR:H	0.49	2.11	21	11
1:A:162:THR:O	1:A:163:HIS:CG	0.49	2.65	16	4
1:A:192:VAL:HG22	1:A:242:VAL:HB	0.49	1.85	12	1
1:A:159:ASP:OD2	1:A:162:THR:OG1	0.49	2.30	18	1
1:A:220:TYR:O	1:A:220:TYR:CG	0.49	2.65	18	1
1:A:245:GLU:OE2	1:A:245:GLU:O	0.49	2.31	16	1
1:A:153:PHE:O	1:A:154:ALA:C	0.49	2.52	3	30
1:A:213:VAL:HG13	1:A:214:VAL:N	0.48	2.23	25	2
1:A:225:ILE:C	1:A:225:ILE:CD1	0.48	2.79	7	1
1:A:165:VAL:HG12	1:A:166:TRP:N	0.48	2.24	30	3
1:A:153:PHE:CE1	1:A:154:ALA:HB2	0.48	2.43	21	2
1:A:185:PHE:O	1:A:189:ALA:N	0.48	2.47	16	2
1:A:179:PHE:C	1:A:179:PHE:CD1	0.48	2.86	30	3
1:A:244:ARG:NH2	1:A:245:GLU:O	0.48	2.45	28	1
1:A:167:LYS:O	1:A:168:ALA:C	0.48	2.52	23	30
1:A:199:LEU:C	1:A:199:LEU:HD23	0.48	2.29	28	2
1:A:153:PHE:CD1	1:A:153:PHE:C	0.48	2.86	21	3
1:A:160:GLU:OE1	1:A:183:ARG:NH2	0.48	2.47	26	1
1:A:199:LEU:HD23	1:A:199:LEU:C	0.47	2.29	24	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:157:GLU:O	1:A:158:LEU:HD12	0.47	2.08	6	1
1:A:222:ARG:O	1:A:226:ASP:OD1	0.47	2.31	21	1
1:A:210:ASP:C	1:A:212:ASN:H	0.47	2.13	26	2
1:A:241:TYR:CD1	1:A:241:TYR:N	0.47	2.82	6	4
1:A:150:ARG:NH1	1:A:159:ASP:OD2	0.47	2.47	18	2
1:A:173:SER:O	1:A:173:SER:OG	0.47	2.33	27	2
1:A:222:ARG:O	1:A:226:ASP:CB	0.47	2.63	1	6
1:A:158:LEU:HD23	1:A:165:VAL:HG22	0.47	1.86	8	2
1:A:242:VAL:HG13	1:A:242:VAL:O	0.47	2.09	28	1
1:A:218:VAL:HG11	1:A:241:TYR:CE2	0.47	2.45	9	1
1:A:150:ARG:NH2	1:A:157:GLU:OE2	0.47	2.48	17	2
1:A:210:ASP:N	1:A:210:ASP:OD1	0.47	2.46	17	1
1:A:160:GLU:CD	1:A:183:ARG:NH1	0.47	2.68	4	1
1:A:167:LYS:NZ	1:A:168:ALA:HB3	0.47	2.25	5	2
1:A:155:ASP:CG	1:A:167:LYS:NZ	0.46	2.68	12	1
1:A:201:HIS:ND1	1:A:204:ARG:NH2	0.46	2.63	19	1
1:A:195:LYS:N	1:A:196:PRO:HD2	0.46	2.24	27	24
1:A:151:LEU:O	1:A:158:LEU:HD12	0.46	2.10	18	1
1:A:178:GLU:OE2	1:A:217:TYR:CE1	0.46	2.68	20	1
1:A:159:ASP:O	1:A:163:HIS:N	0.46	2.48	8	8
1:A:175:SER:CB	1:A:176:PRO:CD	0.46	2.93	6	1
1:A:160:GLU:CD	1:A:161:GLU:N	0.46	2.70	24	1
1:A:192:VAL:O	1:A:192:VAL:CG1	0.46	2.63	25	4
1:A:200:ASP:O	1:A:200:ASP:OD1	0.45	2.34	12	1
1:A:236:LEU:O	1:A:237:ARG:C	0.45	2.55	21	19
1:A:228:GLY:C	1:A:230:LYS:N	0.45	2.69	18	1
1:A:162:THR:O	1:A:163:HIS:C	0.45	2.55	12	25
1:A:210:ASP:C	1:A:212:ASN:N	0.45	2.70	26	2
1:A:211:VAL:O	1:A:211:VAL:CG1	0.45	2.64	14	1
1:A:158:LEU:CD2	1:A:179:PHE:CZ	0.45	3.00	28	1
1:A:162:THR:C	1:A:163:HIS:ND1	0.45	2.70	13	3
1:A:225:ILE:CG2	1:A:226:ASP:N	0.45	2.80	15	7
1:A:228:GLY:C	1:A:230:LYS:H	0.45	2.15	18	1
1:A:219:SER:OG	1:A:222:ARG:NH1	0.44	2.51	8	1
1:A:226:ASP:C	1:A:227:THR:OG1	0.44	2.54	17	2
1:A:226:ASP:O	1:A:227:THR:OG1	0.44	2.33	13	1
1:A:204:ARG:O	1:A:204:ARG:CG	0.44	2.65	18	1
1:A:150:ARG:HH11	1:A:159:ASP:CG	0.44	2.15	22	1
1:A:160:GLU:O	1:A:163:HIS:CD2	0.44	2.70	26	2
1:A:212:ASN:O	1:A:213:VAL:C	0.44	2.55	21	1
1:A:174:LEU:HD23	1:A:174:LEU:H	0.44	1.64	13	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:179:PHE:CD1	1:A:179:PHE:C	0.44	2.89	27	1
1:A:185:PHE:CD1	1:A:243:LEU:HD12	0.44	2.48	27	1
1:A:195:LYS:HZ3	1:A:215:GLU:CD	0.44	2.16	21	1
1:A:204:ARG:O	1:A:204:ARG:NE	0.44	2.50	24	1
1:A:184:TYR:CD2	1:A:188:ASN:ND2	0.43	2.87	23	2
1:A:184:TYR:CZ	1:A:188:ASN:ND2	0.43	2.86	5	1
1:A:199:LEU:C	1:A:199:LEU:CD2	0.43	2.87	6	2
1:A:174:LEU:N	1:A:174:LEU:CD1	0.43	2.65	26	1
1:A:174:LEU:O	1:A:175:SER:O	0.43	2.36	26	1
1:A:222:ARG:O	1:A:226:ASP:C	0.43	2.57	13	1
1:A:151:LEU:HD12	1:A:151:LEU:N	0.43	2.28	5	1
1:A:226:ASP:O	1:A:227:THR:CB	0.42	2.67	21	1
1:A:167:LYS:CE	1:A:225:ILE:O	0.42	2.66	5	1
1:A:159:ASP:CB	1:A:162:THR:OG1	0.42	2.67	7	2
1:A:213:VAL:O	1:A:216:SER:OG	0.42	2.33	16	2
1:A:194:SER:OG	1:A:197:LYS:CG	0.42	2.67	17	1
1:A:227:THR:O	1:A:227:THR:OG1	0.42	2.33	3	1
1:A:211:VAL:O	1:A:211:VAL:CG2	0.42	2.65	29	1
1:A:157:GLU:N	1:A:166:TRP:O	0.42	2.52	3	3
1:A:212:ASN:O	1:A:214:VAL:N	0.42	2.52	21	1
1:A:160:GLU:OE2	1:A:160:GLU:N	0.42	2.53	24	1
1:A:210:ASP:O	1:A:212:ASN:N	0.42	2.52	26	1
1:A:204:ARG:O	1:A:204:ARG:CZ	0.42	2.68	30	1
1:A:211:VAL:O	1:A:211:VAL:HG22	0.42	2.15	1	1
1:A:184:TYR:OH	1:A:201:HIS:CE1	0.42	2.73	9	1
1:A:240:GLY:C	1:A:241:TYR:CD1	0.42	2.93	14	2
1:A:167:LYS:NZ	1:A:225:ILE:CG2	0.42	2.83	25	1
1:A:199:LEU:CG	1:A:214:VAL:HG21	0.41	2.45	25	1
1:A:222:ARG:CG	1:A:223:ARG:N	0.41	2.83	25	1
1:A:199:LEU:HD22	1:A:211:VAL:HG22	0.41	1.93	26	1
1:A:150:ARG:HH12	1:A:157:GLU:CG	0.41	2.28	8	1
1:A:222:ARG:O	1:A:226:ASP:CA	0.41	2.68	13	1
1:A:226:ASP:C	1:A:228:GLY:N	0.41	2.73	13	1
1:A:153:PHE:CZ	1:A:243:LEU:HD11	0.41	2.50	18	1
1:A:167:LYS:C	1:A:167:LYS:CD	0.41	2.88	26	1
1:A:230:LYS:CD	1:A:230:LYS:H	0.41	2.27	27	1
1:A:151:LEU:HD22	1:A:186:VAL:HG11	0.41	1.91	10	1
1:A:167:LYS:HZ3	1:A:168:ALA:HB3	0.41	1.75	16	1
1:A:165:VAL:CG2	1:A:174:LEU:HD11	0.41	2.45	19	1
1:A:178:GLU:N	1:A:178:GLU:OE2	0.41	2.54	23	1
1:A:184:TYR:CG	1:A:201:HIS:CE1	0.41	3.09	24	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:244:ARG:HE	1:A:244:ARG:C	0.41	2.19	28	1
1:A:184:TYR:CE2	1:A:193:LEU:HD21	0.41	2.51	15	1
1:A:184:TYR:O	1:A:188:ASN:ND2	0.41	2.54	3	1
1:A:245:GLU:O	1:A:245:GLU:CD	0.41	2.59	16	1
1:A:159:ASP:OD1	1:A:159:ASP:N	0.41	2.53	25	1
1:A:236:LEU:O	1:A:238:GLY:N	0.40	2.53	11	1
1:A:242:VAL:O	1:A:242:VAL:HG13	0.40	2.16	25	1
1:A:199:LEU:CD2	1:A:203:TRP:CG	0.40	3.04	10	1
1:A:151:LEU:N	1:A:151:LEU:CD1	0.40	2.85	5	1
1:A:178:GLU:CD	1:A:221:LEU:HD11	0.40	2.37	9	1
1:A:199:LEU:O	1:A:203:TRP:CB	0.40	2.70	14	1

6.3 Torsion angles (i)

6.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all NMR entries. 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	93/128 (73%)	80±1 (87±2%)	9±2 (10±2%)	4±1 (4±1%)	4	31
All	All	2790/3840 (73%)	2415 (87%)	266 (10%)	109 (4%)	4	31

All 10 unique Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	154	ALA	29
1	A	203	TRP	23
1	A	227	THR	23
1	A	210	ASP	18
1	A	163	HIS	5
1	A	204	ARG	5
1	A	175	SER	3
1	A	237	ARG	1
1	A	213	VAL	1
1	A	211	VAL	1

6.3.2 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 PDB entries followed by that with respect to all NMR entries. 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	85/114 (75%)	63±4 (75±4%)	22±4 (25±4%)	2 23
All	All	2550/3420 (75%)	1903 (75%)	647 (25%)	2 23

All 70 unique residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	149	VAL	30
1	A	166	TRP	30
1	A	175	SER	30
1	A	156	ILE	27
1	A	194	SER	27
1	A	234	HIS	26
1	A	241	TYR	26
1	A	172	VAL	25
1	A	219	SER	25
1	A	226	ASP	19
1	A	227	THR	18
1	A	225	ILE	17
1	A	203	TRP	16
1	A	195	LYS	14
1	A	181	LEU	13
1	A	177	THR	13
1	A	233	LEU	12
1	A	152	THR	12
1	A	220	TYR	12
1	A	210	ASP	11
1	A	185	PHE	11
1	A	159	ASP	11
1	A	216	SER	11
1	A	217	TYR	10
1	A	204	ARG	9
1	A	221	LEU	9
1	A	243	LEU	8
1	A	167	LYS	8
1	A	235	THR	8

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Mol	Chain	Res	Type	Models (Total)
1	A	237	ARG	8
1	A	201	HIS	8
1	A	191	THR	7
1	A	222	ARG	7
1	A	244	ARG	7
1	A	230	LYS	7
1	A	223	ARG	7
1	A	178	GLU	6
1	A	205	TYR	6
1	A	174	LEU	6
1	A	200	ASP	6
1	A	158	LEU	6
1	A	197	LYS	5
1	A	232	LEU	5
1	A	160	GLU	5
1	A	173	SER	5
1	A	231	ARG	4
1	A	182	LEU	4
1	A	224	LYS	4
1	A	170	GLN	4
1	A	214	VAL	3
1	A	150	ARG	3
1	A	229	GLU	3
1	A	212	ASN	3
1	A	163	HIS	3
1	A	183	ARG	3
1	A	179	PHE	3
1	A	211	VAL	2
1	A	188	ASN	2
1	A	155	ASP	2
1	A	199	LEU	2
1	A	184	TYR	2
1	A	161	GLU	2
1	A	164	GLU	2
1	A	180	THR	1
1	A	202	VAL	1
1	A	245	GLU	1
1	A	236	LEU	1
1	A	153	PHE	1
1	A	193	LEU	1
1	A	215	GLU	1

6.3.3 RNA

There are no RNA molecules in this entry.

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

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

6.5 Carbohydrates

There are no oligosaccharides in this entry.

6.6 Ligand geometry

There are no ligands in this entry.

6.7 Other polymers

There are no such molecules in this entry.

6.8 Polymer linkage issues

There are no chain breaks in this entry.

7 Chemical shift validation

The completeness of assignment taking into account all chemical shift lists is 82% for the well-defined parts and 67% for the entire structure.

7.1 Chemical shift list 1

File name: working_cs.cif

Chemical shift list name: *assigned_chem_shift_list_1*

7.1.1 Bookkeeping

The following table shows the results of parsing the chemical shift list and reports the number of nuclei with statistically unusual chemical shifts.

Total number of shifts	1224
Number of shifts mapped to atoms	1224
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	1

7.1.2 Chemical shift referencing

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction ± precision, *ppm*	Suggested action
$^{13}C_{\alpha}$	105	0.16 ± 0.11	None needed (< 0.5 ppm)
$^{13}C_{\beta}$	97	0.47 ± 0.13	None needed (< 0.5 ppm)
$^{13}C'$	99	0.19 ± 0.13	None needed (< 0.5 ppm)
^{15}N	96	0.22 ± 0.30	None needed (< 0.5 ppm)

7.1.3 Completeness of resonance assignments

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 82%, i.e. 1112 atoms were assigned a chemical shift out of a possible 1359. 0 out of 24 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	446/464 (96%)	182/188 (97%)	179/186 (96%)	85/90 (94%)
Sidechain	612/772 (79%)	409/503 (81%)	203/237 (86%)	0/32 (0%)

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	Total	^{1}H	^{13}C	^{15}N
Aromatic	54/123 (44%)	28/59 (47%)	24/56 (43%)	2/8 (25%)
Overall	1112/1359 (82%)	619/750 (83%)	406/479 (85%)	87/130 (67%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 67%, i.e. 1224 atoms were assigned a chemical shift out of a possible 1814. 0 out of 26 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	509/639 (80%)	209/261 (80%)	204/256 (80%)	96/122 (79%)
Sidechain	661/986 (67%)	436/640 (68%)	225/301 (75%)	0/45 (0%)
Aromatic	54/189 (29%)	28/92 (30%)	24/75 (32%)	2/22 (9%)
Overall	1224/1814 (67%)	673/993 (68%)	453/632 (72%)	98/189 (52%)

7.1.4 Statistically unusual chemical shifts (i)

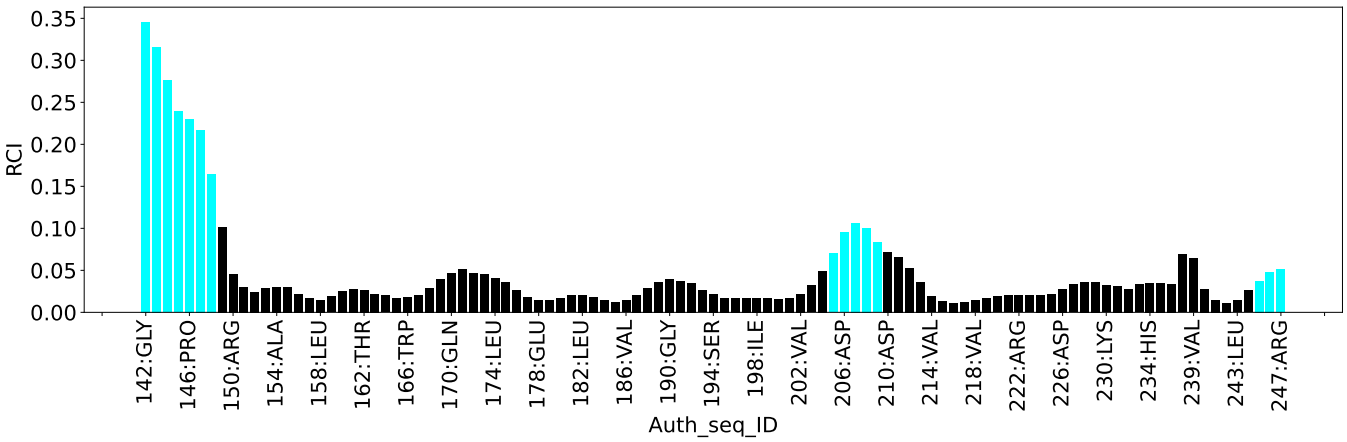
The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules containing paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

List Id	Chain	Res	Type	Atom	Shift, *ppm*	Expected range, *ppm*	Z-score
1	A	164	GLU	HB2	0.92	1.00 – 3.05	-5.4

7.1.5 Random Coil Index (RCI) plots (i)

The image below reports *random coil index* values for the protein chains in the structure. The height of each bar gives a probability of a given residue to be disordered, as predicted from the available chemical shifts and the amino acid sequence. A value above 0.2 is an indication of significant predicted disorder. The colour of the bar shows whether the residue is in the well-defined core (black) or in the ill-defined residue ranges (cyan), as described in section 2 on ensemble composition.If well-defined core and ill-defined regions are not identified then it is shown as gray bars.

Random coil index (RCI) for chain A:


RCI
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
142:GLY
146:PRO
150:ARG
154:ALA
158:LEU
162:THR
166:TRP
170:GLN
174:LEU
178:GLU
182:LEU
186:VAL
190:GLY
194:SER
198:ILE
202:VAL
206:ASP
210:ASP
214:VAL
218:VAL
222:ARG
226:ASP
230:LYS
234:HIS
239:VAL
243:LEU
247:ARG
Auth_seq_ID

8 NMR restraints analysis

8.1 Conformationally restricting restraints

The following table provides the summary of experimentally observed NMR restraints in different categories. Restraints are classified into different categories based on the sequence separation of the atoms involved.

Description	Value
Total distance restraints	834
Intra-residue (|i-j|=0)	219
Sequential (|i-j|=1)	238
Medium range (|i-j|>1 and |i-j|<5)	125
Long range (|i-j|≥5)	211
Inter-chain	0
Hydrogen bond restraints	41
Disulfide bond restraints	0
Total dihedral-angle restraints	185
Number of unmapped restraints	0
Number of restraints per residue	8.0
Number of long range restraints per residue[1]	1.7

[1]Long range hydrogen bonds and disulfide bonds are counted as long range restraints while calculating the number of long range restraints per residue

8.2 Residual restraint violations

This section provides the overview of the restraint violations analysis. The violations are binned as small, medium and large violations based on its absolute value. Average number of violations per model is calculated by dividing the total number of violations in each bin by the size of the ensemble.

8.2.1 Average number of distance violations per model

Distance violations less than 0.1 Å
are not included in the calculation.

Bins (Å)	Average number of violations per model	Max (Å)
0.1-0.2 (Small)	4.2	0.2
0.2-0.5 (Medium)	0.3	0.47
>0.5 (Large)	None	None

8.2.2 Average number of dihedral-angle violations per model (i)

Dihedral-angle violations less than 1° are not included in the calculation.

Bins (°)	Average number of violations per model	Max (°)
1.0-10.0 (Small)	3.1	4.94
10.0-20.0 (Medium)	None	None
>20.0 (Large)	None	None

9 Distance violation analysis (i)

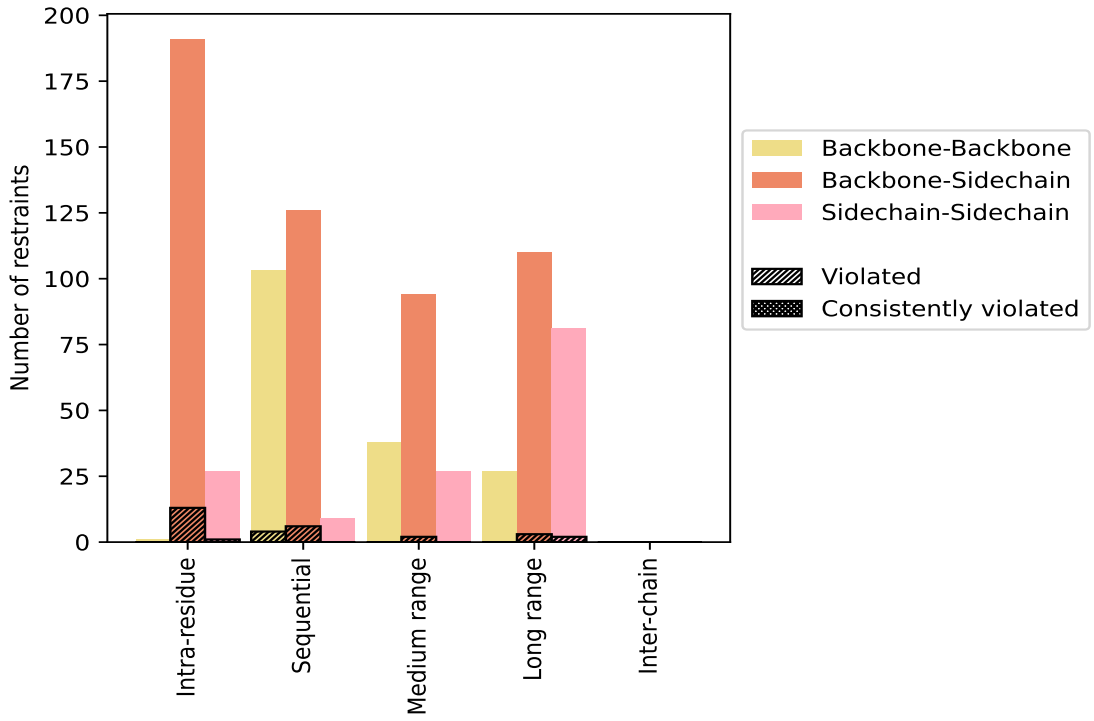
9.1 Summary of distance violations (i)

The following table shows the summary of distance violations in different restraint categories based on the sequence separation of the atoms involved. Each category is further sub-divided into three sub-categories based on the atoms involved. Violations less than 0.1 Å are not included in the statistics.

Restraints type	Count	%[1]	Violated[3]			Consistently Violated[4]		
			Count	%[2]	%[1]	Count	%[2]	%[1]
Intra-residue (|i-j|=0)	219	26.3	14	6.4	1.7	0	0.0	0.0
Backbone-Backbone	1	0.1	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	191	22.9	13	6.8	1.6	0	0.0	0.0
Sidechain-Sidechain	27	3.2	1	3.7	0.1	0	0.0	0.0
Sequential (|i-j|=1)	238	28.5	10	4.2	1.2	0	0.0	0.0
Backbone-Backbone	103	12.4	4	3.9	0.5	0	0.0	0.0
Backbone-Sidechain	126	15.1	6	4.8	0.7	0	0.0	0.0
Sidechain-Sidechain	9	1.1	0	0.0	0.0	0	0.0	0.0
Medium range (|i-j|>1 & |i-j|<5)	125	15.0	2	1.6	0.2	0	0.0	0.0
Backbone-Backbone	38	4.6	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	60	7.2	2	3.3	0.2	0	0.0	0.0
Sidechain-Sidechain	27	3.2	0	0.0	0.0	0	0.0	0.0
Long range (|i-j|≥5)	211	25.3	5	2.4	0.6	0	0.0	0.0
Backbone-Backbone	27	3.2	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	103	12.4	3	2.9	0.4	0	0.0	0.0
Sidechain-Sidechain	81	9.7	2	2.5	0.2	0	0.0	0.0
Inter-chain	0	0.0	0	0.0	0.0	0	0.0	0.0
Backbone-Backbone	0	0.0	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	0	0.0	0	0.0	0.0	0	0.0	0.0
Sidechain-Sidechain	0	0.0	0	0.0	0.0	0	0.0	0.0
Hydrogen bond	41	4.9	0	0.0	0.0	0	0.0	0.0
Disulfide bond	0	0.0	0	0.0	0.0	0	0.0	0.0
Total	834	100.0	31	3.7	3.7	0	0.0	0.0
Backbone-Backbone	169	20.3	4	2.4	0.5	0	0.0	0.0
Backbone-Sidechain	521	62.5	24	4.6	2.9	0	0.0	0.0
Sidechain-Sidechain	144	17.3	3	2.1	0.4	0	0.0	0.0

[1] percentage calculated with respect to the total number of distance restraints, [2] percentage calculated with respect to the number of restraints in a particular restraint category, [3] violated in at least one model, [4] violated in all the models

9.1.1 Bar chart : Distribution of distance restraints and violations



Violated and consistently violated restraints are shown using different hatch patterns in their respective categories. The hydrogen bonds and disulfied bonds are counted in their appropriate category on the x-axis

9.2 Distance violation statistics for each model

The following table provides the distance violation statistics for each model in the ensemble. Violations less than 0.1 Å
are not included in the statistics.

Model ID	Number of violations						Mean (Å)	Max (Å)	SD[6] (Å)	Median (Å)
	IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total				
1	3	1	2	1	0	7	0.13	0.15	0.01	0.13
2	3	1	0	0	0	4	0.11	0.13	0.01	0.11
3	1	3	1	1	0	6	0.12	0.13	0.01	0.12
4	1	1	0	2	0	4	0.13	0.16	0.02	0.14
5	5	2	0	2	0	9	0.14	0.23	0.04	0.13
6	2	2	0	1	0	5	0.12	0.16	0.02	0.13
7	0	0	1	0	0	1	0.11	0.11	0.0	0.11
8	1	2	0	2	0	5	0.14	0.16	0.02	0.14
9	2	1	0	1	0	4	0.12	0.14	0.02	0.12
10	3	1	1	1	0	6	0.13	0.21	0.04	0.11

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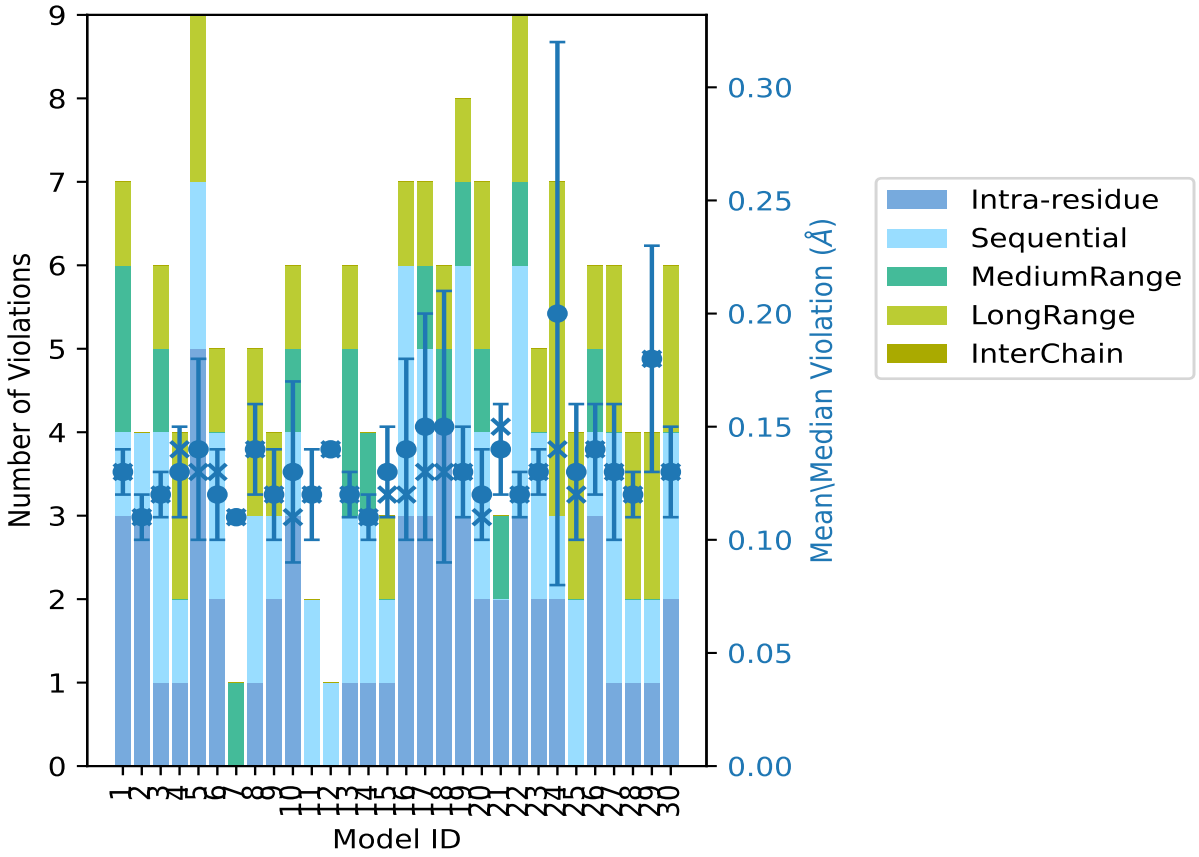
Model ID	Number of violations						Mean (Å)	Max (Å)	SD[6] (Å)	Median (Å)
	IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total				
11	0	2	0	0	0	2	0.12	0.14	0.02	0.12
12	0	1	0	0	0	1	0.14	0.14	0.0	0.14
13	1	2	2	1	0	6	0.12	0.13	0.01	0.12
14	1	2	1	0	0	4	0.11	0.12	0.01	0.11
15	1	1	0	1	0	3	0.13	0.16	0.02	0.12
16	3	3	0	1	0	7	0.14	0.22	0.04	0.12
17	3	2	1	1	0	7	0.15	0.27	0.05	0.13
18	4	0	1	1	0	6	0.15	0.27	0.06	0.13
19	3	3	1	1	0	8	0.13	0.16	0.02	0.13
20	2	2	1	2	0	7	0.12	0.15	0.02	0.11
21	2	0	1	0	0	3	0.14	0.16	0.02	0.15
22	3	3	1	2	0	9	0.12	0.14	0.01	0.12
23	2	2	0	1	0	5	0.13	0.15	0.01	0.13
24	2	1	0	4	0	7	0.2	0.47	0.12	0.14
25	0	2	0	2	0	4	0.13	0.18	0.03	0.12
26	3	1	1	1	0	6	0.14	0.17	0.02	0.14
27	1	3	0	2	0	6	0.13	0.18	0.03	0.13
28	1	1	0	2	0	4	0.12	0.14	0.01	0.12
29	1	1	0	2	0	4	0.18	0.24	0.05	0.18
30	2	2	0	2	0	6	0.13	0.16	0.02	0.13

[1]Intra-residue restraints, [2]Sequential restraints, [3]Medium range restraints, [4]Long range restraints, [5]Inter-chain restraints, [6]Standard deviation

9.2.1 Bar graph : Distance Violation statistics for each model



The mean(dot),median(x) and the standard deviation are shown in blue with respect to the y axis on the right

9.3 Distance violation statistics for the ensemble

Violation analysis may find that some restraints are violated in few models and some are violated in most of models. The following table provides this information as number of violated restraints for a given fraction of the ensemble. In total, 762(IR:205, SQ:228, MR:123, LR:206, IC:0) restraints are not violated in the ensemble.

Number of violated restraints						Fraction of the ensemble	
IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total	Count[6]	%
6	6	0	2	0	14	1	3.3
2	1	1	0	0	4	2	6.7
1	0	0	0	0	1	3	10.0
1	0	0	0	0	1	4	13.3
2	1	0	1	0	4	5	16.7
0	0	0	0	0	0	6	20.0

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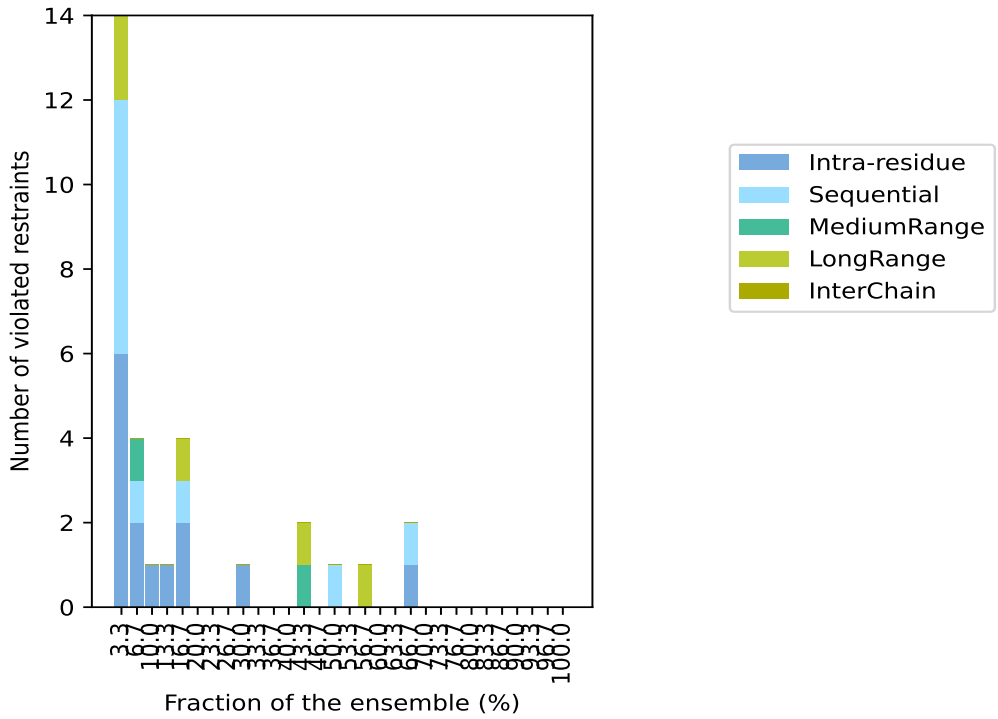
Number of violated restraints						Fraction of the ensemble	
IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total	Count[6]	%
0	0	0	0	0	0	7	23.3
0	0	0	0	0	0	8	26.7
1	0	0	0	0	1	9	30.0
0	0	0	0	0	0	10	33.3
0	0	0	0	0	0	11	36.7
0	0	0	0	0	0	12	40.0
0	0	1	1	0	2	13	43.3
0	0	0	0	0	0	14	46.7
0	1	0	0	0	1	15	50.0
0	0	0	0	0	0	16	53.3
0	0	0	1	0	1	17	56.7
0	0	0	0	0	0	18	60.0
0	0	0	0	0	0	19	63.3
1	1	0	0	0	2	20	66.7
0	0	0	0	0	0	21	70.0
0	0	0	0	0	0	22	73.3
0	0	0	0	0	0	23	76.7
0	0	0	0	0	0	24	80.0
0	0	0	0	0	0	25	83.3
0	0	0	0	0	0	26	86.7
0	0	0	0	0	0	27	90.0
0	0	0	0	0	0	28	93.3
0	0	0	0	0	0	29	96.7
0	0	0	0	0	0	30	100.0

[1]Intra-residue restraints, [2]Sequential restraints, [3]Medium range restraints, [4]Long range restraints, [5]Inter-chain restraints, [6] Number of models with violations

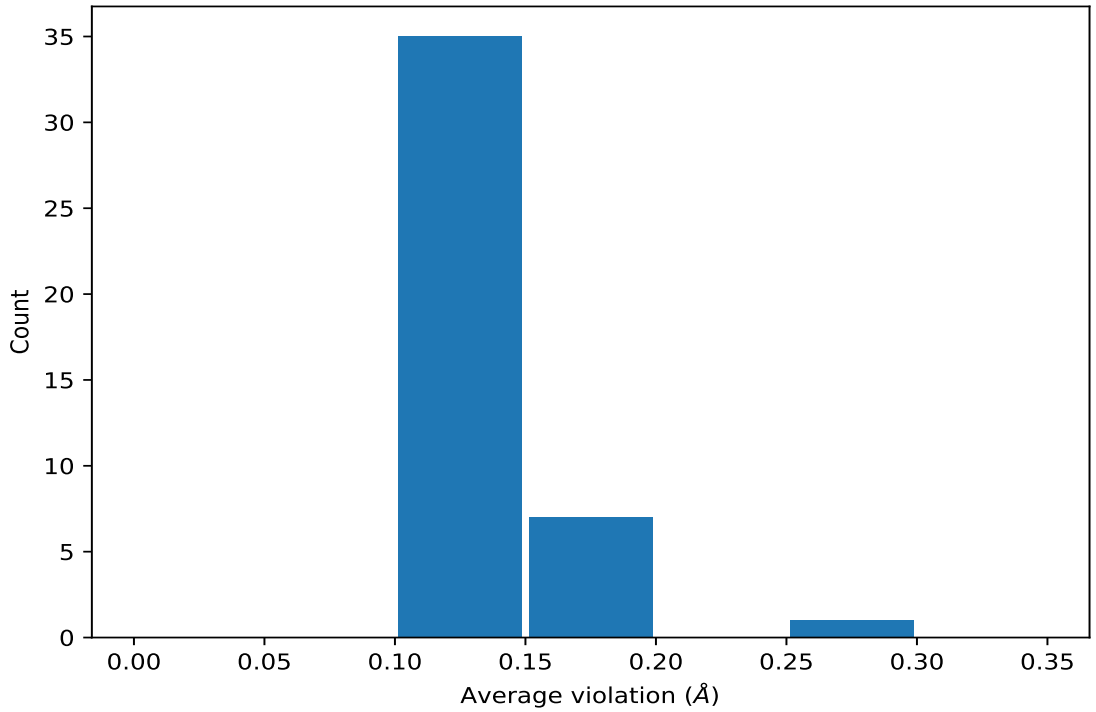
9.3.1 Bar graph : Distance violation statistics for the ensemble



9.4 Most violated distance restraints in the ensemble

9.4.1 Histogram : Distribution of mean distance violations

The following histogram shows the distribution of the average value of the violation. The average is calculated for each restraint that is violated in more than one model over all the violated models in the ensemble



9.4.2 Table: Most violated distance restraints (i)

The following table provides the mean and the standard deviation of theviolation for each restraint sorted by number of violated models and the mean value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint. Rows with same key represent combinatorial or ambiguous restraints and are counted as a single restraint.

Key	Atom-1	Atom-2	Models[1]	Mean (Å)	SD[1] (Å)	Median (Å)
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	20	0.14	0.02	0.13
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	20	0.13	0.02	0.13
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	20	0.13	0.02	0.13
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	17	0.14	0.03	0.13
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	17	0.14	0.03	0.13
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	17	0.14	0.03	0.13
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	17	0.14	0.03	0.13
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	17	0.14	0.03	0.13
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	17	0.14	0.03	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	15	0.12	0.02	0.12
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	15	0.12	0.02	0.12
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	15	0.12	0.02	0.12
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	13	0.13	0.02	0.13
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	13	0.13	0.02	0.13
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	13	0.12	0.02	0.11
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	13	0.12	0.02	0.11

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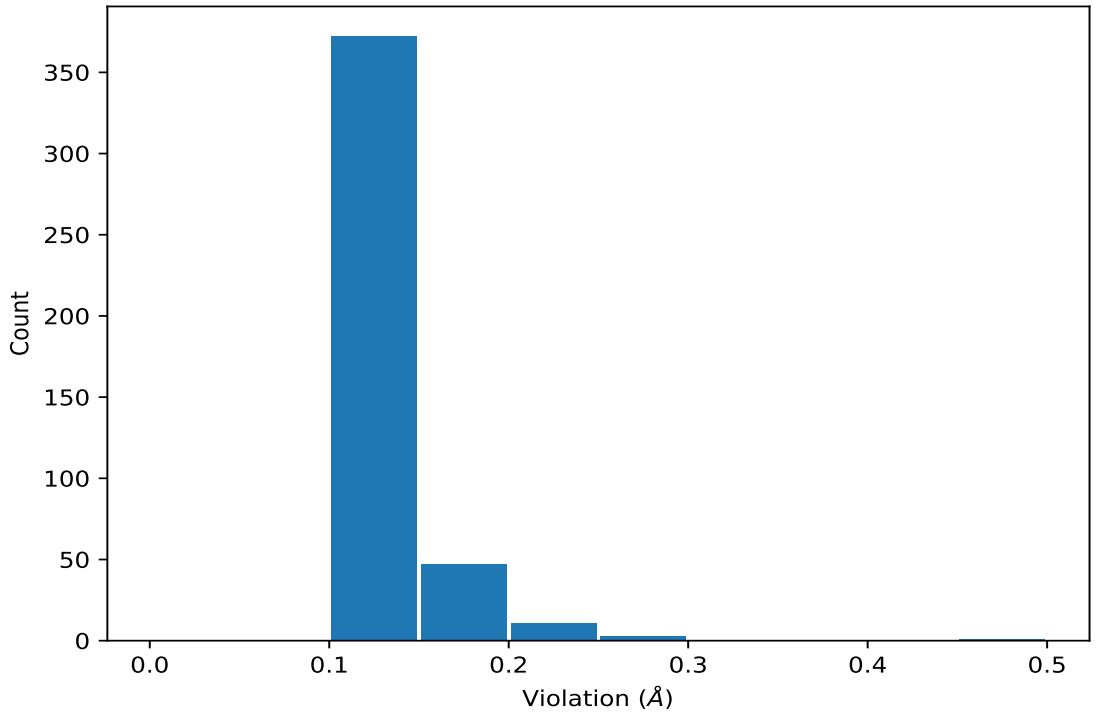
Key	Atom-1	Atom-2	Models[1]	Mean (Å)	SD[1] (Å)	Median (Å)
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	9	0.11	0.0	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	9	0.11	0.0	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	9	0.11	0.0	0.11
(2,618)	1:150:A:ARG:H	1:151:A:LEU:H	5	0.15	0.05	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG21	5	0.14	0.01	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG22	5	0.14	0.01	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG23	5	0.14	0.01	0.14
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD2	5	0.13	0.02	0.13
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD3	5	0.13	0.02	0.13
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG11	5	0.11	0.01	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG12	5	0.11	0.01	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG13	5	0.11	0.01	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG21	5	0.11	0.01	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG22	5	0.11	0.01	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG23	5	0.11	0.01	0.1
(2,605)	1:227:A:THR:HA	1:227:A:THR:HB	4	0.13	0.01	0.13
(2,370)	1:151:A:LEU:HA	1:151:A:LEU:HG	3	0.27	0.0	0.27
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD11	2	0.15	0.02	0.15
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD12	2	0.15	0.02	0.15
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD13	2	0.15	0.02	0.15
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD21	2	0.15	0.02	0.15
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD22	2	0.15	0.02	0.15
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD23	2	0.15	0.02	0.15
(2,545)	1:149:A:VAL:H	1:149:A:VAL:HB	2	0.12	0.01	0.12
(2,648)	1:242:A:VAL:H	1:244:A:ARG:HD2	2	0.12	0.02	0.12
(2,648)	1:242:A:VAL:H	1:244:A:ARG:HD3	2	0.12	0.02	0.12
(2,714)	1:149:A:VAL:HB	1:150:A:ARG:H	2	0.11	0.0	0.11

[1]Number of violated models, [2]Standard deviation

9.5 All violated distance restraints (i)

9.5.1 Histogram : Distribution of distance violations (i)

The following histogram shows the distribution of the absolute value of the violation for all violated restraints in the ensemble.



9.5.2 Table : All distance violations (i)

The following table lists the absolute value of the violation for each restraint in the ensemble sorted by its value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint. Rows with same key represent combinatorial or ambiguous restraints and are counted as a single restraint.

Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,533)	1:209:A:GLY:H	1:210:A:ASP:H	24	0.47
(2,370)	1:151:A:LEU:HA	1:151:A:LEU:HG	17	0.27
(2,370)	1:151:A:LEU:HA	1:151:A:LEU:HG	18	0.27
(2,370)	1:151:A:LEU:HA	1:151:A:LEU:HG	24	0.27
(2,771)	1:156:A:ILE:H	1:156:A:ILE:HG12	29	0.24
(2,771)	1:156:A:ILE:H	1:156:A:ILE:HG13	29	0.24
(2,769)	1:232:A:LEU:HG	1:233:A:LEU:H	5	0.23
(2,618)	1:150:A:ARG:H	1:151:A:LEU:H	16	0.22
(2,618)	1:150:A:ARG:H	1:151:A:LEU:H	10	0.21
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	29	0.2
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	29	0.2
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	29	0.2
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	29	0.2
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	29	0.2
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	29	0.2
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	5	0.18

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	25	0.18
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	25	0.18
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	25	0.18
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	25	0.18
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	25	0.18
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	25	0.18
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	27	0.18
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	27	0.18
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	27	0.18
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	27	0.18
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	27	0.18
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	27	0.18
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	26	0.17
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	26	0.17
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	26	0.17
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	26	0.17
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	26	0.17
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	26	0.17
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	4	0.16
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD11	19	0.16
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD12	19	0.16
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD13	19	0.16
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD21	19	0.16
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD22	19	0.16
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD23	19	0.16
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	16	0.16
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	16	0.16
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	16	0.16
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	19	0.16
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	19	0.16
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	19	0.16
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	6	0.16
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	6	0.16
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	8	0.16
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	8	0.16
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	15	0.16
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	15	0.16
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	21	0.16
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	21	0.16
(2,311)	1:236:A:LEU:HA	1:236:A:LEU:HG	18	0.16
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	30	0.16
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	30	0.16

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	19	0.16
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	19	0.16
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD2	8	0.16
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD3	8	0.16
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	26	0.15
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	27	0.15
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	29	0.15
(2,429)	1:227:A:THR:H	1:227:A:THR:HG21	23	0.15
(2,429)	1:227:A:THR:H	1:227:A:THR:HG22	23	0.15
(2,429)	1:227:A:THR:H	1:227:A:THR:HG23	23	0.15
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	5	0.15
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	5	0.15
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	24	0.15
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	24	0.15
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	27	0.15
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	27	0.15
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	30	0.15
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	30	0.15
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	1	0.15
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	1	0.15
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	1	0.15
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	1	0.15
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	1	0.15
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	1	0.15
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	4	0.15
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	4	0.15
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	4	0.15
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	4	0.15
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	4	0.15
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	4	0.15
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	20	0.15
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	20	0.15
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	20	0.15
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	20	0.15
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	20	0.15
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	20	0.15
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	10	0.15
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	10	0.15
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	21	0.15
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	21	0.15
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	26	0.15
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	26	0.15

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	9	0.14
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	11	0.14
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	12	0.14
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	20	0.14
(2,689)	1:174:A:LEU:H	1:174:A:LEU:HD11	19	0.14
(2,689)	1:174:A:LEU:H	1:174:A:LEU:HD12	19	0.14
(2,689)	1:174:A:LEU:H	1:174:A:LEU:HD13	19	0.14
(2,689)	1:174:A:LEU:H	1:174:A:LEU:HD21	19	0.14
(2,689)	1:174:A:LEU:H	1:174:A:LEU:HD22	19	0.14
(2,689)	1:174:A:LEU:H	1:174:A:LEU:HD23	19	0.14
(2,618)	1:150:A:ARG:H	1:151:A:LEU:H	8	0.14
(2,605)	1:227:A:THR:HA	1:227:A:THR:HB	28	0.14
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	22	0.14
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	22	0.14
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	22	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG21	1	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG22	1	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG23	1	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG21	17	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG22	17	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG23	17	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG21	22	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG22	22	0.14
(2,429)	1:227:A:THR:H	1:227:A:THR:HG23	22	0.14
(2,298)	1:232:A:LEU:H	1:232:A:LEU:HG	5	0.14
(2,211)	1:245:A:GLU:HG2	1:232:A:LEU:HD11	16	0.14
(2,211)	1:245:A:GLU:HG2	1:232:A:LEU:HD12	16	0.14
(2,211)	1:245:A:GLU:HG2	1:232:A:LEU:HD13	16	0.14
(2,211)	1:245:A:GLU:HG2	1:232:A:LEU:HD21	16	0.14
(2,211)	1:245:A:GLU:HG2	1:232:A:LEU:HD22	16	0.14
(2,211)	1:245:A:GLU:HG2	1:232:A:LEU:HD23	16	0.14
(2,211)	1:245:A:GLU:HG3	1:232:A:LEU:HD11	16	0.14
(2,211)	1:245:A:GLU:HG3	1:232:A:LEU:HD12	16	0.14
(2,211)	1:245:A:GLU:HG3	1:232:A:LEU:HD13	16	0.14
(2,211)	1:245:A:GLU:HG3	1:232:A:LEU:HD21	16	0.14
(2,211)	1:245:A:GLU:HG3	1:232:A:LEU:HD22	16	0.14
(2,211)	1:245:A:GLU:HG3	1:232:A:LEU:HD23	16	0.14
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	24	0.14
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	24	0.14
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	9	0.14
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	9	0.14
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	9	0.14

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	9	0.14
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	9	0.14
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	9	0.14
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	1	0.14
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	1	0.14
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	20	0.14
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	20	0.14
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD2	24	0.14
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD3	24	0.14
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	1	0.13
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	8	0.13
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	13	0.13
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	22	0.13
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	23	0.13
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	30	0.13
(2,648)	1:242:A:VAL:H	1:244:A:ARG:HD2	1	0.13
(2,648)	1:242:A:VAL:H	1:244:A:ARG:HD3	1	0.13
(2,605)	1:227:A:THR:HA	1:227:A:THR:HB	18	0.13
(2,605)	1:227:A:THR:HA	1:227:A:THR:HB	26	0.13
(2,558)	1:220:A:TYR:H	1:221:A:LEU:HD11	3	0.13
(2,558)	1:220:A:TYR:H	1:221:A:LEU:HD12	3	0.13
(2,558)	1:220:A:TYR:H	1:221:A:LEU:HD13	3	0.13
(2,558)	1:220:A:TYR:H	1:221:A:LEU:HD21	3	0.13
(2,558)	1:220:A:TYR:H	1:221:A:LEU:HD22	3	0.13
(2,558)	1:220:A:TYR:H	1:221:A:LEU:HD23	3	0.13
(2,545)	1:149:A:VAL:H	1:149:A:VAL:HB	5	0.13
(2,539)	1:187:A:ILE:HG12	1:188:A:ASN:H	6	0.13
(2,539)	1:187:A:ILE:HG13	1:188:A:ASN:H	6	0.13
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD11	26	0.13
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD12	26	0.13
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD13	26	0.13
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD21	26	0.13
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD22	26	0.13
(2,517)	1:174:A:LEU:HA	1:174:A:LEU:HD23	26	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	3	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	3	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	3	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	17	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	17	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	17	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	23	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	23	0.13

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	23	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	28	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	28	0.13
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	28	0.13
(2,429)	1:227:A:THR:H	1:227:A:THR:HG21	2	0.13
(2,429)	1:227:A:THR:H	1:227:A:THR:HG22	2	0.13
(2,429)	1:227:A:THR:H	1:227:A:THR:HG23	2	0.13
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	1	0.13
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	1	0.13
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	13	0.13
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	13	0.13
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	18	0.13
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	18	0.13
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	6	0.13
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	6	0.13
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	22	0.13
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	22	0.13
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	30	0.13
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	30	0.13
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	30	0.13
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	30	0.13
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	30	0.13
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	30	0.13
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	3	0.13
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	3	0.13
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	17	0.13
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	17	0.13
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD2	17	0.13
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD3	17	0.13
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	3	0.12
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	17	0.12
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	19	0.12
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	25	0.12
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG11	5	0.12
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG12	5	0.12
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG13	5	0.12
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG21	5	0.12
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG22	5	0.12
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG23	5	0.12
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	14	0.12
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	14	0.12
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	14	0.12

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	15	0.12
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	15	0.12
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	15	0.12
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	14	0.12
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	14	0.12
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	16	0.12
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	16	0.12
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	26	0.12
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	26	0.12
(2,236)	1:207:A:PHE:HB2	1:199:A:LEU:HD11	24	0.12
(2,236)	1:207:A:PHE:HB2	1:199:A:LEU:HD12	24	0.12
(2,236)	1:207:A:PHE:HB2	1:199:A:LEU:HD13	24	0.12
(2,236)	1:207:A:PHE:HB2	1:199:A:LEU:HD21	24	0.12
(2,236)	1:207:A:PHE:HB2	1:199:A:LEU:HD22	24	0.12
(2,236)	1:207:A:PHE:HB2	1:199:A:LEU:HD23	24	0.12
(2,236)	1:207:A:PHE:HB3	1:199:A:LEU:HD11	24	0.12
(2,236)	1:207:A:PHE:HB3	1:199:A:LEU:HD12	24	0.12
(2,236)	1:207:A:PHE:HB3	1:199:A:LEU:HD13	24	0.12
(2,236)	1:207:A:PHE:HB3	1:199:A:LEU:HD21	24	0.12
(2,236)	1:207:A:PHE:HB3	1:199:A:LEU:HD22	24	0.12
(2,236)	1:207:A:PHE:HB3	1:199:A:LEU:HD23	24	0.12
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	4	0.12
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	4	0.12
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	28	0.12
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	28	0.12
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	3	0.12
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	3	0.12
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	3	0.12
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	3	0.12
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	3	0.12
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	3	0.12
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	13	0.12
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	13	0.12
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	22	0.12
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	22	0.12
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD2	29	0.12
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD3	29	0.12
(2,754)	1:210:A:ASP:H	1:211:A:VAL:H	16	0.11
(2,714)	1:149:A:VAL:HB	1:150:A:ARG:H	13	0.11
(2,605)	1:227:A:THR:HA	1:227:A:THR:HB	21	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	2	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	2	0.11

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	2	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	16	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	16	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	16	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	17	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	17	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	17	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	19	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	19	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	19	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	20	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	20	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	20	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	22	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	22	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	22	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	30	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	30	0.11
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	30	0.11
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG11	22	0.11
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG12	22	0.11
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG13	22	0.11
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG21	22	0.11
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG22	22	0.11
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG23	22	0.11
(2,545)	1:149:A:VAL:H	1:149:A:VAL:HB	10	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	11	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	11	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	11	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	20	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	20	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	20	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	25	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	25	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	25	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	30	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	30	0.11
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	30	0.11
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	2	0.11
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	2	0.11
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	9	0.11
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	9	0.11

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	23	0.11
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	23	0.11
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	8	0.11
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	8	0.11
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	15	0.11
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	15	0.11
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	23	0.11
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	23	0.11
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	27	0.11
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	27	0.11
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	13	0.11
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	13	0.11
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	13	0.11
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	13	0.11
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	13	0.11
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	13	0.11
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	18	0.11
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	18	0.11
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	18	0.11
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	18	0.11
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	18	0.11
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	18	0.11
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	19	0.11
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	19	0.11
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	19	0.11
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	19	0.11
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	19	0.11
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	19	0.11
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	22	0.11
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	22	0.11
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	22	0.11
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	22	0.11
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	22	0.11
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	22	0.11
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	24	0.11
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	24	0.11
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	24	0.11
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	24	0.11
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	24	0.11
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	24	0.11
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	28	0.11
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	28	0.11

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	28	0.11
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	28	0.11
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	28	0.11
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	28	0.11
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	7	0.11
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	7	0.11
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	18	0.11
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	18	0.11
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD2	5	0.11
(2,74)	1:159:A:ASP:HA	1:150:A:ARG:HD3	5	0.11
(2,756)	1:225:A:ILE:HG21	1:225:A:ILE:HD11	9	0.1
(2,756)	1:225:A:ILE:HG21	1:225:A:ILE:HD12	9	0.1
(2,756)	1:225:A:ILE:HG21	1:225:A:ILE:HD13	9	0.1
(2,756)	1:225:A:ILE:HG22	1:225:A:ILE:HD11	9	0.1
(2,756)	1:225:A:ILE:HG22	1:225:A:ILE:HD12	9	0.1
(2,756)	1:225:A:ILE:HG22	1:225:A:ILE:HD13	9	0.1
(2,756)	1:225:A:ILE:HG23	1:225:A:ILE:HD11	9	0.1
(2,756)	1:225:A:ILE:HG23	1:225:A:ILE:HD12	9	0.1
(2,756)	1:225:A:ILE:HG23	1:225:A:ILE:HD13	9	0.1
(2,714)	1:149:A:VAL:HB	1:150:A:ARG:H	27	0.1
(2,693)	1:193:A:LEU:HG	1:194:A:SER:H	22	0.1
(2,648)	1:242:A:VAL:H	1:244:A:ARG:HD2	13	0.1
(2,648)	1:242:A:VAL:H	1:244:A:ARG:HD3	13	0.1
(2,637)	1:202:A:VAL:H	1:202:A:VAL:HG11	16	0.1
(2,637)	1:202:A:VAL:H	1:202:A:VAL:HG12	16	0.1
(2,637)	1:202:A:VAL:H	1:202:A:VAL:HG13	16	0.1
(2,637)	1:202:A:VAL:H	1:202:A:VAL:HG21	16	0.1
(2,637)	1:202:A:VAL:H	1:202:A:VAL:HG22	16	0.1
(2,637)	1:202:A:VAL:H	1:202:A:VAL:HG23	16	0.1
(2,618)	1:150:A:ARG:H	1:151:A:LEU:H	19	0.1
(2,618)	1:150:A:ARG:H	1:151:A:LEU:H	27	0.1
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	3	0.1
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	3	0.1
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	3	0.1
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG21	5	0.1
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG22	5	0.1
(2,599)	1:156:A:ILE:H	1:156:A:ILE:HG23	5	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG11	1	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG12	1	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG13	1	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG21	1	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG22	1	0.1

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG23	1	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG11	6	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG12	6	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG13	6	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG21	6	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG22	6	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG23	6	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG11	10	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG12	10	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG13	10	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG21	10	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG22	10	0.1
(2,574)	1:149:A:VAL:H	1:149:A:VAL:HG23	10	0.1
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	2	0.1
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	2	0.1
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	2	0.1
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG21	6	0.1
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG22	6	0.1
(2,510)	1:155:A:ASP:H	1:156:A:ILE:HG23	6	0.1
(2,401)	1:231:A:ARG:H	1:232:A:LEU:H	14	0.1
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	4	0.1
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	4	0.1
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	10	0.1
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	10	0.1
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD2	20	0.1
(2,387)	1:244:A:ARG:HA	1:244:A:ARG:HD3	20	0.1
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	10	0.1
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	10	0.1
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	20	0.1
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	20	0.1
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB2	25	0.1
(2,134)	1:166:A:TRP:HA	1:171:A:PRO:HB3	25	0.1
(2,77)	1:242:A:VAL:HG11	1:234:A:HIS:HA	5	0.1
(2,77)	1:242:A:VAL:HG12	1:234:A:HIS:HA	5	0.1
(2,77)	1:242:A:VAL:HG13	1:234:A:HIS:HA	5	0.1
(2,77)	1:242:A:VAL:HG21	1:234:A:HIS:HA	5	0.1
(2,77)	1:242:A:VAL:HG22	1:234:A:HIS:HA	5	0.1
(2,77)	1:242:A:VAL:HG23	1:234:A:HIS:HA	5	0.1
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD2	14	0.1
(2,76)	1:194:A:SER:HA	1:196:A:PRO:HD3	14	0.1

10 Dihedral-angle violation analysis

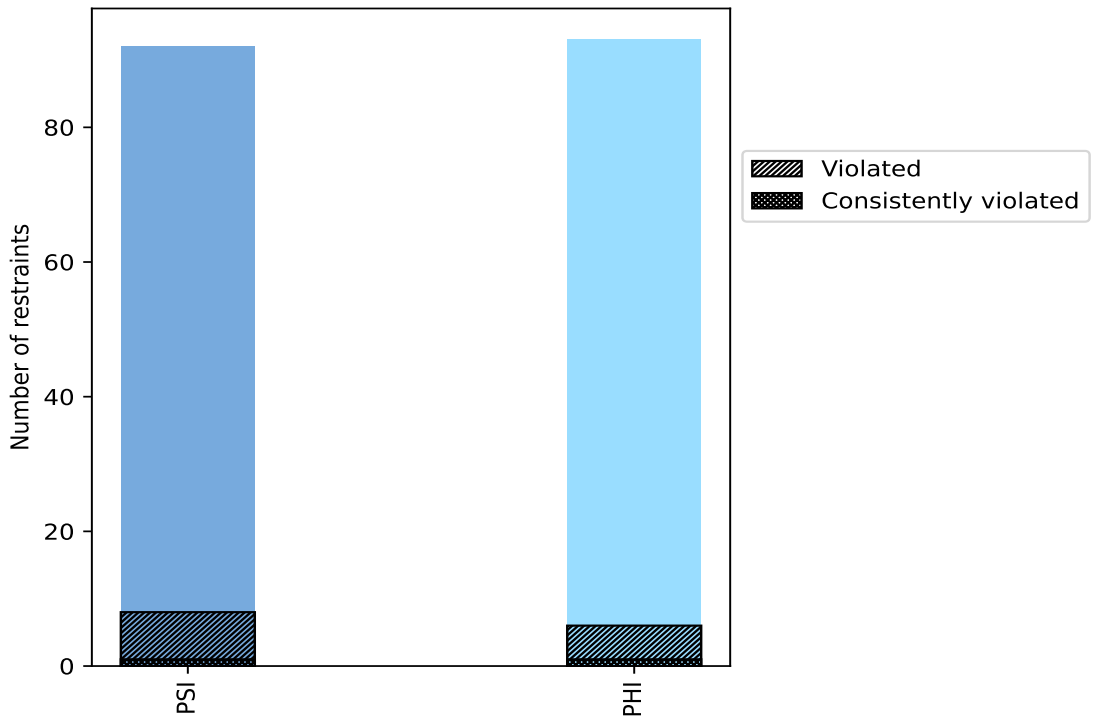
10.1 Summary of dihedral-angle violations

The following table provides the summary of dihedral-angle violations in different dihedral-angle types. Violations less than 1° are not included in the calculation.

Angle type	Count	%[1]	Violated[3]			Consistently Violated[4]		
			Count	%[2]	%[1]	Count	%[2]	%[1]
PSI	92	49.7	8	8.7	4.3	1	1.1	0.5
PHI	93	50.3	6	6.5	3.2	1	1.1	0.5
Total	185	100.0	14	7.6	7.6	2	1.1	1.1

[1] percentage calculated with respect to total number of dihedral-angle restraints, [2] percentage calculated with respect to number of restraints in a particular dihedral-angle type, [3] violated in at least one model, [4] violated in all the models

10.1.1 Bar chart : Distribution of dihedral-angles and violations



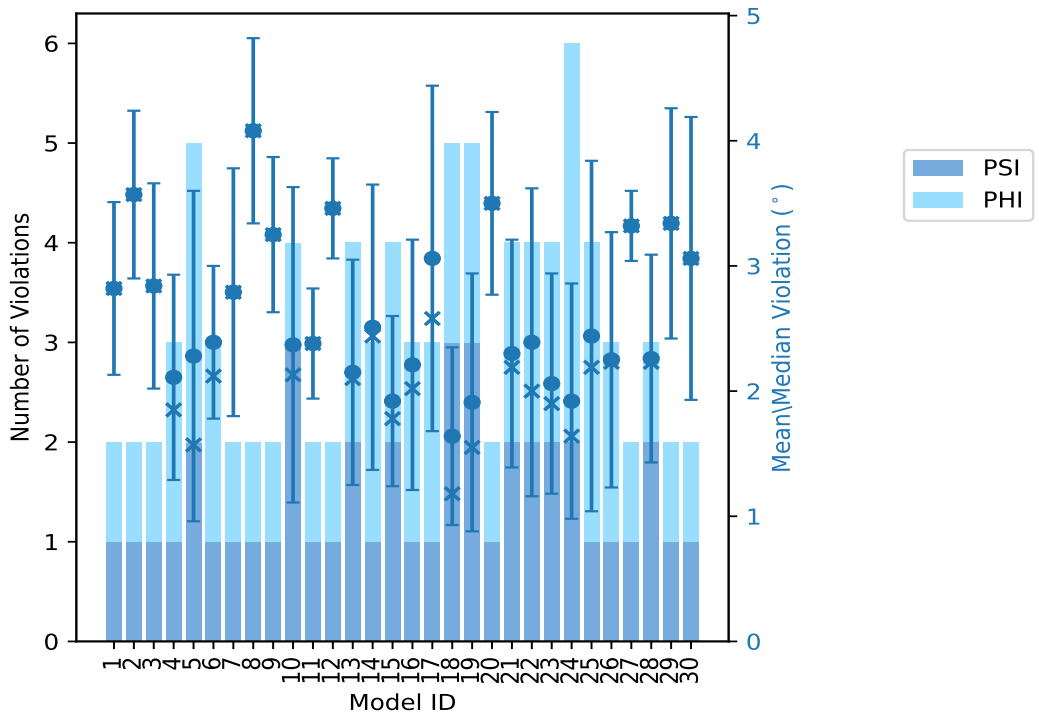
Violated and consistently violated restraints are shown using different hatch patterns in their respective categories

10.2 Dihedral-angle violation statistics for each model (i)

The following table provides the dihedral-angle violation statistics for each model in the ensemble. Violations less than 1° are not included in the statistics.

Model ID	Number of violations			Mean (°)	Max (°)	SD (°)	Median (°)
	PSI	PHI	Total				
1	1	1	2	2.82	3.51	0.69	2.82
2	1	1	2	3.57	4.23	0.67	3.57
3	1	1	2	2.84	3.65	0.82	2.84
4	1	2	3	2.11	3.22	0.82	1.85
5	2	3	5	2.28	4.41	1.32	1.57
6	1	2	3	2.39	3.23	0.61	2.12
7	1	1	2	2.79	3.78	0.99	2.79
8	1	1	2	4.08	4.82	0.74	4.08
9	1	1	2	3.25	3.87	0.62	3.25
10	3	1	4	2.37	4.16	1.26	2.13
11	1	1	2	2.38	2.82	0.44	2.38
12	1	1	2	3.46	3.87	0.4	3.46
13	2	2	4	2.15	3.36	0.9	2.1
14	1	2	3	2.51	3.94	1.14	2.44
15	2	2	4	1.92	2.96	0.68	1.78
16	1	2	3	2.21	3.51	1.0	2.02
17	1	2	3	3.06	4.94	1.38	2.58
18	3	2	5	1.64	2.89	0.71	1.18
19	3	2	5	1.91	3.92	1.03	1.55
20	1	1	2	3.5	4.23	0.73	3.5
21	2	2	4	2.3	3.61	0.91	2.19
22	2	2	4	2.39	4.39	1.23	2.0
23	2	2	4	2.06	3.42	0.88	1.9
24	2	4	6	1.92	3.48	0.94	1.64
25	1	3	4	2.44	4.32	1.4	2.19
26	1	2	3	2.25	3.5	1.02	2.23
27	1	1	2	3.32	3.6	0.28	3.32
28	2	1	3	2.26	3.29	0.83	2.23
29	1	1	2	3.34	4.25	0.92	3.34
30	1	1	2	3.06	4.19	1.13	3.06

10.2.1 Bar graph : Dihedral violation statistics for each model



The mean(dot),median(x) and the standard deviation are shown in blue with respect to the y axis on the right

10.3 Dihedral-angle violation statistics for the ensemble

Violation analysis may find that some restraints are violated in very few models and some are violated in most of models. The following table provides this information as number of violated restraints for a given fraction of ensemble.

Number of violated restraints			Fraction of the ensemble	
PSI	PHI	Total	Count[1]	%
5	2	7	1	3.3
1	1	2	2	6.7
0	0	0	3	10.0
0	1	1	4	13.3
0	0	0	5	16.7
0	0	0	6	20.0
1	0	1	7	23.3
0	0	0	8	26.7
0	0	0	9	30.0
0	0	0	10	33.3
0	0	0	11	36.7

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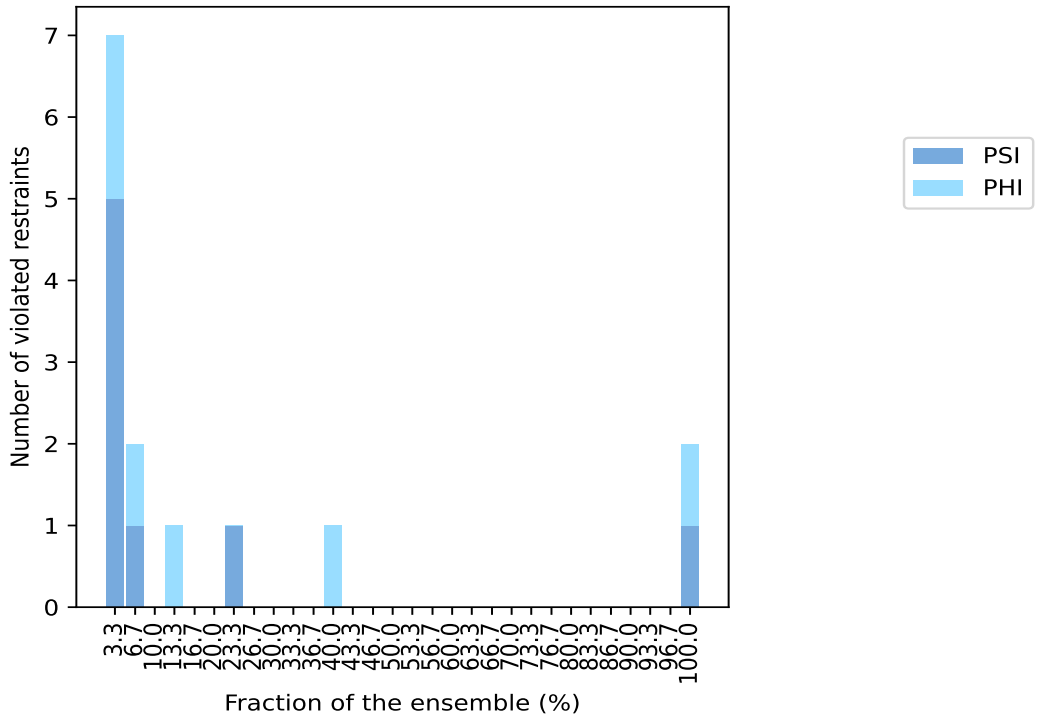
Number of violated restraints			Fraction of the ensemble	
PSI	PHI	Total	Count[1]	%
0	1	1	12	40.0
0	0	0	13	43.3
0	0	0	14	46.7
0	0	0	15	50.0
0	0	0	16	53.3
0	0	0	17	56.7
0	0	0	18	60.0
0	0	0	19	63.3
0	0	0	20	66.7
0	0	0	21	70.0
0	0	0	22	73.3
0	0	0	23	76.7
0	0	0	24	80.0
0	0	0	25	83.3
0	0	0	26	86.7
0	0	0	27	90.0
0	0	0	28	93.3
0	0	0	29	96.7
1	1	2	30	100.0

[1] Number of models with violations

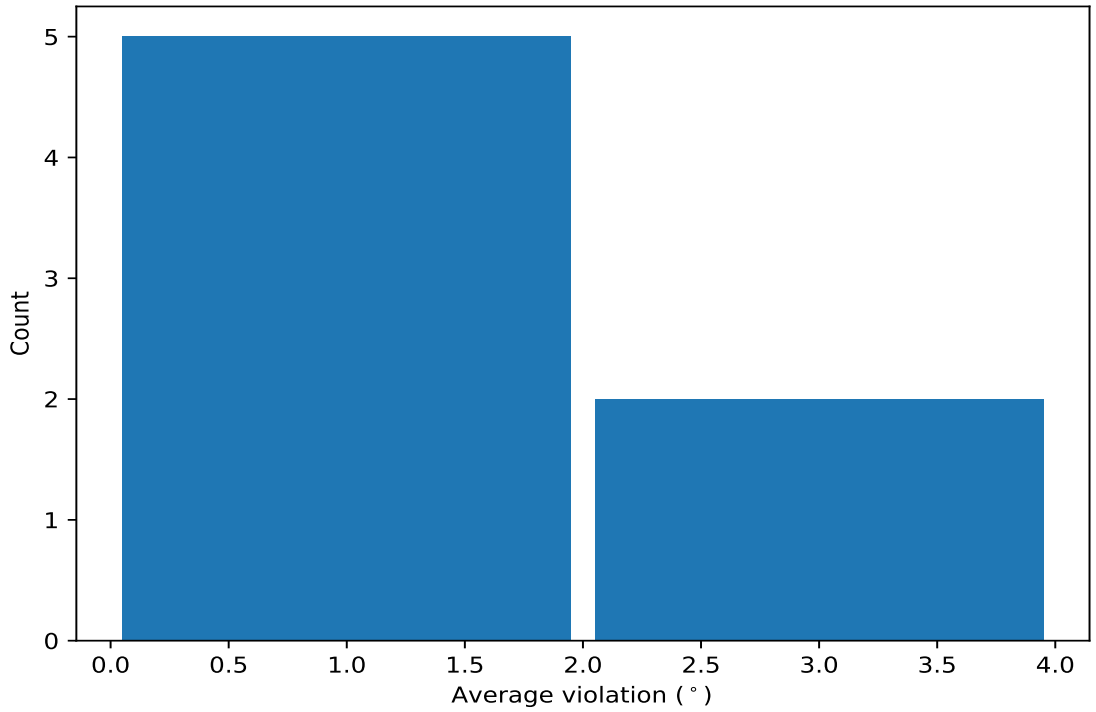
10.3.1 Bar graph : Dihedral-angle Violation statistics for the ensemble



10.4 Most violated dihedral-angle restraints in the ensemble

10.4.1 Histogram : Distribution of mean dihedral-angle violations

The following histogram shows the distribution of the average value of the violation. The average is calculated for each restraint that is violated in more than one model over all the violated models in the ensemble



10.4.2 Table: Most violated dihedral-angle restraints

The following table provides the mean and the standard deviation of the violation for each restraint sorted by number of violated models and the mean value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint.

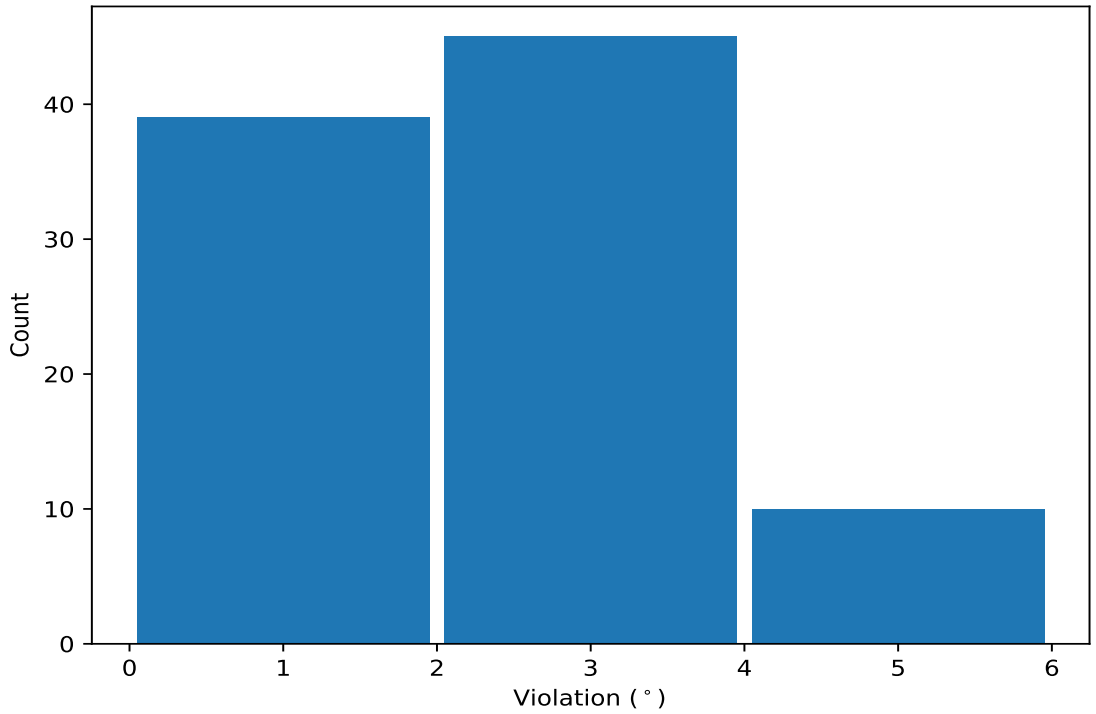
Key	Atom-1	Atom-2	Atom-3	Atom-4	Models[1]	Mean	SD[2]	Median
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	30	3.78	0.53	3.72
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	30	2.41	0.48	2.29
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	12	1.28	0.28	1.16
(1,90)	1:194:A:SER:N	1:194:A:SER:CA	1:194:A:SER:C	1:195:A:LYS:N	7	1.23	0.23	1.18
(1,3)	1:149:A:VAL:C	1:150:A:ARG:N	1:150:A:ARG:CA	1:150:A:ARG:C	4	1.35	0.27	1.36
(1,116)	1:209:A:GLY:N	1:209:A:GLY:CA	1:209:A:GLY:C	1:210:A:ASP:N	2	1.98	0.72	1.98
(1,159)	1:231:A:ARG:C	1:232:A:LEU:N	1:232:A:LEU:CA	1:232:A:LEU:C	2	1.15	0.0	1.15

[1] Number of violated models, [2]Standard deviation, All angle values are in degree (°)

10.5 All violated dihedral-angle restraints

10.5.1 Histogram : Distribution of violations

The following histogram shows the distribution of the absolute value of the violation for all violated restraints in the ensemble.



10.5.2 Table: All violated dihedral-angle restraints

The following table lists the absolute value of the violation for each restraint in the ensemble sorted by its value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint.

Key	Atom-1	Atom-2	Atom-3	Atom-4	Model ID	Violation (°)
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	17	4.94
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	8	4.82
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	5	4.41
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	22	4.39
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	25	4.32
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	29	4.25
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	2	4.23
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	20	4.23
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	30	4.19
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	10	4.16
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	14	3.94
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	19	3.92
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	9	3.87
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	12	3.87
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	7	3.78
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	3	3.65
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	21	3.61
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	27	3.6
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	1	3.51
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	16	3.51
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	26	3.5

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Key	Atom-1	Atom-2	Atom-3	Atom-4	Model ID	Violation (°)
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	24	3.48
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	23	3.42
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	13	3.36
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	8	3.35
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	28	3.29
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	25	3.25
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	5	3.23
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	6	3.23
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	4	3.22
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	12	3.06
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	27	3.05
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	15	2.96
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	10	2.93
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	2	2.9
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	18	2.89
(1,12)	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	1:156:A:ILE:N	11	2.82
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	20	2.78
(1,116)	1:209:A:GLY:N	1:209:A:GLY:CA	1:209:A:GLY:C	1:210:A:ASP:N	24	2.69
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	9	2.63
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	21	2.63
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	13	2.62
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	17	2.58
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	14	2.44
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	29	2.42
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	22	2.35
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	26	2.23
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	28	2.23
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	23	2.15
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	1	2.13
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	24	2.13
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	6	2.12
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	15	2.05
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	3	2.02
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	16	2.02
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	18	1.97
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	11	1.93
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	30	1.93
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	4	1.85
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	6	1.81
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	7	1.8
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	21	1.75
(1,150)	1:226:A:ASP:N	1:226:A:ASP:CA	1:226:A:ASP:C	1:227:A:THR:N	19	1.69
(1,3)	1:149:A:VAL:C	1:150:A:ARG:N	1:150:A:ARG:CA	1:150:A:ARG:C	17	1.67
(1,90)	1:194:A:SER:N	1:194:A:SER:CA	1:194:A:SER:C	1:195:A:LYS:N	22	1.65
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	23	1.64
(1,173)	1:240:A:GLY:N	1:240:A:GLY:CA	1:240:A:GLY:C	1:241:A:TYR:N	13	1.57
(1,3)	1:149:A:VAL:C	1:150:A:ARG:N	1:150:A:ARG:CA	1:150:A:ARG:C	5	1.57
(1,13)	1:155:A:ASP:C	1:156:A:ILE:N	1:156:A:ILE:CA	1:156:A:ILE:C	19	1.55
(1,90)	1:194:A:SER:N	1:194:A:SER:CA	1:194:A:SER:C	1:195:A:LYS:N	15	1.51
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	19	1.38
(1,4)	1:150:A:ARG:N	1:150:A:ARG:CA	1:150:A:ARG:C	1:151:A:LEU:N	10	1.33

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Key	Atom-1	Atom-2	Atom-3	Atom-4	Model ID	Violation (°)
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	4	1.27
(1,116)	1:209:A:GLY:N	1:209:A:GLY:CA	1:209:A:GLY:C	1:210:A:ASP:N	28	1.26
(1,108)	1:203:A:TRP:N	1:203:A:TRP:CA	1:203:A:TRP:C	1:204:A:ARG:N	21	1.22
(1,90)	1:194:A:SER:N	1:194:A:SER:CA	1:194:A:SER:C	1:195:A:LYS:N	5	1.18
(1,90)	1:194:A:SER:N	1:194:A:SER:CA	1:194:A:SER:C	1:195:A:LYS:N	18	1.18
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	15	1.17
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	14	1.16
(1,159)	1:231:A:ARG:C	1:232:A:LEU:N	1:232:A:LEU:CA	1:232:A:LEU:C	22	1.15
(1,159)	1:231:A:ARG:C	1:232:A:LEU:N	1:232:A:LEU:CA	1:232:A:LEU:C	24	1.15
(1,3)	1:149:A:VAL:C	1:150:A:ARG:N	1:150:A:ARG:CA	1:150:A:ARG:C	25	1.14
(1,5)	1:150:A:ARG:C	1:151:A:LEU:N	1:151:A:LEU:CA	1:151:A:LEU:C	16	1.09
(1,38)	1:168:A:ALA:N	1:168:A:ALA:CA	1:168:A:ALA:C	1:169:A:GLY:N	18	1.07
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	18	1.07
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	25	1.06
(1,90)	1:194:A:SER:N	1:194:A:SER:CA	1:194:A:SER:C	1:195:A:LYS:N	10	1.05
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	13	1.05
(1,90)	1:194:A:SER:N	1:194:A:SER:CA	1:194:A:SER:C	1:195:A:LYS:N	23	1.03
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	5	1.03
(1,3)	1:149:A:VAL:C	1:150:A:ARG:N	1:150:A:ARG:CA	1:150:A:ARG:C	24	1.03
(1,90)	1:194:A:SER:N	1:194:A:SER:CA	1:194:A:SER:C	1:195:A:LYS:N	19	1.02
(1,11)	1:154:A:ALA:C	1:155:A:ASP:N	1:155:A:ASP:CA	1:155:A:ASP:C	24	1.02
(1,115)	1:208:A:GLY:C	1:209:A:GLY:N	1:209:A:GLY:CA	1:209:A:GLY:C	26	1.01