Full wwPDB NMR Structure Validation Report (i)

Jun 3, 2023 – 05:07 AM EDT

PDB ID	:	2H3K
BMRB ID	:	6759
Title	:	Solution Structure of the first NEAT domain of IsdH
Authors	:	Pilpa, R.M.; Fadeev, E.A.; Villareal, V.A.; Wong, M.A.; Phillips, M.; Clubb, R.T.
Deposited on	:	2006-05-22

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:

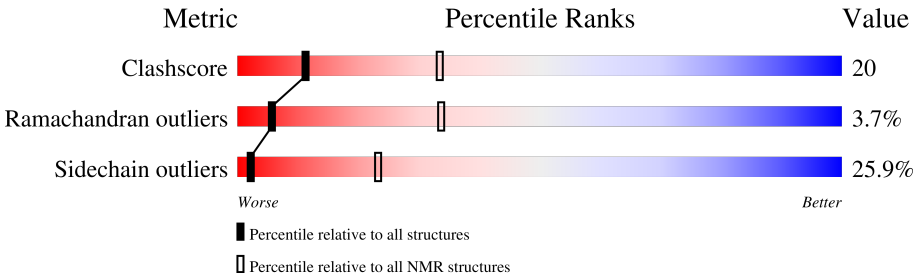
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
wwPDB-RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
wwPDB-ShiftChecker	:	v1.2
BMRB Restraints Analysis	:	v1.2
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.33

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 79%.

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	158937	12864
Ramachandran outliers	154571	11451
Sidechain outliers	154315	11428

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	144	41% 45% 6% 8%

2 Ensemble composition and analysis (i)

This entry contains 20 models. Model 5 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *fewest violations,lowest energy,minimized average structure*.

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:3-A:37, A:45-A:141 (132)	0.58	5

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 3 clusters. No single-model clusters were found.

Cluster number	Models
1	2, 4, 5, 6, 8, 9, 10, 14, 16, 18, 19, 20
2	1, 7, 11, 13, 15, 17
3	3, 12

3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 2319 atoms, of which 1135 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Haptoglobin-binding surface anchored protein.

Mol	Chain	Residues	Atoms					Trace
			Total	C	H	N	O	
1	A	144	2319	754	1135	189	241	0

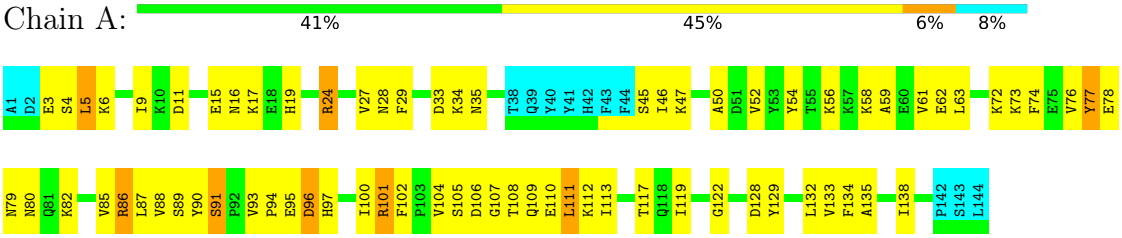
4 Residue-property plots (i)

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: Haptoglobin-binding surface anchored protein

Chain A:



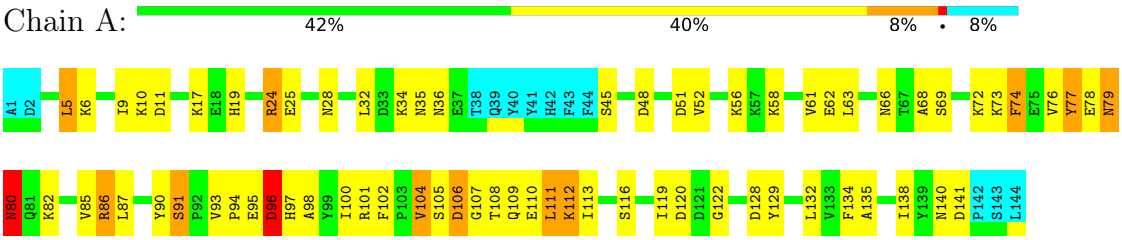
4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

• Molecule 1: Haptoglobin-binding surface anchored protein

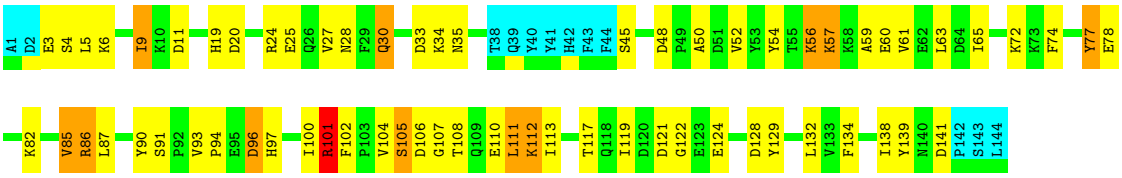
Chain A:



4.2.2 Score per residue for model 2

• Molecule 1: Haptoglobin-binding surface anchored protein

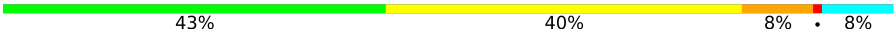
Chain A:

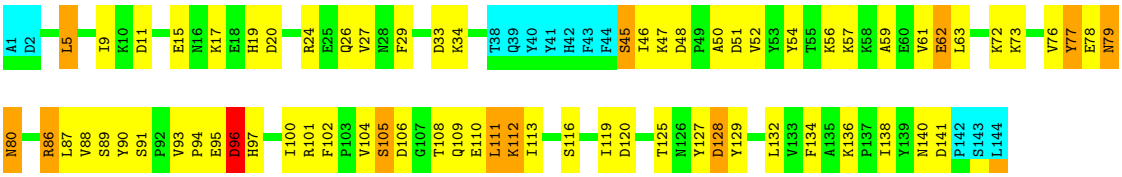


4.2.3 Score per residue for model 3

• Molecule 1: Haptoglobin-binding surface anchored protein

Chain A:

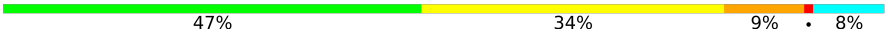


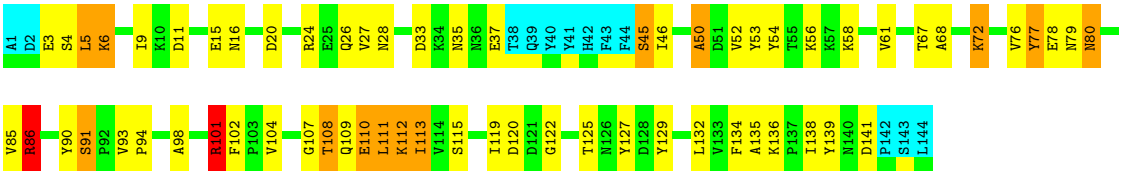


4.2.4 Score per residue for model 4

• Molecule 1: Haptoglobin-binding surface anchored protein

Chain A:

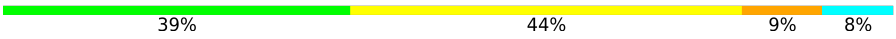


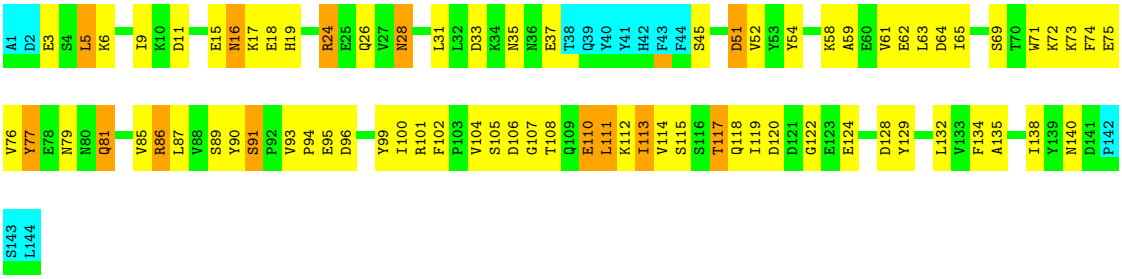


4.2.5 Score per residue for model 5 (medoid)

• Molecule 1: Haptoglobin-binding surface anchored protein

Chain A:

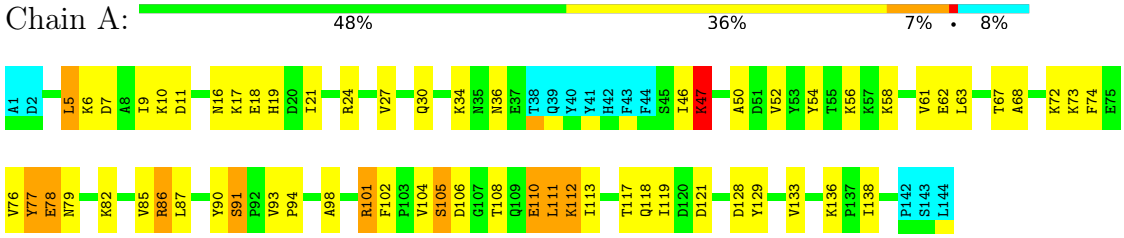




4.2.6 Score per residue for model 6

• Molecule 1: Haptoglobin-binding surface anchored protein

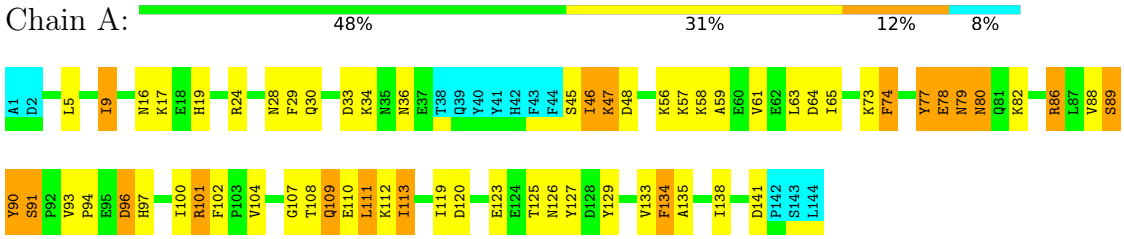
Chain A:



4.2.7 Score per residue for model 7

• Molecule 1: Haptoglobin-binding surface anchored protein

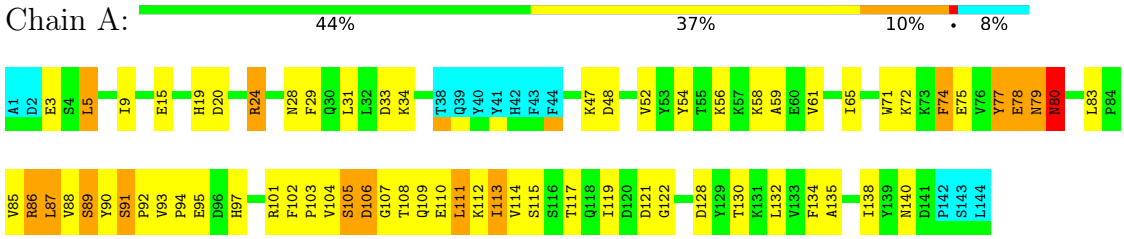
Chain A:



4.2.8 Score per residue for model 8

• Molecule 1: Haptoglobin-binding surface anchored protein

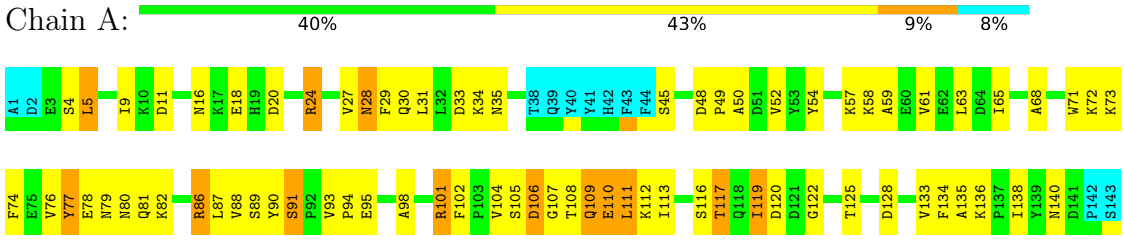
Chain A:



4.2.9 Score per residue for model 9

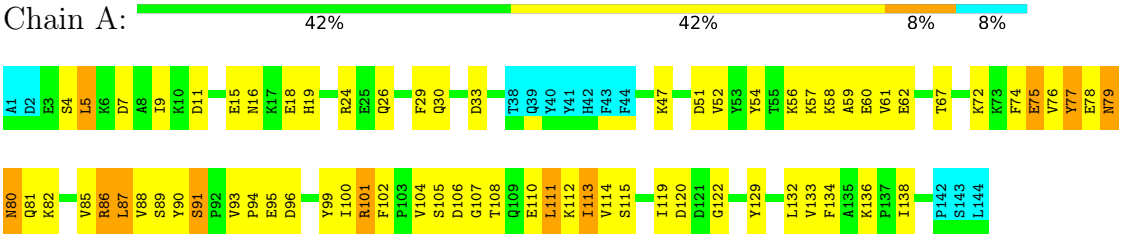
• Molecule 1: Haptoglobin-binding surface anchored protein

Chain A:



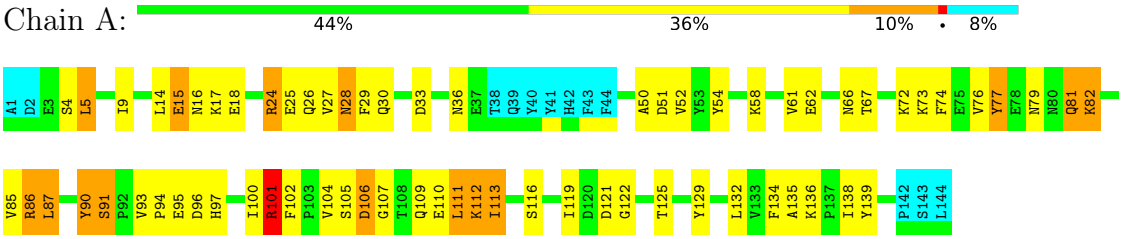
4.2.10 Score per residue for model 10

• Molecule 1: Haptoglobin-binding surface anchored protein



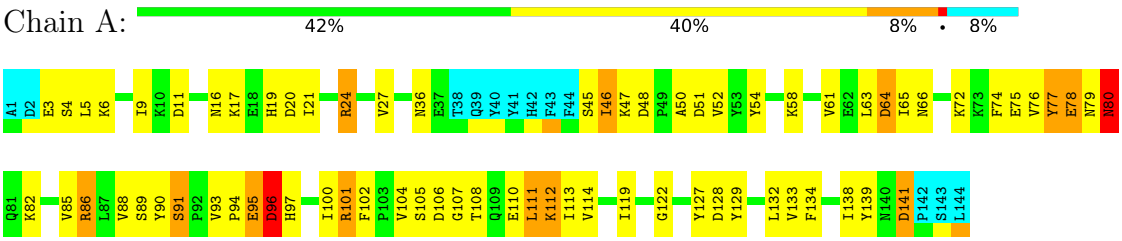
4.2.11 Score per residue for model 11

• Molecule 1: Haptoglobin-binding surface anchored protein



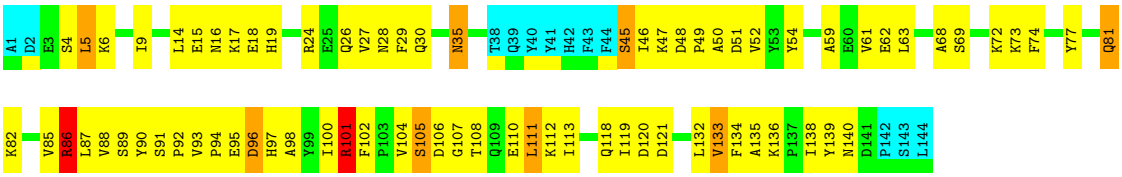
4.2.12 Score per residue for model 12

• Molecule 1: Haptoglobin-binding surface anchored protein



4.2.13 Score per residue for model 13

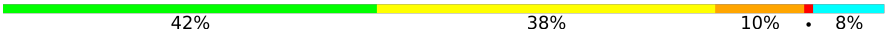
• Molecule 1: Haptoglobin-binding surface anchored protein

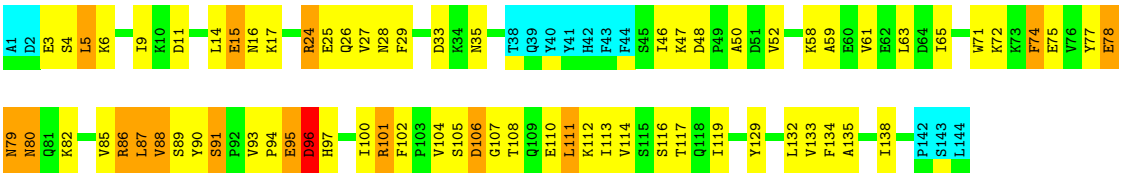


4.2.14 Score per residue for model 14

• Molecule 1: Haptoglobin-binding surface anchored protein

Chain A:

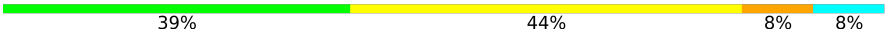


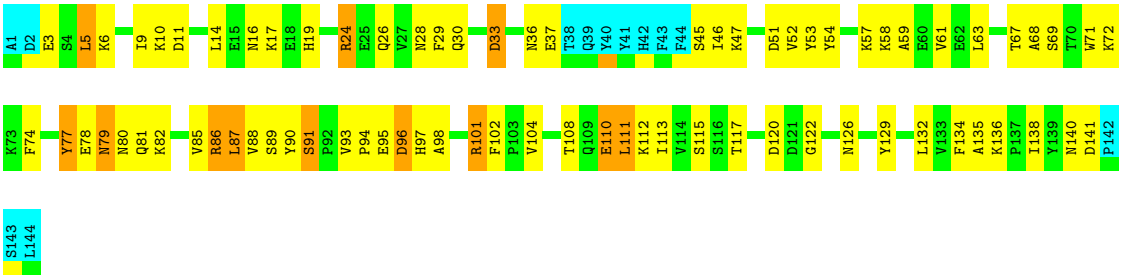


4.2.15 Score per residue for model 15

• Molecule 1: Haptoglobin-binding surface anchored protein

Chain A:

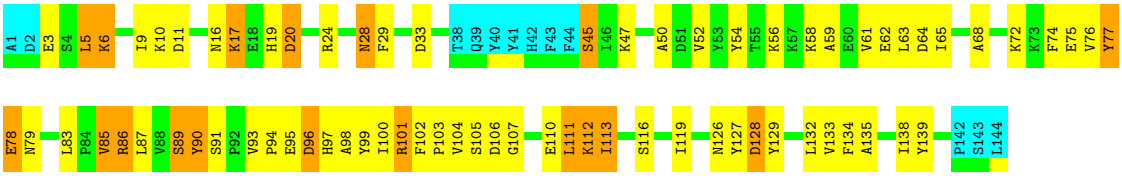




4.2.16 Score per residue for model 16

• Molecule 1: Haptoglobin-binding surface anchored protein

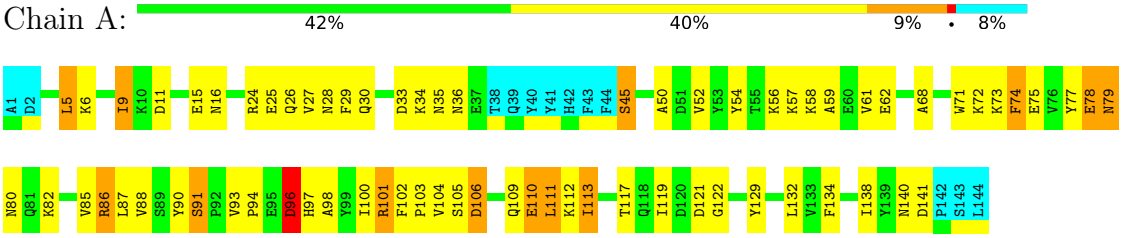
Chain A:



4.2.17 Score per residue for model 17

• Molecule 1: Haptoglobin-binding surface anchored protein

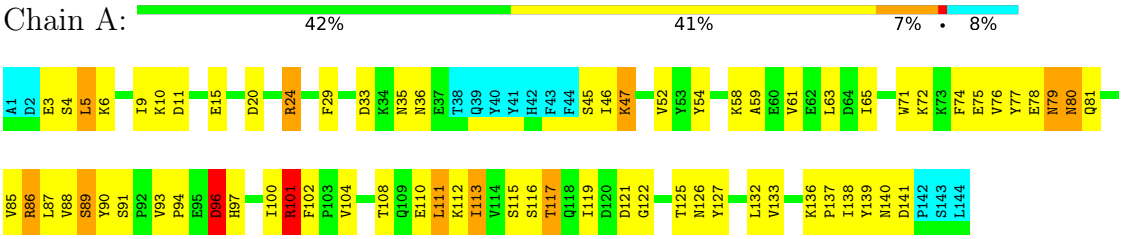
Chain A:



4.2.18 Score per residue for model 18

• Molecule 1: Haptoglobin-binding surface anchored protein

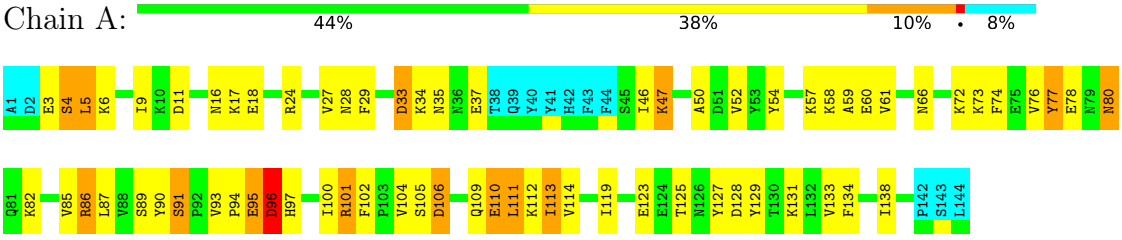
Chain A:



4.2.19 Score per residue for model 19

• Molecule 1: Haptoglobin-binding surface anchored protein

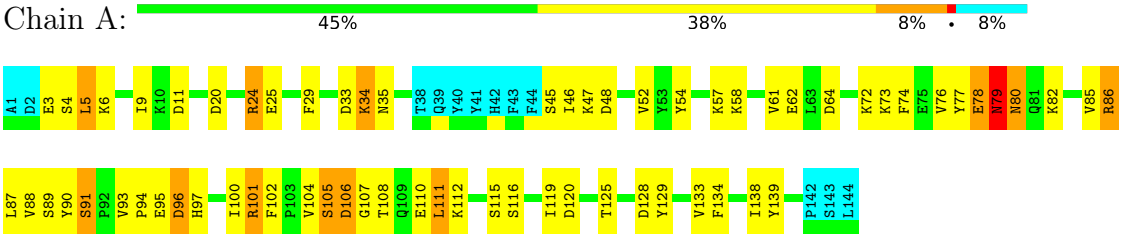
Chain A:



4.2.20 Score per residue for model 20

• Molecule 1: Haptoglobin-binding surface anchored protein

Chain A:



5 Refinement protocol and experimental data overview

The models were refined using the following method: *distance geometry*.

Of the 200 calculated structures, 20 were deposited, based on the following criterion: *structures with acceptable covalent geometry,structures with favorable non-bond energy,structures with the least restraint violations,structures with the lowest energy*.

The authors did not provide any information on software used for structure solution, optimization or refinement.

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	1508
Number of shifts mapped to atoms	1508
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	79%

6 Model quality

6.1 Standard geometry

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

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	Planarity
1	A	0.0±0.0	3.0±0.0
All	All	0	60

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

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

Mol	Chain	Res	Type	Group	Models (Total)
1	A	24	ARG	Sidechain	20
1	A	86	ARG	Sidechain	20
1	A	101	ARG	Sidechain	20

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	1077	1043	1043	43±6
All	All	21540	20860	20860	857

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 20.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:52:VAL:HG11	1:A:54:TYR:CZ	0.83	2.09	20	16
1:A:61:VAL:HG11	1:A:134:PHE:CZ	0.79	2.13	12	14
1:A:74:PHE:CE2	1:A:85:VAL:HG21	0.79	2.13	16	9
1:A:110:GLU:C	1:A:111:LEU:HD23	0.76	2.01	17	20
1:A:104:VAL:HG21	1:A:138:ILE:CG2	0.76	2.09	9	16
1:A:5:LEU:O	1:A:9:ILE:HG23	0.76	1.80	9	20
1:A:28:ASN:OD1	1:A:135:ALA:HB2	0.76	1.81	9	3
1:A:132:LEU:O	1:A:132:LEU:HD23	0.73	1.83	1	11
1:A:68:ALA:HB2	1:A:98:ALA:HB2	0.72	1.61	4	4
1:A:61:VAL:HG11	1:A:134:PHE:CE1	0.71	2.20	16	4
1:A:104:VAL:HG21	1:A:138:ILE:HG21	0.67	1.67	11	16
1:A:87:LEU:HD23	1:A:99:TYR:O	0.66	1.89	10	1
1:A:78:GLU:OE1	1:A:108:THR:HG23	0.66	1.89	2	3
1:A:62:GLU:O	1:A:63:LEU:HD12	0.66	1.91	16	2
1:A:61:VAL:HG21	1:A:134:PHE:CZ	0.66	2.26	9	2
1:A:54:TYR:CD1	1:A:59:ALA:HB2	0.65	2.26	19	5
1:A:64:ASP:C	1:A:65:ILE:HD12	0.64	2.12	5	3
1:A:14:LEU:HD12	1:A:87:LEU:CD2	0.62	2.24	15	1
1:A:110:GLU:HG3	1:A:133:VAL:HG12	0.62	1.71	10	1
1:A:78:GLU:OE1	1:A:108:THR:HG21	0.62	1.94	18	1
1:A:74:PHE:CE2	1:A:85:VAL:HG11	0.62	2.29	12	2
1:A:119:ILE:HD12	1:A:119:ILE:N	0.61	2.10	16	5
1:A:108:THR:HG22	1:A:111:LEU:HD22	0.61	1.71	3	6
1:A:74:PHE:CE1	1:A:113:ILE:HG23	0.61	2.30	6	7
1:A:76:VAL:HG22	1:A:113:ILE:HG13	0.61	1.73	4	6
1:A:59:ALA:HB3	1:A:104:VAL:CG2	0.61	2.25	15	7
1:A:104:VAL:HG23	1:A:104:VAL:O	0.60	1.96	11	16
1:A:119:ILE:O	1:A:119:ILE:HG22	0.60	1.96	13	16
1:A:104:VAL:HG21	1:A:138:ILE:HG22	0.60	1.72	10	5
1:A:110:GLU:HG2	1:A:133:VAL:HG22	0.59	1.73	12	2
1:A:63:LEU:HD12	1:A:63:LEU:N	0.58	2.14	3	1
1:A:74:PHE:CE1	1:A:76:VAL:HG23	0.58	2.34	6	4
1:A:20:ASP:C	1:A:21:ILE:HD13	0.57	2.19	12	1
1:A:52:VAL:HG11	1:A:54:TYR:CE1	0.57	2.34	13	10
1:A:78:GLU:OE2	1:A:108:THR:HG21	0.57	1.99	6	1
1:A:61:VAL:HG11	1:A:102:PHE:CE2	0.57	2.34	9	2
1:A:28:ASN:HB3	1:A:135:ALA:HB2	0.57	1.77	8	7
1:A:62:GLU:C	1:A:63:LEU:HD12	0.57	2.20	13	1
1:A:74:PHE:CD2	1:A:85:VAL:HG21	0.57	2.34	6	3
1:A:83:LEU:HD22	1:A:103:PRO:HG2	0.56	1.77	8	2
1:A:111:LEU:HD23	1:A:111:LEU:N	0.56	2.15	19	20
1:A:5:LEU:HG	1:A:87:LEU:HD11	0.56	1.77	8	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:100:ILE:HD12	1:A:100:ILE:C	0.56	2.21	2	9
1:A:71:TRP:HA	1:A:117:THR:HG22	0.56	1.78	15	2
1:A:74:PHE:HE2	1:A:85:VAL:HG11	0.55	1.61	12	1
1:A:68:ALA:CB	1:A:98:ALA:HB2	0.55	2.31	4	7
1:A:61:VAL:HG11	1:A:134:PHE:HZ	0.55	1.56	12	8
1:A:14:LEU:HD12	1:A:87:LEU:HD23	0.55	1.78	15	1
1:A:61:VAL:HG21	1:A:134:PHE:CE1	0.54	2.37	9	1
1:A:71:TRP:CE3	1:A:117:THR:HG22	0.54	2.37	17	4
1:A:59:ALA:HB3	1:A:104:VAL:HG23	0.54	1.80	8	4
1:A:90:TYR:CZ	1:A:91:SER:O	0.53	2.61	7	20
1:A:52:VAL:HG22	1:A:61:VAL:HG22	0.53	1.80	12	3
1:A:87:LEU:HG	1:A:100:ILE:HG22	0.53	1.81	11	1
1:A:102:PHE:N	1:A:102:PHE:CD1	0.53	2.77	10	6
1:A:108:THR:CG2	1:A:111:LEU:HD22	0.53	2.34	3	3
1:A:52:VAL:CG1	1:A:54:TYR:CZ	0.52	2.93	8	6
1:A:87:LEU:HD12	1:A:100:ILE:HG22	0.52	1.81	14	2
1:A:102:PHE:CD1	1:A:102:PHE:N	0.52	2.78	1	10
1:A:71:TRP:CZ3	1:A:74:PHE:CD2	0.52	2.97	8	1
1:A:52:VAL:CG1	1:A:54:TYR:CE1	0.51	2.93	4	9
1:A:71:TRP:CE3	1:A:117:THR:CG2	0.51	2.93	17	2
1:A:85:VAL:HG22	1:A:102:PHE:HB3	0.51	1.82	11	1
1:A:74:PHE:HE2	1:A:100:ILE:HD13	0.51	1.66	12	5
1:A:110:GLU:HB3	1:A:133:VAL:HG22	0.51	1.81	6	2
1:A:21:ILE:HD13	1:A:21:ILE:N	0.51	2.21	12	1
1:A:54:TYR:CE1	1:A:59:ALA:HB2	0.51	2.41	16	4
1:A:110:GLU:CG	1:A:133:VAL:HG22	0.51	2.35	12	1
1:A:54:TYR:CD1	1:A:59:ALA:CB	0.51	2.94	19	3
1:A:61:VAL:CG2	1:A:138:ILE:HG21	0.50	2.36	5	4
1:A:14:LEU:HD22	1:A:88:VAL:O	0.50	2.06	13	1
1:A:133:VAL:HG23	1:A:133:VAL:O	0.50	2.05	10	2
1:A:74:PHE:CD2	1:A:85:VAL:HG11	0.50	2.42	10	3
1:A:74:PHE:HE2	1:A:85:VAL:HG21	0.50	1.65	10	2
1:A:111:LEU:N	1:A:111:LEU:CD2	0.50	2.75	11	19
1:A:85:VAL:O	1:A:85:VAL:HG13	0.50	2.07	5	2
1:A:133:VAL:O	1:A:133:VAL:HG12	0.50	2.06	14	4
1:A:88:VAL:HG12	1:A:89:SER:N	0.49	2.23	3	2
1:A:88:VAL:HG11	1:A:101:ARG:HD3	0.49	1.84	9	1
1:A:76:VAL:HG12	1:A:113:ILE:HG13	0.49	1.85	19	2
1:A:61:VAL:HG23	1:A:138:ILE:HG21	0.49	1.84	14	1
1:A:61:VAL:HG23	1:A:104:VAL:HG21	0.48	1.85	1	4
1:A:74:PHE:HE1	1:A:113:ILE:HG23	0.48	1.68	13	3

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:71:TRP:CZ3	1:A:117:THR:CG2	0.48	2.96	18	2
1:A:96:ASP:O	1:A:97:HIS:CG	0.48	2.66	13	13
1:A:46:ILE:HG22	1:A:47:LYS:N	0.48	2.24	20	6
1:A:29:PHE:CZ	1:A:46:ILE:HG21	0.48	2.43	15	2
1:A:90:TYR:CE2	1:A:91:SER:O	0.48	2.67	15	13
1:A:74:PHE:HB3	1:A:85:VAL:HG11	0.48	1.86	14	1
1:A:50:ALA:HB1	1:A:61:VAL:CG1	0.48	2.38	16	1
1:A:19:HIS:CG	1:A:19:HIS:O	0.47	2.67	10	7
1:A:129:TYR:O	1:A:129:TYR:CD2	0.47	2.67	4	11
1:A:29:PHE:CD1	1:A:29:PHE:O	0.47	2.67	15	14
1:A:90:TYR:CE1	1:A:91:SER:O	0.47	2.67	11	4
1:A:61:VAL:CG2	1:A:104:VAL:HG11	0.47	2.39	13	2
1:A:45:SER:OG	1:A:46:ILE:HD12	0.47	2.09	13	1
1:A:77:TYR:O	1:A:77:TYR:CG	0.47	2.67	15	12
1:A:14:LEU:HD13	1:A:89:SER:HA	0.47	1.85	15	1
1:A:66:ASN:OD1	1:A:97:HIS:CE1	0.47	2.67	19	3
1:A:86:ARG:CZ	1:A:86:ARG:CB	0.47	2.92	13	1
1:A:112:LYS:CG	1:A:129:TYR:CE1	0.47	2.98	1	2
1:A:19:HIS:O	1:A:19:HIS:CG	0.46	2.68	5	4
1:A:19:HIS:CE1	1:A:89:SER:OG	0.46	2.68	16	1
1:A:108:THR:HG22	1:A:111:LEU:CD2	0.46	2.40	3	2
1:A:77:TYR:CD2	1:A:112:LYS:HB2	0.46	2.45	4	6
1:A:88:VAL:HG23	1:A:101:ARG:HG2	0.46	1.87	12	2
1:A:125:THR:HG22	1:A:127:TYR:CE1	0.46	2.45	4	1
1:A:88:VAL:CG2	1:A:89:SER:N	0.46	2.78	18	5
1:A:54:TYR:CE1	1:A:59:ALA:CB	0.46	2.99	16	3
1:A:119:ILE:N	1:A:119:ILE:CD1	0.46	2.78	16	3
1:A:88:VAL:HG13	1:A:89:SER:OG	0.46	2.10	8	1
1:A:100:ILE:HD12	1:A:101:ARG:N	0.46	2.26	11	1
1:A:138:ILE:N	1:A:138:ILE:HD13	0.46	2.26	14	1
1:A:93:VAL:N	1:A:94:PRO:HD2	0.45	2.26	7	20
1:A:85:VAL:HG21	1:A:100:ILE:HD13	0.45	1.87	17	1
1:A:34:LYS:HG3	1:A:129:TYR:CD2	0.45	2.46	20	1
1:A:77:TYR:CD1	1:A:78:GLU:N	0.45	2.84	7	1
1:A:65:ILE:O	1:A:65:ILE:HG22	0.45	2.10	18	2
1:A:54:TYR:CE1	1:A:139:TYR:O	0.45	2.69	13	1
1:A:62:GLU:CG	1:A:63:LEU:N	0.45	2.79	16	1
1:A:78:GLU:O	1:A:79:ASN:CB	0.45	2.65	3	10
1:A:88:VAL:HG23	1:A:89:SER:N	0.45	2.26	9	4
1:A:51:ASP:OD1	1:A:53:TYR:CE2	0.45	2.70	15	1
1:A:56:LYS:CD	1:A:57:LYS:N	0.45	2.80	2	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:34:LYS:CG	1:A:129:TYR:CD2	0.45	3.00	20	1
1:A:74:PHE:CE1	1:A:76:VAL:CG2	0.45	3.00	1	2
1:A:111:LEU:HD21	1:A:134:PHE:CD2	0.45	2.47	4	3
1:A:5:LEU:HD23	1:A:9:ILE:CG2	0.44	2.42	1	1
1:A:65:ILE:HD12	1:A:65:ILE:N	0.44	2.27	16	2
1:A:77:TYR:CE1	1:A:112:LYS:HB2	0.44	2.48	3	1
1:A:125:THR:HG22	1:A:127:TYR:CZ	0.44	2.47	19	2
1:A:78:GLU:O	1:A:80:ASN:N	0.44	2.51	12	14
1:A:91:SER:OG	1:A:95:GLU:CB	0.44	2.66	5	10
1:A:3:GLU:CG	1:A:4:SER:N	0.44	2.78	19	1
1:A:105:SER:O	1:A:106:ASP:CB	0.44	2.66	11	16
1:A:77:TYR:O	1:A:77:TYR:CD1	0.44	2.70	3	1
1:A:31:LEU:CD2	1:A:132:LEU:HD12	0.44	2.43	5	1
1:A:90:TYR:CD2	1:A:90:TYR:O	0.44	2.71	7	1
1:A:68:ALA:HB1	1:A:98:ALA:HB2	0.44	1.89	13	1
1:A:102:PHE:CD2	1:A:102:PHE:N	0.43	2.86	7	3
1:A:61:VAL:O	1:A:61:VAL:HG13	0.43	2.13	9	1
1:A:61:VAL:CG1	1:A:102:PHE:CE2	0.43	3.02	10	2
1:A:46:ILE:HD13	1:A:46:ILE:N	0.43	2.29	7	1
1:A:85:VAL:HG11	1:A:100:ILE:HD13	0.43	1.88	1	1
1:A:76:VAL:HG13	1:A:111:LEU:HB2	0.43	1.90	10	1
1:A:32:LEU:HD22	1:A:36:ASN:C	0.43	2.33	1	1
1:A:109:GLN:O	1:A:134:PHE:N	0.43	2.52	4	6
1:A:74:PHE:CE2	1:A:100:ILE:HD13	0.43	2.48	7	1
1:A:46:ILE:H	1:A:46:ILE:HD12	0.43	1.73	6	2
1:A:73:LYS:O	1:A:115:SER:CB	0.43	2.67	5	1
1:A:82:LYS:HE3	1:A:114:VAL:HG21	0.43	1.89	19	1
1:A:107:GLY:O	1:A:108:THR:C	0.43	2.57	7	11
1:A:27:VAL:O	1:A:50:ALA:N	0.43	2.52	9	8
1:A:61:VAL:O	1:A:101:ARG:CB	0.43	2.67	12	6
1:A:127:TYR:O	1:A:128:ASP:CB	0.43	2.67	3	2
1:A:127:TYR:O	1:A:129:TYR:N	0.43	2.52	12	3
1:A:85:VAL:O	1:A:85:VAL:CG1	0.43	2.67	4	2
1:A:74:PHE:CZ	1:A:76:VAL:CG2	0.43	3.02	9	1
1:A:28:ASN:O	1:A:135:ALA:N	0.42	2.52	7	2
1:A:29:PHE:CE2	1:A:49:PRO:HA	0.42	2.49	13	2
1:A:75:GLU:O	1:A:114:VAL:N	0.42	2.52	12	2
1:A:19:HIS:O	1:A:19:HIS:ND1	0.42	2.52	1	5
1:A:27:VAL:N	1:A:50:ALA:O	0.42	2.52	17	5
1:A:107:GLY:HA3	1:A:139:TYR:CE1	0.42	2.49	20	3
1:A:61:VAL:HG23	1:A:104:VAL:CG2	0.42	2.44	4	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:45:SER:C	1:A:46:ILE:HD12	0.42	2.34	12	1
1:A:107:GLY:N	1:A:139:TYR:CE1	0.42	2.87	4	1
1:A:77:TYR:CE2	1:A:112:LYS:HB2	0.42	2.50	12	1
1:A:107:GLY:HA3	1:A:139:TYR:CZ	0.42	2.49	4	3
1:A:78:GLU:OE2	1:A:108:THR:CG2	0.42	2.68	6	1
1:A:52:VAL:HG21	1:A:138:ILE:HD12	0.42	1.92	12	1
1:A:15:GLU:O	1:A:16:ASN:CB	0.42	2.68	11	3
1:A:24:ARG:O	1:A:25:GLU:CG	0.42	2.68	11	1
1:A:54:TYR:CG	1:A:141:ASP:OD1	0.42	2.73	18	1
1:A:119:ILE:O	1:A:120:ASP:CB	0.42	2.67	7	1
1:A:18:GLU:O	1:A:18:GLU:CG	0.42	2.68	10	1
1:A:6:LYS:O	1:A:6:LYS:CD	0.42	2.68	16	1
1:A:34:LYS:O	1:A:35:ASN:ND2	0.42	2.53	1	1
1:A:133:VAL:O	1:A:133:VAL:CG2	0.42	2.68	10	2
1:A:14:LEU:N	1:A:14:LEU:CD1	0.42	2.82	11	1
1:A:88:VAL:HG11	1:A:101:ARG:NE	0.42	2.30	17	2
1:A:103:PRO:C	1:A:104:VAL:HG13	0.42	2.35	17	1
1:A:109:GLN:NE2	1:A:133:VAL:CG1	0.42	2.83	19	1
1:A:89:SER:OG	1:A:99:TYR:CD2	0.42	2.73	5	1
1:A:14:LEU:N	1:A:14:LEU:CD2	0.42	2.83	15	1
1:A:46:ILE:CG2	1:A:47:LYS:N	0.42	2.83	19	3
1:A:51:ASP:O	1:A:62:GLU:N	0.42	2.52	3	2
1:A:107:GLY:HA3	1:A:139:TYR:CE2	0.42	2.50	4	1
1:A:75:GLU:O	1:A:114:VAL:CG2	0.42	2.68	8	2
1:A:77:TYR:O	1:A:77:TYR:CD2	0.42	2.73	11	1
1:A:19:HIS:CD2	1:A:19:HIS:N	0.42	2.87	16	1
1:A:32:LEU:HD22	1:A:36:ASN:HA	0.42	1.91	1	1
1:A:63:LEU:N	1:A:63:LEU:CD1	0.42	2.83	3	1
1:A:76:VAL:HG13	1:A:112:LYS:O	0.42	2.15	3	1
1:A:65:ILE:O	1:A:97:HIS:ND1	0.42	2.53	8	2
1:A:109:GLN:NE2	1:A:134:PHE:O	0.42	2.53	17	1
1:A:112:LYS:HG3	1:A:129:TYR:CE1	0.41	2.50	1	1
1:A:28:ASN:OD1	1:A:30:GLN:NE2	0.41	2.53	2	1
1:A:28:ASN:OD1	1:A:29:PHE:N	0.41	2.53	17	2
1:A:61:VAL:HG11	1:A:102:PHE:CZ	0.41	2.50	9	1
1:A:88:VAL:HG11	1:A:101:ARG:HG2	0.41	1.92	18	1
1:A:91:SER:CB	1:A:95:GLU:HB3	0.41	2.45	14	6
1:A:112:LYS:HG3	1:A:129:TYR:CD1	0.41	2.50	1	1
1:A:90:TYR:CD1	1:A:90:TYR:O	0.41	2.73	20	1
1:A:6:LYS:O	1:A:9:ILE:CG1	0.41	2.68	4	1
1:A:91:SER:HB3	1:A:95:GLU:CB	0.41	2.45	13	3

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:5:LEU:O	1:A:9:ILE:CG2	0.41	2.68	16	2
1:A:24:ARG:HB3	1:A:53:TYR:CD1	0.41	2.50	15	1
1:A:132:LEU:HD23	1:A:132:LEU:O	0.41	2.15	14	2
1:A:9:ILE:HD12	1:A:90:TYR:CZ	0.41	2.50	1	1
1:A:95:GLU:O	1:A:97:HIS:CD2	0.41	2.74	8	2
1:A:113:ILE:HD11	1:A:132:LEU:HD13	0.41	1.91	1	1
1:A:9:ILE:HB	1:A:90:TYR:CG	0.41	2.51	2	1
1:A:91:SER:N	1:A:97:HIS:O	0.41	2.51	7	1
1:A:104:VAL:CG2	1:A:138:ILE:HG21	0.41	2.45	12	1
1:A:125:THR:CG2	1:A:127:TYR:CZ	0.41	3.04	19	1
1:A:53:TYR:CB	1:A:101:ARG:NH2	0.41	2.84	4	1
1:A:115:SER:O	1:A:127:TYR:N	0.41	2.54	4	1
1:A:77:TYR:CD1	1:A:77:TYR:C	0.41	2.92	6	1
1:A:9:ILE:HB	1:A:90:TYR:CE1	0.41	2.51	6	2
1:A:92:PRO:O	1:A:95:GLU:N	0.41	2.53	8	2
1:A:78:GLU:HG3	1:A:108:THR:HG23	0.41	1.93	10	1
1:A:14:LEU:HD13	1:A:87:LEU:CD2	0.41	2.46	14	1
1:A:137:PRO:HB2	1:A:139:TYR:CE2	0.41	2.51	18	1
1:A:17:LYS:CG	1:A:18:GLU:N	0.41	2.84	19	1
1:A:61:VAL:HB	1:A:102:PHE:CE2	0.41	2.50	4	1
1:A:77:TYR:CD2	1:A:112:LYS:CB	0.41	3.04	4	1
1:A:86:ARG:CG	1:A:101:ARG:O	0.41	2.69	4	1
1:A:66:ASN:ND2	1:A:97:HIS:CE1	0.41	2.89	11	1
1:A:78:GLU:OE1	1:A:79:ASN:CB	0.41	2.69	17	1
1:A:119:ILE:H	1:A:119:ILE:HD12	0.41	1.76	17	1
1:A:3:GLU:HG3	1:A:4:SER:N	0.41	2.32	4	1
1:A:20:ASP:OD1	1:A:20:ASP:N	0.41	2.53	9	1
1:A:104:VAL:O	1:A:104:VAL:CG2	0.40	2.68	7	1
1:A:24:ARG:HB3	1:A:53:TYR:CE1	0.40	2.51	15	1
1:A:64:ASP:OD1	1:A:99:TYR:CE2	0.40	2.75	16	1
1:A:90:TYR:O	1:A:90:TYR:CD2	0.40	2.74	16	1
1:A:112:LYS:HG2	1:A:129:TYR:CE1	0.40	2.51	2	1
1:A:59:ALA:N	1:A:140:ASN:OD1	0.40	2.54	5	1
1:A:119:ILE:HD12	1:A:119:ILE:H	0.40	1.71	18	1
1:A:54:TYR:HD1	1:A:59:ALA:HB2	0.40	1.74	19	1
1:A:130:THR:O	1:A:130:THR:HG22	0.40	2.15	8	1
1:A:82:LYS:HE2	1:A:114:VAL:HG21	0.40	1.93	12	1
1:A:88:VAL:HG12	1:A:101:ARG:HE	0.40	1.76	14	1
1:A:34:LYS:CG	1:A:34:LYS:O	0.40	2.69	2	1
1:A:90:TYR:O	1:A:90:TYR:CD1	0.40	2.74	11	1
1:A:45:SER:OG	1:A:46:ILE:N	0.40	2.54	13	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:4:SER:OG	1:A:72:LYS:CE	0.40	2.69	4	1
1:A:119:ILE:O	1:A:119:ILE:CG2	0.40	2.69	4	1
1:A:79:ASN:OD1	1:A:79:ASN:N	0.40	2.55	6	1
1:A:52:VAL:HG13	1:A:138:ILE:HG23	0.40	1.94	14	1
1:A:54:TYR:CD1	1:A:140:ASN:HA	0.40	2.52	15	1
1:A:129:TYR:CD2	1:A:129:TYR:O	0.40	2.74	15	1
1:A:110:GLU:HG2	1:A:133:VAL:HG13	0.40	1.92	16	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	132/144 (92%)	105±3 (80±2%)	22±3 (17±2%)	5±2 (4±1%)	6	34
All	All	2640/2880 (92%)	2099 (80%)	443 (17%)	98 (4%)	6	34

All 22 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	33	ASP	16
1	A	96	ASP	14
1	A	122	GLY	12
1	A	80	ASN	10
1	A	45	SER	7
1	A	79	ASN	6
1	A	15	GLU	5
1	A	16	ASN	5
1	A	140	ASN	4
1	A	81	GLN	3
1	A	47	LYS	3
1	A	46	ILE	2
1	A	17	LYS	2
1	A	125	THR	1
1	A	50	ALA	1

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Mol	Chain	Res	Type	Models (Total)
1	A	108	THR	1
1	A	9	ILE	1
1	A	134	PHE	1
1	A	119	ILE	1
1	A	82	LYS	1
1	A	35	ASN	1
1	A	20	ASP	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	122/133 (92%)	90±3 (74±3%)	32±3 (26±3%)	2 23
All	All	2440/2660 (92%)	1807 (74%)	633 (26%)	2 23

All 85 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	77	TYR	20
1	A	86	ARG	20
1	A	111	LEU	20
1	A	112	LYS	20
1	A	72	LYS	19
1	A	5	LEU	17
1	A	58	LYS	17
1	A	11	ASP	16
1	A	87	LEU	16
1	A	91	SER	15
1	A	6	LYS	14
1	A	113	ILE	14
1	A	82	LYS	12
1	A	128	ASP	11
1	A	17	LYS	10
1	A	48	ASP	10
1	A	56	LYS	10
1	A	63	LEU	10

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Mol	Chain	Res	Type	Models (Total)
1	A	73	LYS	10
1	A	79	ASN	10
1	A	4	SER	10
1	A	35	ASN	10
1	A	101	ARG	10
1	A	45	SER	9
1	A	96	ASP	9
1	A	120	ASP	9
1	A	3	GLU	9
1	A	30	GLN	9
1	A	57	LYS	9
1	A	26	GLN	9
1	A	136	LYS	9
1	A	24	ARG	8
1	A	106	ASP	8
1	A	116	SER	8
1	A	141	ASP	8
1	A	34	LYS	8
1	A	47	LYS	8
1	A	78	GLU	8
1	A	62	GLU	7
1	A	20	ASP	7
1	A	121	ASP	7
1	A	110	GLU	7
1	A	16	ASN	7
1	A	81	GLN	7
1	A	36	ASN	7
1	A	89	SER	7
1	A	51	ASP	6
1	A	74	PHE	6
1	A	105	SER	6
1	A	117	THR	6
1	A	10	LYS	5
1	A	25	GLU	5
1	A	95	GLU	5
1	A	18	GLU	5
1	A	28	ASN	5
1	A	75	GLU	5
1	A	115	SER	5
1	A	69	SER	4
1	A	80	ASN	4
1	A	85	VAL	4

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Mol	Chain	Res	Type	Models (Total)
1	A	15	GLU	4
1	A	37	GLU	4
1	A	125	THR	4
1	A	126	ASN	4
1	A	140	ASN	3
1	A	60	GLU	3
1	A	67	THR	3
1	A	118	GLN	3
1	A	90	TYR	3
1	A	109	GLN	3
1	A	52	VAL	2
1	A	9	ILE	2
1	A	124	GLU	2
1	A	7	ASP	2
1	A	123	GLU	2
1	A	64	ASP	2
1	A	133	VAL	2
1	A	33	ASP	2
1	A	104	VAL	1
1	A	132	LEU	1
1	A	114	VAL	1
1	A	21	ILE	1
1	A	88	VAL	1
1	A	102	PHE	1
1	A	131	LYS	1

6.3.3 RNA (i)

There are no RNA molecules in this entry.

6.4 Non-standard residues in protein, DNA, RNA chains (i)

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

6.5 Carbohydrates (i)

There are no monosaccharides 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 79% for the well-defined parts and 76% 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	1508
Number of shifts mapped to atoms	1508
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	4

7.1.2 Chemical shift referencing

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction ± precision, *ppm*	Suggested action
$^{13}C_{\alpha}$	139	0.49 ± 0.15	None needed (< 0.5 ppm)
$^{13}C_{\beta}$	136	0.32 ± 0.14	None needed (< 0.5 ppm)
$^{13}C'$	114	0.27 ± 0.15	None needed (< 0.5 ppm)
^{15}N	122	0.03 ± 0.76	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 79%, i.e. 1427 atoms were assigned a chemical shift out of a possible 1809. 0 out of 19 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	601/647 (93%)	247/259 (95%)	238/264 (90%)	116/124 (94%)
Sidechain	774/1024 (76%)	504/655 (77%)	270/332 (81%)	0/37 (0%)

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	Total	^{1}H	^{13}C	^{15}N
Aromatic	52/138 (38%)	26/66 (39%)	25/69 (36%)	1/3 (33%)
Overall	1427/1809 (79%)	777/980 (79%)	533/665 (80%)	117/164 (71%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 76%, i.e. 1508 atoms were assigned a chemical shift out of a possible 1976. 0 out of 20 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	636/705 (90%)	261/282 (93%)	253/288 (88%)	122/135 (90%)
Sidechain	816/1088 (75%)	531/697 (76%)	285/353 (81%)	0/38 (0%)
Aromatic	56/183 (31%)	28/88 (32%)	27/91 (30%)	1/4 (25%)
Overall	1508/1976 (76%)	820/1067 (77%)	565/732 (77%)	123/177 (69%)

7.1.4 Statistically unusual chemical shifts (i)

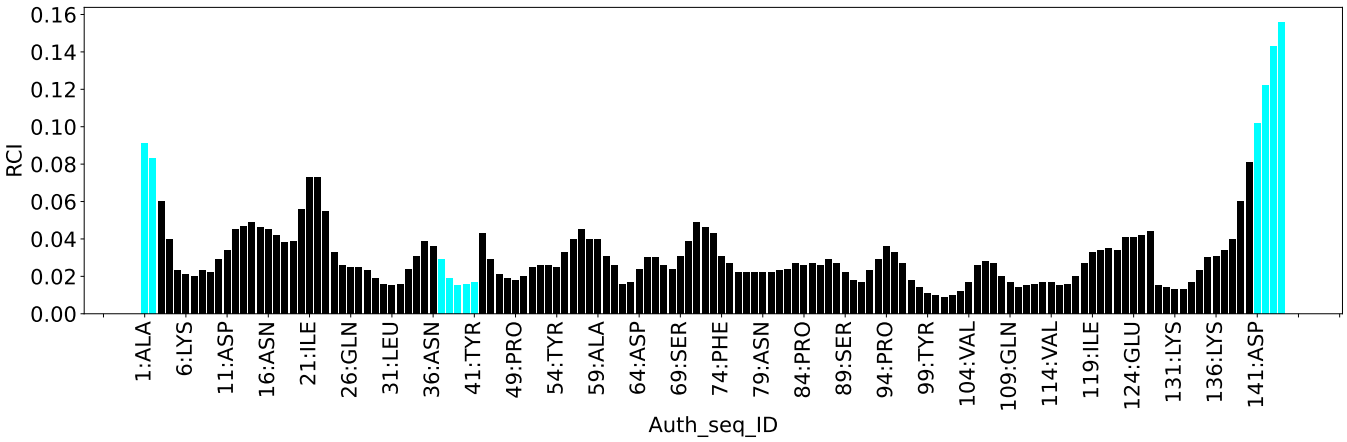
The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules containing paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

List Id	Chain	Res	Type	Atom	Shift, *ppm*	Expected range, *ppm*	Z-score
1	A	102	PHE	CE1	117.34	124.17 – 137.29	-10.2
1	A	71	TRP	CE3	131.04	111.58 – 129.41	5.9
1	A	71	TRP	CZ3	129.85	113.48 – 129.28	5.4
1	A	122	GLY	N	128.52	91.59 – 127.52	5.3

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
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
1:ALA
6:LYS
11:ASP
16:ASN
21:ILE
26:GLN
31:LEU
36:ASN
41:TYR
49:PRO
54:TYR
59:ALA
64:ASP
69:SER
74:PHE
79:ASN
84:PRO
89:SER
94:PRO
99:TYR
104:VAL
109:GLN
114:VAL
119:ILE
124:GLU
131:LYS
136:LYS
141:ASP
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	1807
Intra-residue (|i-j|=0)	369
Sequential (|i-j|=1)	455
Medium range (|i-j|>1 and |i-j|<5)	232
Long range (|i-j|≥5)	685
Inter-chain	0
Hydrogen bond restraints	66
Disulfide bond restraints	0
Total dihedral-angle restraints	140
Number of unmapped restraints	0
Number of restraints per residue	13.5
Number of long range restraints per residue[1]	5.2

[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)	2.5	0.17
0.2-0.5 (Medium)	None	None
>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)	2.1	2.3
10.0-20.0 (Medium)	None	None
>20.0 (Large)	4.0	105.1

9 Distance violation analysis (i)

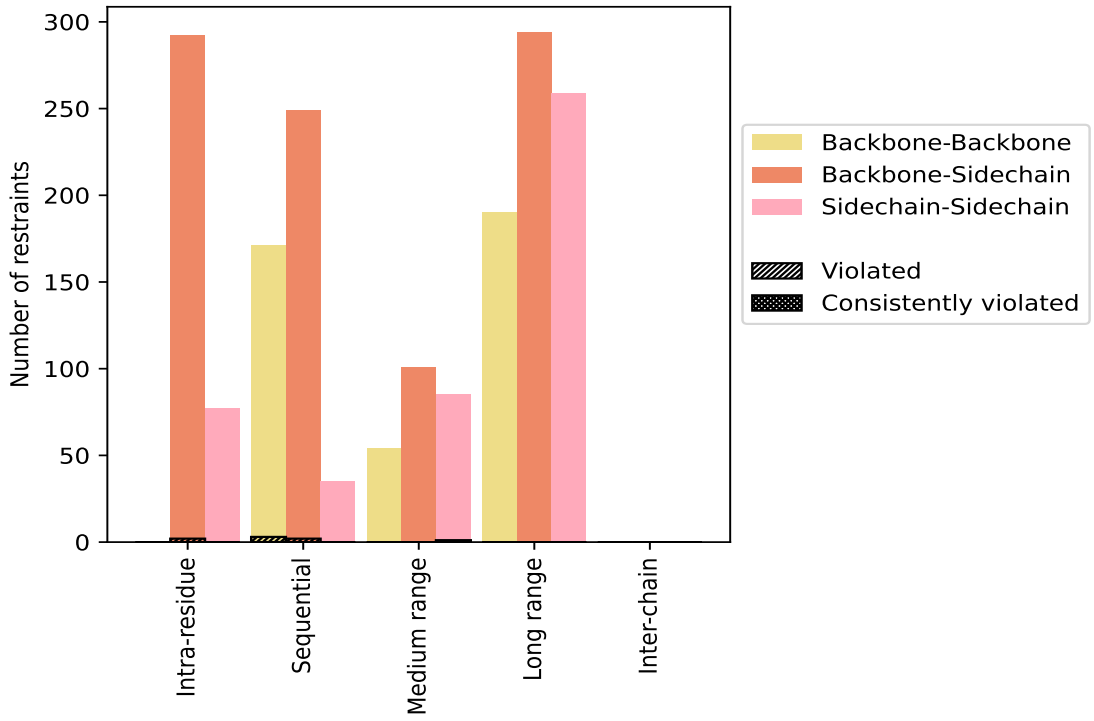
9.1 Summary of distance violations (i)

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)	369	20.4	2	0.5	0.1	0	0.0	0.0
Backbone-Backbone	0	0.0	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	292	16.2	2	0.7	0.1	0	0.0	0.0
Sidechain-Sidechain	77	4.3	0	0.0	0.0	0	0.0	0.0
Sequential (|i-j|=1)	455	25.2	5	1.1	0.3	0	0.0	0.0
Backbone-Backbone	171	9.5	3	1.8	0.2	0	0.0	0.0
Backbone-Sidechain	249	13.8	2	0.8	0.1	0	0.0	0.0
Sidechain-Sidechain	35	1.9	0	0.0	0.0	0	0.0	0.0
Medium range (|i-j|>1 & |i-j|<5)	232	12.8	1	0.4	0.1	1	0.4	0.1
Backbone-Backbone	46	2.5	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	101	5.6	0	0.0	0.0	0	0.0	0.0
Sidechain-Sidechain	85	4.7	1	1.2	0.1	1	1.2	0.1
Long range (|i-j|≥5)	685	37.9	0	0.0	0.0	0	0.0	0.0
Backbone-Backbone	132	7.3	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	294	16.3	0	0.0	0.0	0	0.0	0.0
Sidechain-Sidechain	259	14.3	0	0.0	0.0	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	66	3.7	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	1807	100.0	8	0.4	0.4	1	0.1	0.1
Backbone-Backbone	415	23.0	3	0.7	0.2	0	0.0	0.0
Backbone-Sidechain	936	51.8	4	0.4	0.2	0	0.0	0.0
Sidechain-Sidechain	456	25.2	1	0.2	0.1	1	0.2	0.1

[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	0	2	1	0	0	3	0.12	0.14	0.01	0.12
2	0	0	1	0	0	1	0.13	0.13	0.0	0.13
3	2	0	1	0	0	3	0.15	0.16	0.01	0.15
4	1	1	1	0	0	3	0.16	0.17	0.01	0.17
5	0	0	1	0	0	1	0.14	0.14	0.0	0.14
6	1	1	1	0	0	3	0.14	0.16	0.02	0.14
7	1	1	1	0	0	3	0.15	0.17	0.02	0.16
8	1	0	1	0	0	2	0.15	0.15	0.0	0.15
9	1	0	1	0	0	2	0.13	0.14	0.01	0.13
10	0	0	1	0	0	1	0.12	0.12	0.0	0.12
11	1	1	1	0	0	3	0.13	0.16	0.02	0.13

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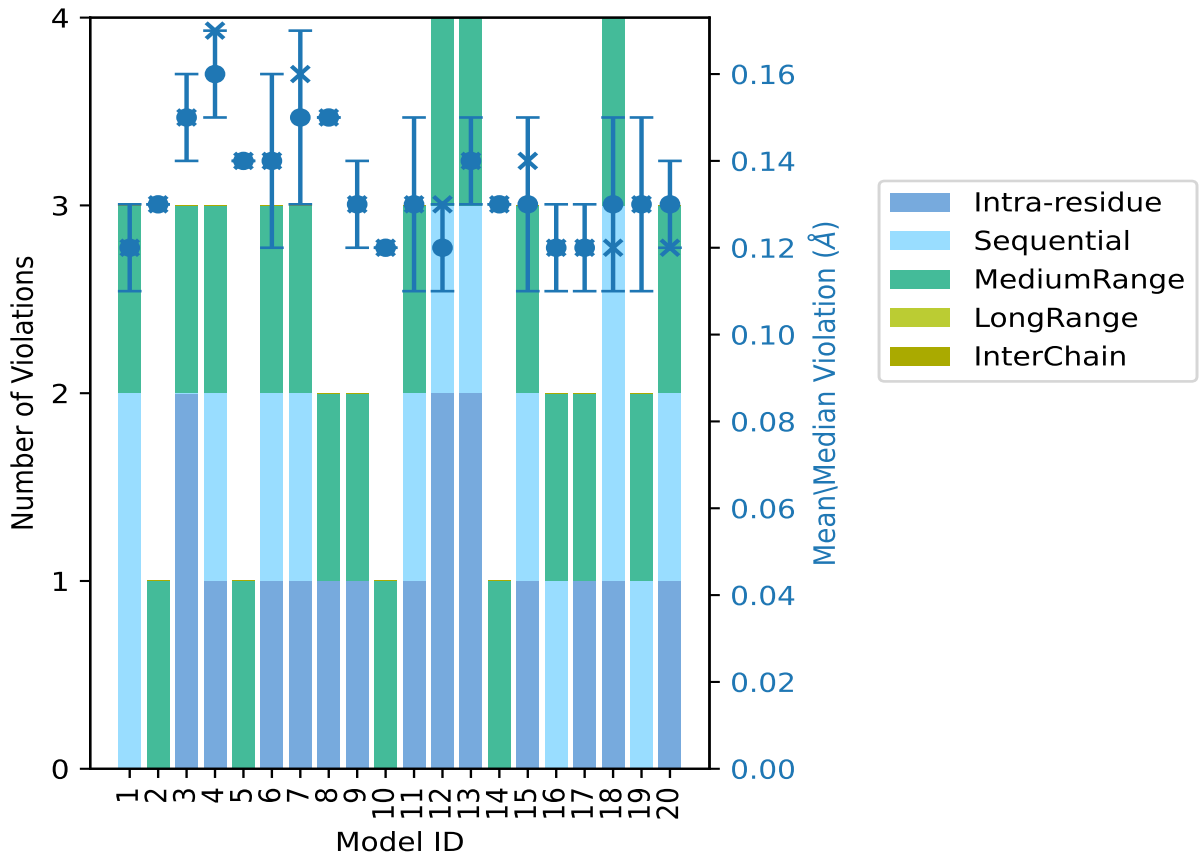
Model ID	Number of violations						Mean (Å)	Max (Å)	SD[6] (Å)	Median (Å)
	IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total				
12	2	1	1	0	0	4	0.12	0.13	0.01	0.13
13	2	1	1	0	0	4	0.14	0.16	0.01	0.14
14	0	0	1	0	0	1	0.13	0.13	0.0	0.13
15	1	1	1	0	0	3	0.13	0.15	0.02	0.14
16	0	1	1	0	0	2	0.12	0.13	0.01	0.12
17	1	0	1	0	0	2	0.12	0.13	0.01	0.12
18	1	2	1	0	0	4	0.13	0.16	0.02	0.12
19	0	1	1	0	0	2	0.13	0.15	0.02	0.13
20	1	1	1	0	0	3	0.13	0.14	0.01	0.12

[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

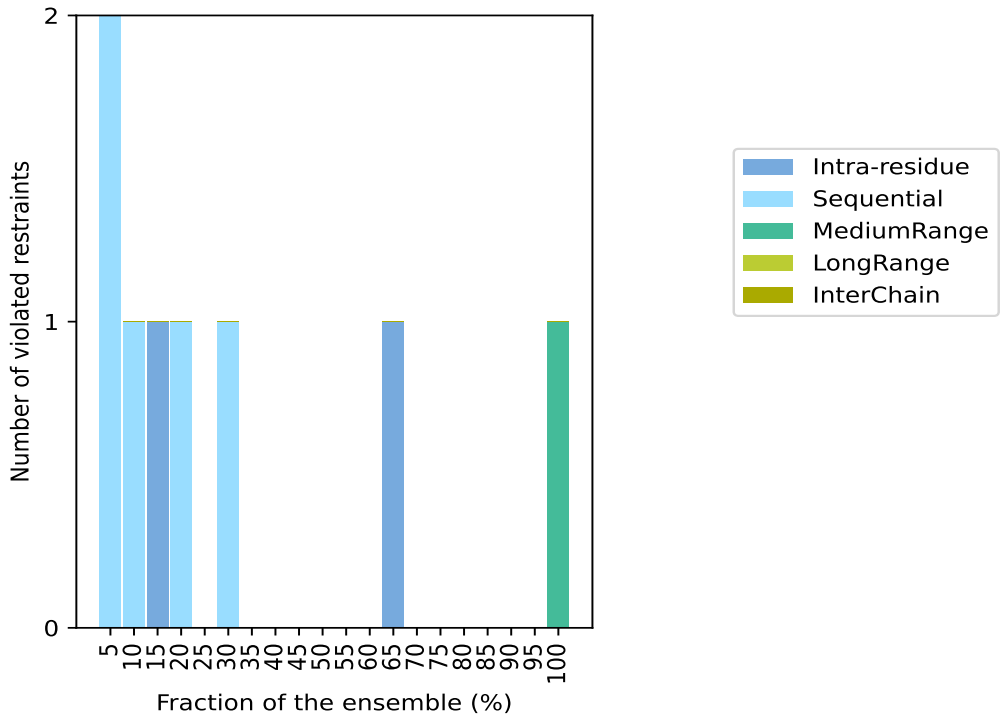
9.3 Distance violation statistics for the ensemble (i)

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, 1733(IR:367, SQ:450, MR:231, LR:685, 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]	%
0	2	0	0	0	2	1	5.0
0	1	0	0	0	1	2	10.0
1	0	0	0	0	1	3	15.0
0	1	0	0	0	1	4	20.0
0	0	0	0	0	0	5	25.0
0	1	0	0	0	1	6	30.0
0	0	0	0	0	0	7	35.0
0	0	0	0	0	0	8	40.0
0	0	0	0	0	0	9	45.0
0	0	0	0	0	0	10	50.0
0	0	0	0	0	0	11	55.0
0	0	0	0	0	0	12	60.0
1	0	0	0	0	1	13	65.0
0	0	0	0	0	0	14	70.0
0	0	0	0	0	0	15	75.0
0	0	0	0	0	0	16	80.0
0	0	0	0	0	0	17	85.0
0	0	0	0	0	0	18	90.0
0	0	0	0	0	0	19	95.0
0	0	1	0	0	1	20	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

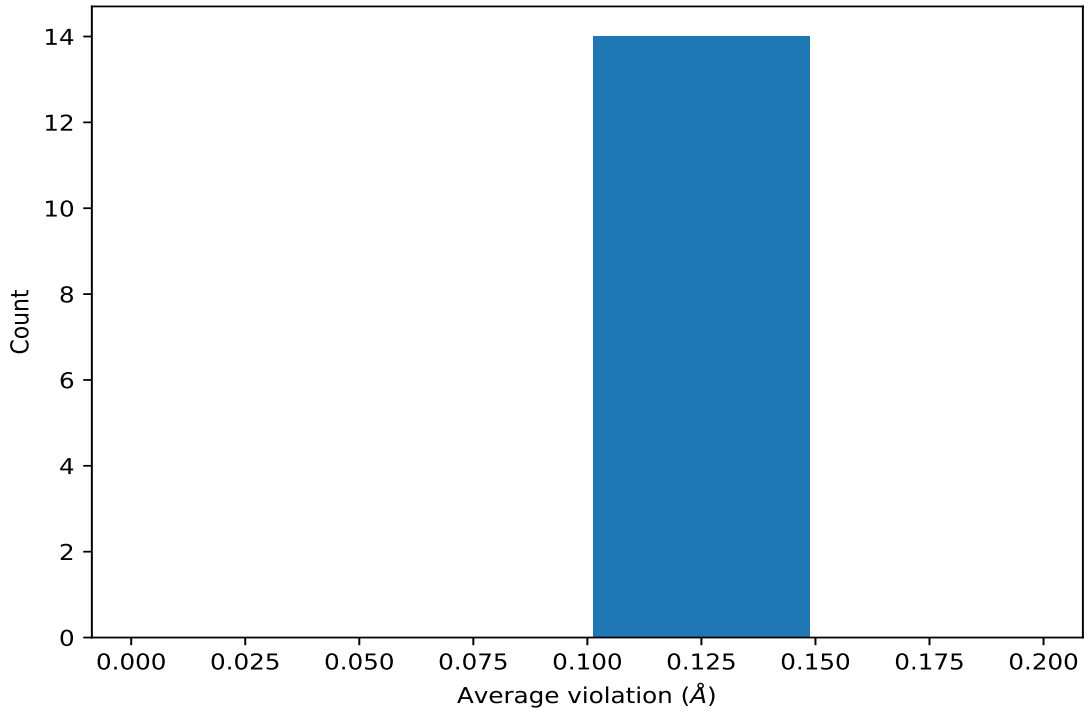
9.3.1 Bar graph : Distance violation statistics for the ensemble



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 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. Rows with same key represent combinatorial or ambiguous restraints and are counted as a single restraint.

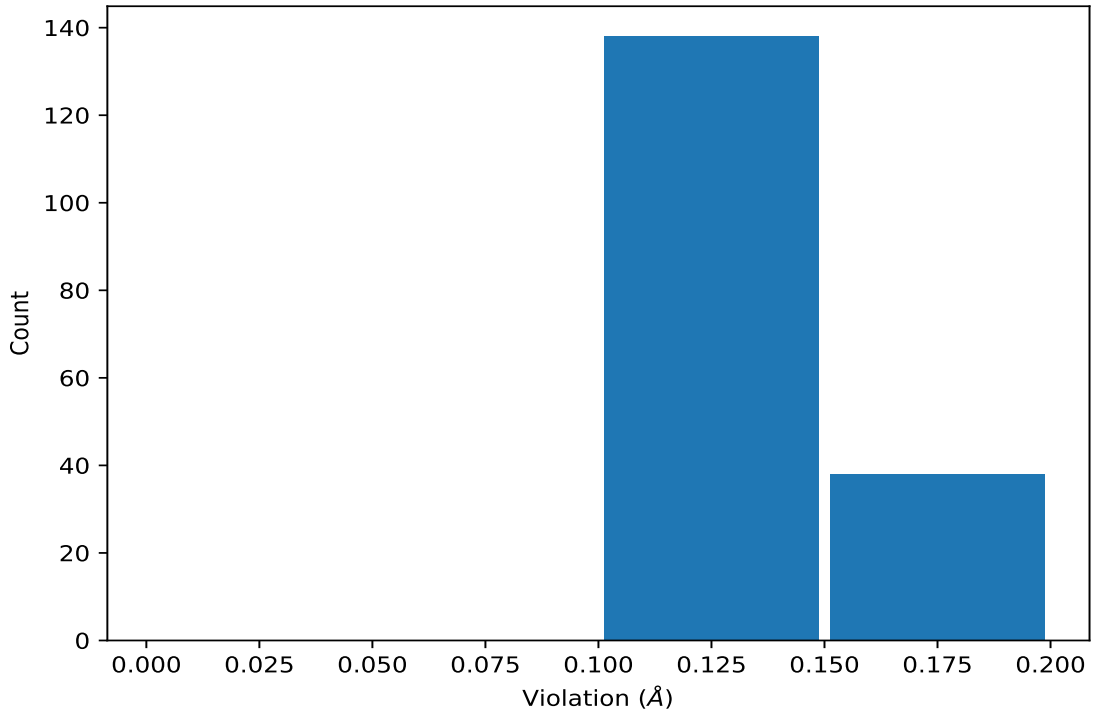
Key	Atom-1	Atom-2	Models[1]	Mean (Å)	SD[1] (Å)	Median (Å)
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	20	0.14	0.01	0.14
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	20	0.14	0.01	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	20	0.14	0.01	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	20	0.14	0.01	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	13	0.14	0.02	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	13	0.14	0.02	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	13	0.14	0.02	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	13	0.14	0.02	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	13	0.14	0.02	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	13	0.14	0.02	0.14
(1,1192)	1:A:104:VAL:HB	1:A:105:SER:H	6	0.13	0.01	0.14
(1,512)	1:A:135:ALA:H	1:A:136:LYS:HA	4	0.12	0.0	0.12
(1,1213)	1:A:88:VAL:HA	1:A:88:VAL:HB	3	0.15	0.01	0.15
(1,737)	1:A:45:SER:H	1:A:46:ILE:H	2	0.14	0.03	0.14

[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)
(1,737)	1:A:45:SER:H	1:A:46:ILE:H	7	0.17
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	4	0.17
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	4	0.17
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	4	0.17
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	4	0.17
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	4	0.17
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	4	0.17
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	4	0.17
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	4	0.17
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	4	0.17

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	4	0.17
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	3	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	3	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	3	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	3	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	3	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	3	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	7	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	7	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	7	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	7	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	7	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	7	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	18	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	18	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	18	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	18	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	18	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	18	0.16
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	6	0.16
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	6	0.16
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	6	0.16
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	6	0.16
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	11	0.16
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	11	0.16
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	11	0.16
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	11	0.16
(1,1213)	1:A:88:VAL:HA	1:A:88:VAL:HB	13	0.16
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	8	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	8	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	8	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	8	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	8	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	8	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	13	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	13	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	13	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	13	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	13	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	13	0.15
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	8	0.15
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	8	0.15

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	8	0.15
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	8	0.15
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	15	0.15
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	15	0.15
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	15	0.15
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	15	0.15
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	19	0.15
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	19	0.15
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	19	0.15
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	19	0.15
(1,1213)	1:A:88:VAL:HA	1:A:88:VAL:HB	3	0.15
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	20	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	20	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	20	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	20	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	20	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	20	0.14
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	1	0.14
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	1	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	1	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	1	0.14
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	3	0.14
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	3	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	3	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	3	0.14
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	5	0.14
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	5	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	5	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	5	0.14
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	9	0.14
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	9	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	9	0.14
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	9	0.14
(1,1192)	1:A:104:VAL:HB	1:A:105:SER:H	4	0.14
(1,1192)	1:A:104:VAL:HB	1:A:105:SER:H	6	0.14
(1,1192)	1:A:104:VAL:HB	1:A:105:SER:H	15	0.14
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	12	0.13
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	12	0.13
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	12	0.13
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	12	0.13
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	12	0.13
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	12	0.13

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	2	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	2	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	2	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	2	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	12	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	12	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	12	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	12	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	13	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	13	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	13	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	13	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	14	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	14	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	14	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	14	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	16	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	16	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	16	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	16	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	17	0.13
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	17	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	17	0.13
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	17	0.13
(1,1213)	1:A:88:VAL:HA	1:A:88:VAL:HB	12	0.13
(1,1192)	1:A:104:VAL:HB	1:A:105:SER:H	11	0.13
(1,1192)	1:A:104:VAL:HB	1:A:105:SER:H	13	0.13
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	9	0.12
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	9	0.12
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	9	0.12
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	9	0.12
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	9	0.12
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	9	0.12
(1,512)	1:A:135:ALA:H	1:A:136:LYS:HA	1	0.12
(1,512)	1:A:135:ALA:H	1:A:136:LYS:HA	20	0.12
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	7	0.12
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	7	0.12
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	7	0.12
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	7	0.12
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	10	0.12
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	10	0.12
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	10	0.12

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	10	0.12
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	18	0.12
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	18	0.12
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	18	0.12
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	18	0.12
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB2	20	0.12
(1,198)	1:A:90:TYR:HE1	1:A:92:PRO:HB3	20	0.12
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB2	20	0.12
(1,198)	1:A:90:TYR:HE2	1:A:92:PRO:HB3	20	0.12
(1,1391)	1:A:48:ASP:H	1:A:49:PRO:HA	18	0.12
(1,1192)	1:A:104:VAL:HB	1:A:105:SER:H	18	0.12
(1,872)	1:A:110:GLU:HB2	1:A:111:LEU:H	1	0.11
(1,872)	1:A:110:GLU:HB3	1:A:111:LEU:H	1	0.11
(1,737)	1:A:45:SER:H	1:A:46:ILE:H	12	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	6	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	6	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	6	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	6	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	6	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	6	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	11	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	11	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	11	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	11	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	11	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	11	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	15	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	15	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	15	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	15	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	15	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	15	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD11	17	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD12	17	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD13	17	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD21	17	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD22	17	0.11
(1,590)	1:A:111:LEU:HA	1:A:111:LEU:HD23	17	0.11
(1,512)	1:A:135:ALA:H	1:A:136:LYS:HA	16	0.11
(1,512)	1:A:135:ALA:H	1:A:136:LYS:HA	19	0.11

10 Dihedral-angle violation analysis

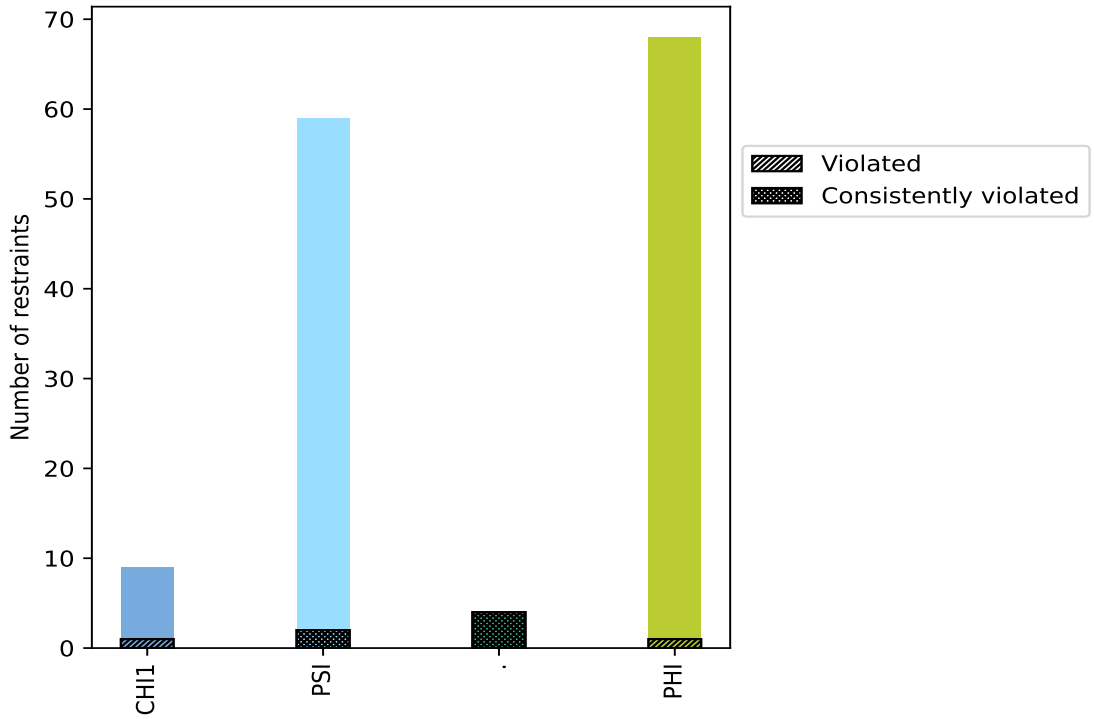
10.1 Summary of dihedral-angle violations

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]
CHI1	9	6.4	1	11.1	0.7	0	0.0	0.0
PSI	59	42.1	2	3.4	1.4	2	3.4	1.4
.	4	2.9	4	100.0	2.9	4	100.0	2.9
PHI	68	48.6	1	1.5	0.7	0	0.0	0.0
Total	140	100.0	8	5.7	5.7	6	4.3	4.3

[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



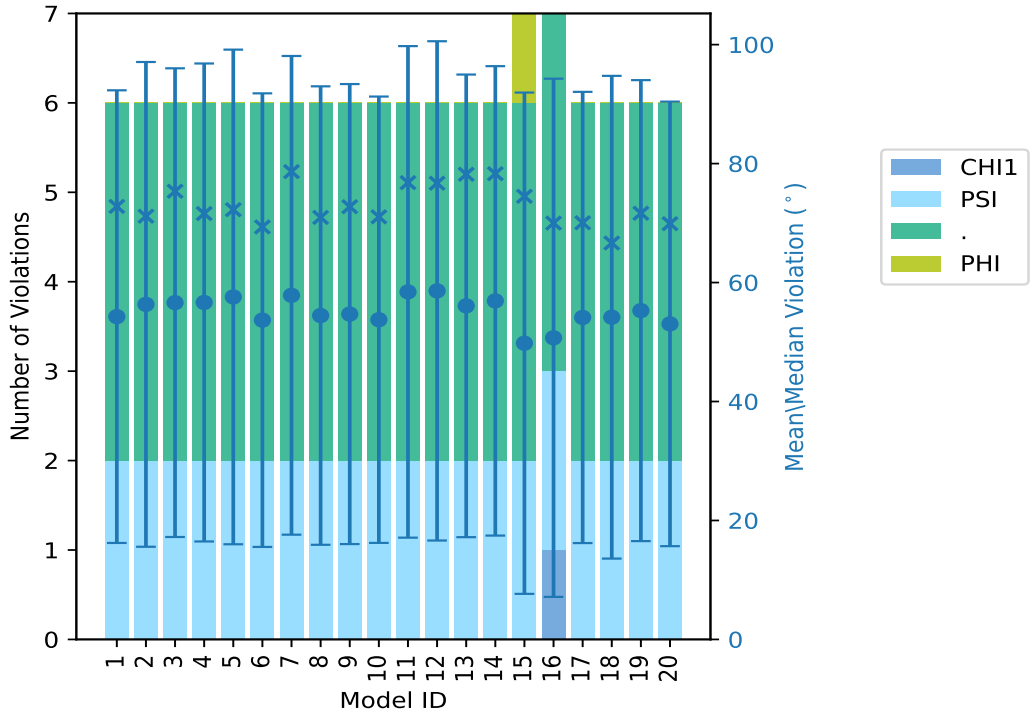
Violated and consistently violated restraints are shown using different hatch patterns in their respective categories

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 (°)
	CHI1	PSI	.	PHI	Total				
1	0	2	4	0	6	54.27	91.6	38.05	72.8
2	0	2	4	0	6	56.33	96.4	40.75	71.15
3	0	2	4	0	6	56.62	97.0	39.4	75.35
4	0	2	4	0	6	56.65	102.1	40.18	71.6
5	0	2	4	0	6	57.58	102.1	41.58	72.25
6	0	2	4	0	6	53.68	90.2	38.13	69.35
7	0	2	4	0	6	57.85	94.2	40.24	78.65
8	0	2	4	0	6	54.45	94.1	38.54	70.95
9	0	2	4	0	6	54.7	91.3	38.67	72.75
10	0	2	4	0	6	53.75	91.6	37.52	71.05
11	0	2	4	0	6	58.43	104.6	41.32	76.8
12	0	2	4	0	6	58.6	99.4	41.97	76.7
13	0	2	4	0	6	56.08	88.5	38.89	78.2
14	0	2	4	0	6	56.92	93.5	39.46	78.3
15	0	2	4	1	7	49.8	91.1	42.14	74.5
16	1	2	4	0	7	50.71	105.1	43.56	70.0
17	0	2	4	0	6	54.13	91.5	37.93	70.05
18	0	2	4	0	6	54.17	99.0	40.58	66.65
19	0	2	4	0	6	55.28	92.6	38.75	71.65
20	0	2	4	0	6	53.05	88.3	37.37	69.9

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	
CHI1	PSI	.	PHI	Total	Count[1]	%
1	0	0	1	2	1	5.0
0	0	0	0	0	2	10.0
0	0	0	0	0	3	15.0
0	0	0	0	0	4	20.0
0	0	0	0	0	5	25.0
0	0	0	0	0	6	30.0
0	0	0	0	0	7	35.0
0	0	0	0	0	8	40.0
0	0	0	0	0	9	45.0
0	0	0	0	0	10	50.0
0	0	0	0	0	11	55.0

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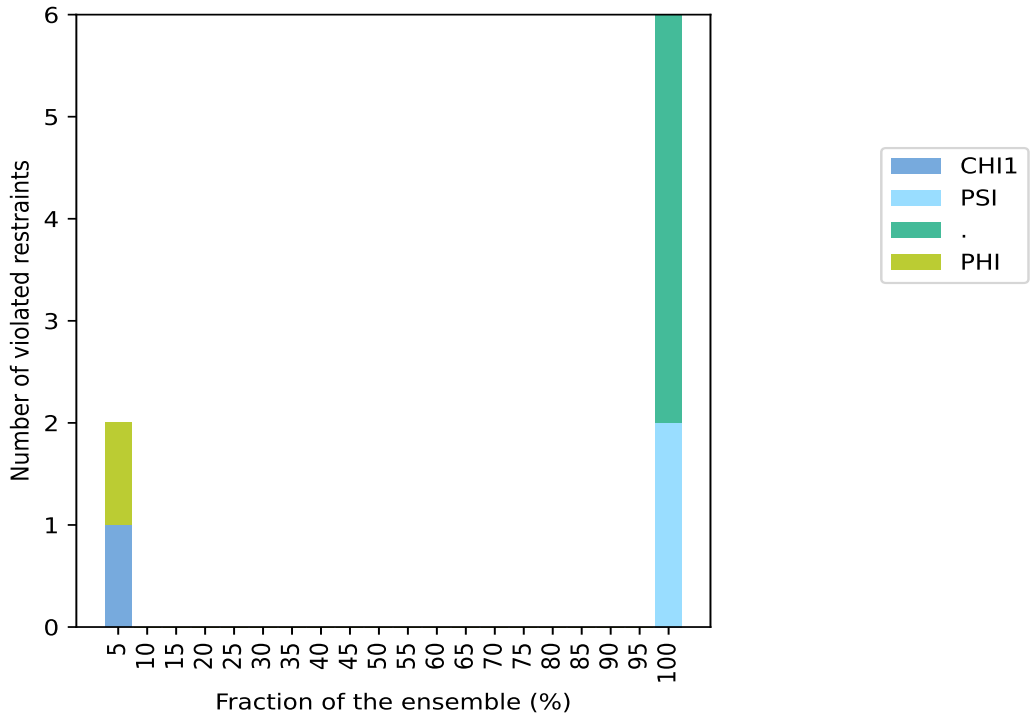
Number of violated restraints					Fraction of the ensemble	
CHI1	PSI	.	PHI	Total	Count[1]	%
0	0	0	0	0	12	60.0
0	0	0	0	0	13	65.0
0	0	0	0	0	14	70.0
0	0	0	0	0	15	75.0
0	0	0	0	0	16	80.0
0	0	0	0	0	17	85.0
0	0	0	0	0	18	90.0
0	0	0	0	0	19	95.0
0	2	4	0	6	20	100.0

[1] Number of models with violations

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

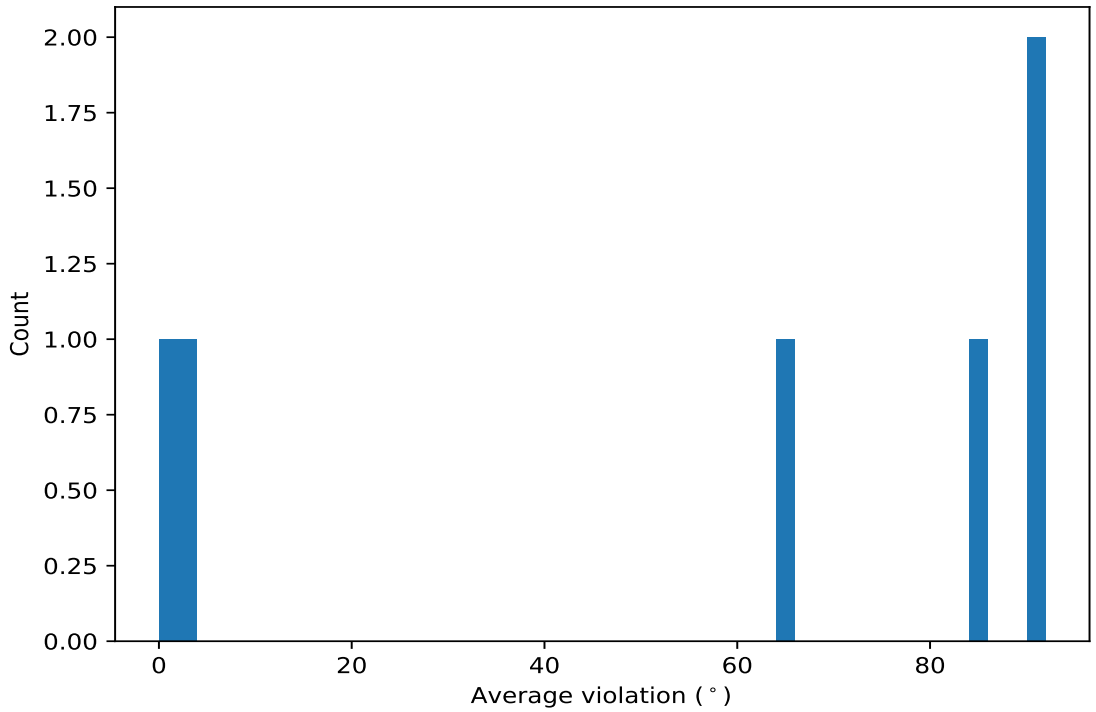


10.4 Most violated dihedral-angle restraints in the ensemble

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.

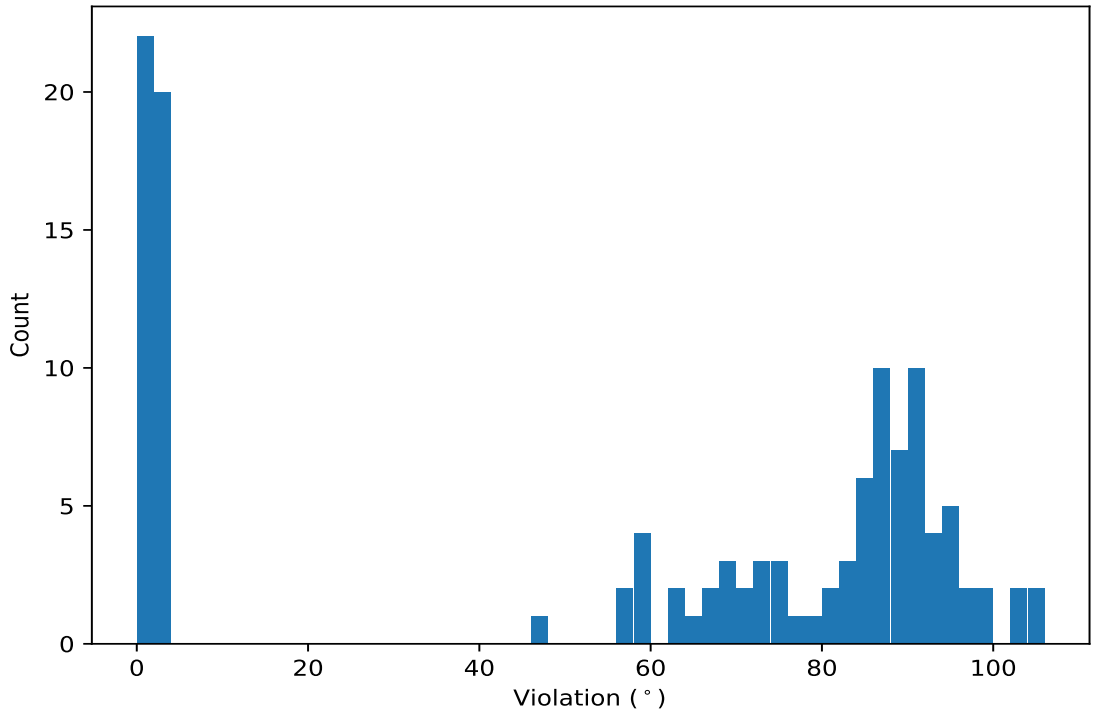
Key	Atom-1	Atom-2	Atom-3	Atom-4	Models[1]	Mean	SD[2]	Media
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	20	91.46	9.31	91.7
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	20	90.99	2.57	90.9
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	20	84.37	5.96	84.75
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	20	65.27	7.73	66.55
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	20	2.07	0.16	2.05
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	20	1.68	0.24	1.6

[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 (°)
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	16	105.1
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	11	104.6
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	4	102.1
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	5	102.1
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	12	99.4
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	18	99.0
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	3	97.0
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	2	96.4
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	12	95.7
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	2	95.7
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	5	94.8
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	7	94.2
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	8	94.1
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	14	93.5
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	19	92.6
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	19	92.1
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	7	92.0
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	1	91.6
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	10	91.6
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	17	91.5
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	9	91.3

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Key	Atom-1	Atom-2	Atom-3	Atom-4	Model ID	Violation (°)
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	15	91.1
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	15	90.8
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	4	90.7
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	16	90.6
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	6	90.2
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	12	90.2
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	17	89.4
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	18	89.3
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	6	89.3
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	11	88.8
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	13	88.5
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	20	88.3
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	3	88.0
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	13	87.9
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	15	87.7
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	14	87.7
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	9	87.2
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	13	86.9
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	18	86.9
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	9	86.7
(1,5)	1:A:108:THR:N	1:A:108:THR:CA	1:A:108:THR:CB	1:A:108:THR:CG2	8	86.5
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	5	86.5
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	20	86.5
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	2	85.7
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	10	85.0
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	7	84.9
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	1	84.6
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	14	84.6
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	16	84.4
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	11	83.9
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	8	82.9
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	1	82.8
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	6	81.1
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	20	80.1
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	3	79.3
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	10	76.7
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	4	75.5
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	15	74.5
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	19	74.3
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	17	73.8
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	7	72.4
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	14	72.0
(1,4)	1:A:70:THR:N	1:A:70:THR:CA	1:A:70:THR:CB	1:A:70:THR:CG2	3	71.4
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	16	70.0
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	11	69.7
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	13	69.5
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	19	69.0
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	4	67.7
(1,3)	1:A:55:THR:N	1:A:55:THR:CA	1:A:55:THR:CB	1:A:55:THR:CG2	17	66.3
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	10	65.4
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	12	63.2

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Key	Atom-1	Atom-2	Atom-3	Atom-4	Model ID	Violation (°)
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	1	62.8
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	20	59.7
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	8	59.0
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	9	58.8
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	5	58.0
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	6	57.6
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	2	56.6
(1,6)	1:A:117:THR:N	1:A:117:THR:CA	1:A:117:THR:CB	1:A:117:THR:CG2	18	46.4
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	7	2.3
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	8	2.3
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	2	2.2
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	3	2.2
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	10	2.2
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	16	2.2
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	17	2.2
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	20	2.2
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	4	2.1
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	5	2.1
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	9	2.1
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	9	2.1
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	13	2.1
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	1	2.0
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	5	2.0
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	6	2.0
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	11	2.0
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	14	2.0
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	18	2.0
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	19	2.0
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	6	1.9
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	8	1.9
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	1	1.8
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	3	1.8
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	4	1.8
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	15	1.8
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	14	1.7
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	19	1.7
(1,101)	1:A:107:GLY:N	1:A:107:GLY:CA	1:A:107:GLY:C	1:A:108:THR:N	12	1.7
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	10	1.6
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	11	1.6
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	13	1.6
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	15	1.6
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	17	1.6
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	16	1.5
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	20	1.5
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	2	1.4
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	12	1.4
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	18	1.4
(1,79)	1:A:92:PRO:N	1:A:92:PRO:CA	1:A:92:PRO:C	1:A:93:VAL:N	7	1.3
(1,2)	1:A:97:HIS:N	1:A:97:HIS:CA	1:A:97:HIS:CB	1:A:97:HIS:CG	16	1.2
(1,98)	1:A:104:VAL:C	1:A:105:SER:N	1:A:105:SER:CA	1:A:105:SER:C	15	1.1