



## Full wwPDB EM Validation Report ⓘ

Aug 29, 2023 – 04:46 PM EDT

PDB ID : 8EAN  
EMDB ID : EMD-27791  
Title : Cryo-EM structure of in-situ tailspike in bacteriophage P22  
Authors : Wang, C.; Liu, J.; Molineux, I.J.  
Deposited on : 2022-08-29  
Resolution : 3.70 Å (reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev50  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.35

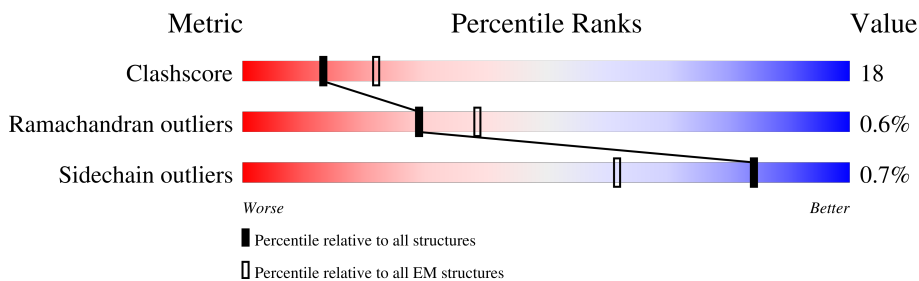
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.70 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	0	662	
1	Y	662	
1	Z	662	

## 2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 15075 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

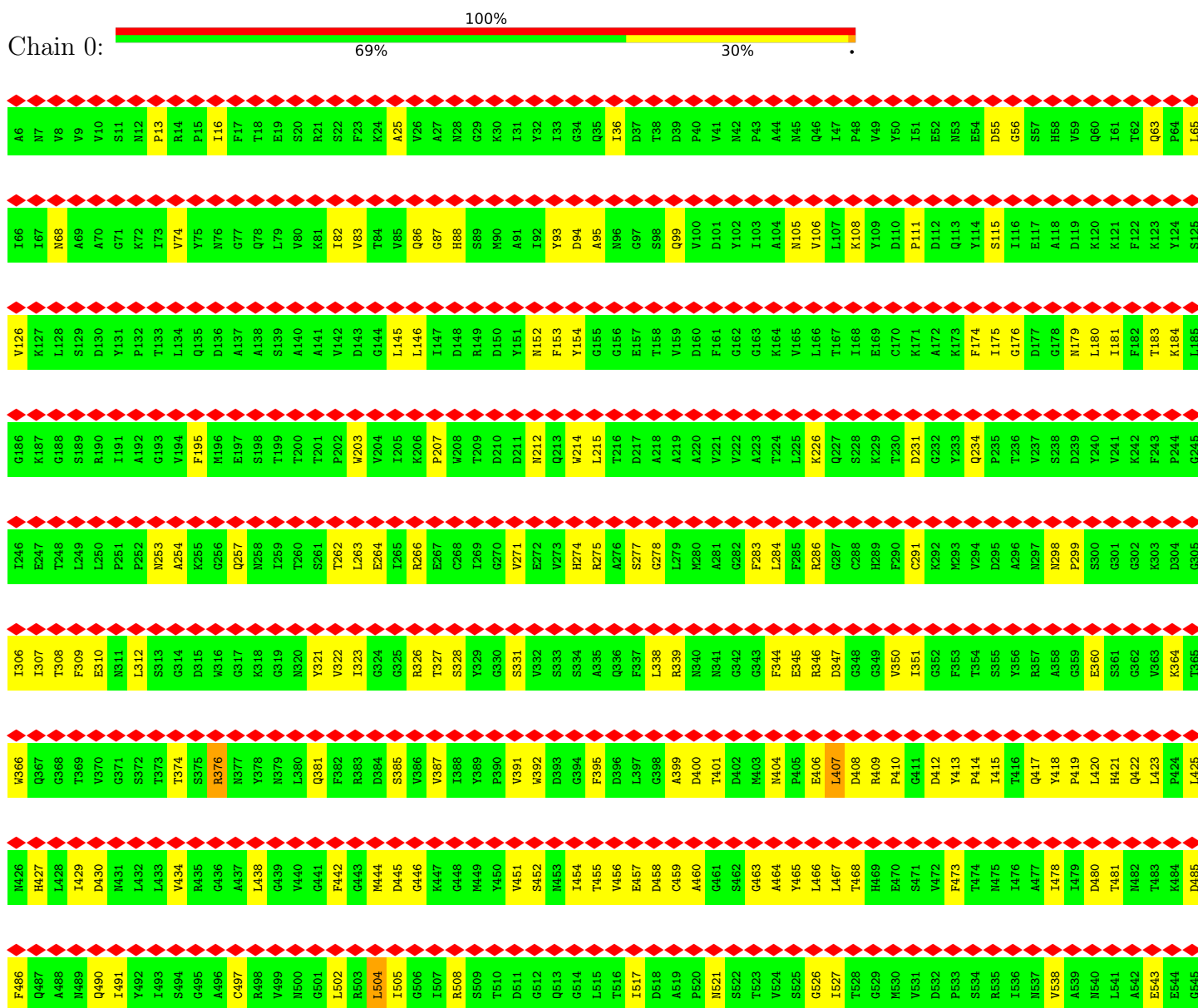
- Molecule 1 is a protein called Tail spike protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0	662	Total 5025	C 3169	N 855	O 985	S 16	0	0
1	Y	662	Total 5025	C 3169	N 855	O 985	S 16	0	0
1	Z	662	Total 5025	C 3169	N 855	O 985	S 16	0	0

### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

#### • Molecule 1: Tail spike protein





S606	L607	K608	V609	M610	H611	K612	D613	C614	R615	G616	A617	E618	I619	P620	F621	V622	P623	D624	I625	A626	S627	D628	D629	F630	I631	K632	D633	S634	S635	C636	F637	L638	P639	Y640	W641	E642	N643	N644	S645	T646	S647	L648	K649	A650	L651	V652	K653	K654	P655	N656	G657	E658	L659	V660	R661	L662	T663	L664	A665
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T666	L667
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• Molecule 1: Tail spike protein



A6	N7	V8	V9	S11	M12	P13	R14	P15	I16	F17	T18	E19	S20	R21	S22	F23	K24	A25	V26	A27	M28	G29	K30	I31	Y32	I33	G34	Q35	I36	D37	T38	D39	P40	V41	M42	P43	A44	N45	Q46	L47	F48	V49	Y50	I51	E52	N53	E54	D55	G56	S57	H58	V59	Q60	I61	T62	Q63	P64	L65
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I66	L67	M68	A69	A70	G71	K72	I73	V74	W75	I76	G77	Q78	L79	V80	K81	I82	T84	V85	Q86	G87	H88	S89	M90	A91	I92	Y93	D94	Q95	I96	G97	S98	Q99	V100	D101	Y102	I103	A104	N105	V106	L107	K108	Y109	D110	P111	D112	Q113	Y114	D115	I116	E117	A118	H119	K120	I121	T122	F123	Q124	Y124	S125
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V126	K127	L128	S129	D130	Y131	P132	T133	L134	Q135	D136	A137	A138	S139	A140	A141	V142	D143	G144	L145	Q146	I147	D148	R149	D150	Y151	M152	F153	Y154	G155	G156	E157	S158	V159	D160	F161	G162	G163	K164	V165	L166	L167	I168	E169	C170	P171	A172	Q173	F174	I175	G176	D177	G178	N179	L180	I181	F182	T183	K184	L185
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G186	K187	G188	S189	R190	I191	A192	G193	V194	F195	M196	E197	S198	T199	T200	T201	P202	W203	W204	I205	K206	I147	W208	T209	D210	D211	N212	Q213	W214	L215	T216	D217	A218	A219	A220	V221	W222	A223	T224	L225	K226	Q227	S228	K229	T230	D231	G232	Y233	Q234	P235	T236	V237	S238	D239	Y240	V241	K242	F243	P244	G245
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T246	E247	T248	L249	L250	P251	P252	N253	A254	K255	G256	Q257	M258	T259	T260	S261	T262	E264	L265	R266	E267	C268	L269	G270	W271	E272	V273	H274	R275	A276	S277	G278	L279	M280	A281	G282	F283	L284	F285	R286	C288	H289	F290	C291	R292	M293	V294	D295	A296	N297	M298	P299	S300	G301	G302	K303	D304	G305
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I306	T307	T308	F309	E310	N311	L312	S313	G314	D315	W316	G317	K318	G319	R320	Y321	V322	G323	G324	G325	R326	T327	S328	Y329	G330	S331	V332	S333	S334	F335	G336	F337	L338	R339	N340	N341	G342	G343	F344	E345	R346	G348	G349	V350	G351	F352	F353	T354	S355	Y356	R357	A358	E359	E360	S361	G362	V363	K364	T365
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W366	Q367	G368	T369	V370	M371	L372	T373	T374	S375	R376	N377	Y378	N379	L380	Q381	F382	R383	D384	S385	V386	V387	L388	Y389	P390	V391	W392	D393	G394	T400	F401	D402	M403	M404	P405	E406	L407	D408	R409	P410	D411	D412	Y413	P414	T415	T416	Q417	Y418	P419	L420	H421	Q422	L423	P424	L425
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M426	H427	L428	L429	D430	M431	L432	L433	W434	R435	G436	A437	L438	G439	M440	G441	F442	G443	M444	D445	G446	K447	G448	M449	Y450	W451	S452	M453	L454	G455	T456	W457	D458	C459	A460	G461	S462	G463	A464	Y465	L466	L467	T468	H469	E470	S471	W472	F473	T474	M475	L476	A477	L478	L479	D480	T481	M482	L483	K484	D485
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F486	Q487	A488	M489	Q490	L491	Y492	L493	S494	G495	A496	C497	R498	V499	M500	G501	L502	R503	L504	I505	G506	I507	R508	S509	T510	D511	G512	O513	G514	L515	T516	I517	D518	A519	P520	N521	S522	T523	V524	S525	G526	I527	T528	O529	M530	V531	D532	P533	S534	F535	R536	I537	M538	V539	S540	L541	M542	A543	E544	G545
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L546	G547	M548	I549	R550	A551	M552	S553	F554	G555	Y556	D557	S558	A559	A560	I561	K562	L563	R564	I565	H566	K567	L568	S569	K570	T571	L572	D573	S574	G575	A576	L577	Y578	H579	H580	I581	N582	G583	G584	A585	G586	G587	G588	S589	A590	Y591	T592	O593	L594	T595	N596	I597	S598	G599	S600	T601	P602	D603	E604	V605
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S606	L607	K608	V609	M610	H611	K612	D613	C614	R615	G616	A617	E618	I619	P620	F621	V622	P623	D624	I625	A626	S627	D628	D629	F630	I631	K632	D633	S634	S635	C636	F637	L638	P639	Y640	W641	E642	N643	N644	S645	T646	S647	L648	K649	A650	L651	V652	K653	K654	P655	N656	G657	E658	L659	V660	R661	L662	T663	L664	A665
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## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	195900	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	30	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1200	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.035	Depositor
Minimum map value	-0.018	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.000	Depositor
Recommended contour level	0.01	Depositor
Map size ( $\text{\AA}$ )	512.63995, 512.63995, 512.63995	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.068, 1.068, 1.068	Depositor



## 5 Model quality [i](#)

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	0	0.35	0/5128	0.52	0/6966
1	Y	0.36	0/5128	0.52	0/6966
1	Z	0.37	0/5128	0.53	0/6966
All	All	0.36	0/15384	0.52	0/20898

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	0	5025	0	4930	189	0
1	Y	5025	0	4930	188	0
1	Z	5025	0	4930	225	0
All	All	15075	0	14790	544	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 18.

All (544) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Y:103:ILE:HD12	1:Z:13:PRO:HB2	1.48	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Z:94:ASP:OD1	1:Z:95:ALA:N	2.01	0.93
1:O:407:LEU:HD13	1:O:407:LEU:H	1.40	0.84
1:Z:85:VAL:HG23	1:Z:86:GLN:H	1.43	0.82
1:Z:519:ALA:HB1	1:Z:522:SER:HB3	1.62	0.81
1:Z:585:ALA:HB1	1:Z:588:GLY:HA3	1.63	0.80
1:Z:582:ASN:H	1:Z:590:ALA:HA	1.47	0.79
1:Y:455:THR:HA	1:Y:477:ALA:HB3	1.63	0.78
1:O:502:LEU:HD21	1:O:517:ILE:HD11	1.64	0.78
1:Y:272:GLU:N	1:Y:272:GLU:OE1	2.18	0.77
1:O:401:THR:HG21	1:O:404:ASN:HB2	1.66	0.76
1:Y:658:GLU:N	1:Y:658:GLU:OE1	2.19	0.76
1:O:83:VAL:HG12	1:Y:9:VAL:HG12	1.66	0.76
1:Y:582:ASN:HB3	1:Y:612:LYS:HA	1.69	0.74
1:Y:139:SER:O	1:Y:164:LYS:NZ	2.21	0.74
1:Y:573:ASP:OD1	1:Z:550:ARG:NH1	2.21	0.74
1:Y:345:GLU:O	1:Z:326:ARG:NH2	2.20	0.74
1:Z:264:GLU:OE2	1:Z:286:ARG:NH1	2.21	0.73
1:O:622:VAL:HG13	1:O:640:TYR:HB3	1.72	0.72
1:Y:286:ARG:NH1	1:Y:310:GLU:OE1	2.23	0.72
1:O:322:VAL:HG12	1:O:322:VAL:O	1.90	0.72
1:Z:208:TRP:CZ3	1:Z:357:ARG:NE	2.58	0.71
1:O:491:ILE:CG2	1:O:517:ILE:HD13	2.20	0.71
1:Y:273:VAL:HG12	1:Y:276:ALA:HB2	1.72	0.71
1:Y:510:THR:HG22	1:Y:512:GLY:H	1.54	0.71
1:Z:237:VAL:O	1:Z:241:VAL:HG23	1.91	0.70
1:O:605:VAL:HG21	1:Y:610:ASN:HB2	1.72	0.70
1:Y:103:ILE:CD1	1:Z:13:PRO:HB2	2.21	0.70
1:Y:363:VAL:HG12	1:Y:363:VAL:O	1.91	0.70
1:Y:564:ARG:NH1	1:Y:570:LYS:O	2.23	0.70
1:O:459:CYS:HG	1:O:481:THR:HG1	1.39	0.70
1:Z:577:LEU:HG	1:Z:594:LEU:HG	1.74	0.70
1:Y:31:ILE:HG13	1:Y:67:ILE:HD11	1.73	0.70
1:Y:346:ARG:NH2	1:Z:389:TYR:OH	2.26	0.69
1:Z:215:LEU:HD13	1:Z:220:ALA:HB1	1.75	0.69
1:Z:409:ARG:NH2	1:Z:418:TYR:O	2.26	0.69
1:O:491:ILE:HG21	1:O:517:ILE:HD13	1.72	0.69
1:Z:540:ASN:OD1	1:Z:541:LEU:N	2.25	0.69
1:Y:582:ASN:HD22	1:Y:589:SER:HB3	1.58	0.68
1:Y:33:ILE:O	1:Y:46:GLN:NE2	2.26	0.68
1:Y:564:ARG:NE	1:Y:573:ASP:OD1	2.28	0.67
1:Y:206:LYS:O	1:Y:224:THR:HG21	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:572:LEU:O	1:0:573:ASP:OD1	2.13	0.67
1:Y:651:LEU:HD21	1:Y:659:LEU:HD12	1.75	0.67
1:Z:177:ASP:HB2	1:Z:199:THR:HG22	1.76	0.67
1:Y:73:ILE:HD12	1:Y:73:ILE:H	1.60	0.67
1:0:264:GLU:OE2	1:0:286:ARG:NE	2.28	0.67
1:0:351:ILE:HD11	1:0:381:GLN:OE1	1.94	0.67
1:Z:312:LEU:HD11	1:Z:370:VAL:HG21	1.76	0.66
1:Y:103:ILE:HD12	1:Z:13:PRO:CB	2.24	0.66
1:Z:31:ILE:HD13	1:Z:92:ILE:HD13	1.77	0.66
1:Y:273:VAL:HG12	1:Y:273:VAL:O	1.95	0.66
1:Z:512:GLY:HA2	1:Z:535:ARG:NH2	2.11	0.66
1:0:563:LEU:HD11	1:Y:559:ALA:CB	2.26	0.66
1:Z:463:GLY:CA	1:Z:481:THR:HG21	2.24	0.66
1:Y:263:LEU:O	1:Y:263:LEU:HD23	1.96	0.65
1:Z:153:PHE:CE1	1:Z:176:GLY:HA3	2.32	0.65
1:0:83:VAL:CG1	1:Y:9:VAL:HG12	2.26	0.65
1:Y:454:ILE:HG22	1:Y:456:VAL:HG23	1.80	0.64
1:0:563:LEU:HD11	1:Y:559:ALA:HB3	1.78	0.64
1:Y:75:TYR:HB3	1:Y:80:VAL:HG11	1.80	0.64
1:0:13:PRO:CG	1:Z:103:ILE:HD13	2.28	0.63
1:Z:196:MET:SD	1:Z:263:LEU:HB2	2.39	0.63
1:Z:208:TRP:CZ3	1:Z:357:ARG:CD	2.81	0.63
1:Z:631:ILE:HG21	1:Z:653:LYS:HB2	1.80	0.63
1:Y:546:LEU:HD11	1:Y:549:ILE:HD11	1.79	0.63
1:0:502:LEU:CD2	1:0:517:ILE:HD11	2.27	0.63
1:0:621:PHE:CE1	1:0:641:TRP:HB2	2.33	0.63
1:Y:230:THR:HG22	1:Y:231:ASP:H	1.63	0.63
1:Y:404:ASN:HB2	1:Y:405:PRO:HD3	1.81	0.63
1:0:641:TRP:HE3	1:0:648:LEU:HG	1.64	0.62
1:0:376:ARG:HH22	1:0:409:ARG:HD3	1.64	0.62
1:Y:63:GLN:NE2	1:Y:63:GLN:O	2.32	0.62
1:0:504:LEU:HD11	1:0:527:ILE:HD11	1.81	0.62
1:Y:165:VAL:HG23	1:Y:165:VAL:O	2.00	0.62
1:0:226:LYS:NZ	1:0:231:ASP:O	2.32	0.62
1:Z:191:ILE:HD11	1:Z:273:VAL:HG22	1.82	0.61
1:0:174:PHE:CZ	1:0:180:LEU:HD13	2.35	0.61
1:Y:181:ILE:HG13	1:Y:264:GLU:HB3	1.81	0.61
1:Y:269:ILE:HG22	1:Y:269:ILE:O	1.98	0.61
1:Z:491:ILE:HG23	1:Z:517:ILE:HA	1.82	0.61
1:Z:580:HIS:HB2	1:Z:591:TYR:CE2	2.35	0.61
1:0:464:ALA:HB1	1:0:466:LEU:HD11	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Z:194:VAL:HG11	1:Z:263:LEU:HD13	1.83	0.61
1:Z:332:VAL:HG22	1:Z:333:SER:H	1.66	0.61
1:Y:468:THR:OG1	1:Y:497:CYS:SG	2.59	0.61
1:Y:91:ALA:HB1	1:Y:99:GLN:HE22	1.66	0.60
1:0:94:ASP:OD1	1:0:95:ALA:N	2.35	0.60
1:0:563:LEU:HD21	1:Y:579:SER:H	1.66	0.60
1:0:445:ASP:OD1	1:0:446:GLY:N	2.35	0.60
1:Z:14:ARG:HE	1:Z:79:LEU:HB3	1.66	0.60
1:Y:253:ASN:OD1	1:Y:254:ALA:N	2.35	0.60
1:0:638:LEU:HB3	1:0:651:LEU:HB3	1.84	0.60
1:Z:395:PHE:CE2	1:Z:432:LEU:HD22	2.37	0.60
1:0:253:ASN:OD1	1:0:254:ALA:N	2.36	0.59
1:0:376:ARG:HH12	1:0:409:ARG:HB3	1.68	0.59
1:Y:564:ARG:NH2	1:Y:571:THR:O	2.35	0.59
1:0:36:ILE:HG23	1:0:105:ASN:OD1	2.03	0.59
1:Y:175:ILE:H	1:Y:175:ILE:HD12	1.68	0.59
1:Z:63:GLN:O	1:Z:65:LEU:N	2.35	0.59
1:Z:74:VAL:HG12	1:Z:75:TYR:O	2.02	0.59
1:0:203:TRP:O	1:0:257:GLN:NE2	2.36	0.59
1:Y:391:VAL:O	1:Y:439:GLY:N	2.36	0.59
1:Z:425:LEU:HD21	1:Z:449:MET:HE1	1.84	0.58
1:Z:481:THR:HB	1:Z:490:GLN:NE2	2.18	0.58
1:Y:350:VAL:HG12	1:Y:350:VAL:O	2.03	0.58
1:Z:208:TRP:CZ3	1:Z:357:ARG:CZ	2.86	0.58
1:Z:294:VAL:HG12	1:Z:295:ASP:H	1.69	0.58
1:Z:483:THR:HA	1:Z:508:ARG:CZ	2.34	0.58
1:0:13:PRO:HG2	1:Z:103:ILE:HD13	1.84	0.58
1:Y:435:ARG:NH1	1:Y:457:GLU:OE2	2.34	0.58
1:Z:597:ILE:HG22	1:Z:602:PRO:HA	1.84	0.58
1:Z:208:TRP:CH2	1:Z:357:ARG:NE	2.72	0.58
1:Z:569:SER:CB	1:Z:572:LEU:HB2	2.33	0.58
1:Z:646:THR:O	1:Z:646:THR:HG22	2.03	0.58
1:Z:429:ILE:HG23	1:Z:432:LEU:HD11	1.86	0.58
1:0:179:ASN:ND2	1:0:264:GLU:HB2	2.19	0.57
1:Z:312:LEU:CD1	1:Z:370:VAL:HG21	2.33	0.57
1:0:207:PRO:O	1:0:215:LEU:N	2.37	0.57
1:0:407:LEU:H	1:0:407:LEU:CD1	2.13	0.57
1:Y:322:VAL:HG12	1:Y:322:VAL:O	2.05	0.57
1:Y:466:LEU:HD23	1:Y:473:PHE:CZ	2.38	0.57
1:Z:452:SER:OG	1:Z:453:ASN:N	2.36	0.57
1:Z:322:VAL:HG12	1:Z:322:VAL:O	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:214:TRP:CZ3	1:0:391:VAL:HG22	2.40	0.57
1:Z:164:LYS:O	1:Z:186:GLY:N	2.36	0.57
1:0:636:CYS:SG	1:Y:618:GLU:HG2	2.44	0.56
1:0:271:VAL:HG22	1:0:291:CYS:SG	2.46	0.56
1:Z:430:ASP:OD1	1:Z:431:ASN:N	2.39	0.56
1:Y:403:MET:HG2	1:Y:404:ASN:ND2	2.21	0.56
1:Z:176:GLY:O	1:Z:198:SER:HA	2.05	0.56
1:Z:562:LYS:HE2	1:Z:578:TYR:HE1	1.71	0.56
1:0:283:PHE:N	1:0:306:ILE:O	2.35	0.56
1:Y:582:ASN:CB	1:Y:612:LYS:HA	2.36	0.56
1:0:326:ARG:NH2	1:0:328:SER:OG	2.38	0.56
1:Z:585:ALA:HB1	1:Z:588:GLY:CA	2.36	0.56
1:0:641:TRP:CE3	1:0:648:LEU:HG	2.40	0.56
1:0:637:PHE:CE1	1:Y:621:PHE:HB3	2.41	0.56
1:0:16:ILE:HD12	1:Z:18:THR:OG1	2.06	0.55
1:0:408:ASP:HA	1:0:415:ILE:HG13	1.87	0.55
1:0:504:LEU:CD1	1:0:527:ILE:HD11	2.35	0.55
1:Y:345:GLU:HA	1:Z:356:TYR:CD1	2.41	0.55
1:0:214:TRP:CE3	1:0:438:LEU:HD22	2.41	0.55
1:0:608:LYS:NZ	1:Z:633:ASP:OD2	2.32	0.55
1:Z:582:ASN:HB2	1:Z:612:LYS:N	2.22	0.55
1:Y:70:ALA:HB1	1:Y:72:LYS:HZ3	1.70	0.55
1:0:617:ALA:O	1:0:619:ILE:HG13	2.06	0.55
1:0:111:PRO:O	1:0:115:SER:N	2.38	0.55
1:Z:253:ASN:OD1	1:Z:254:ALA:N	2.40	0.55
1:Z:357:ARG:O	1:Z:358:ALA:HB3	2.07	0.55
1:Z:532:ASP:OD2	1:Z:535:ARG:NE	2.34	0.55
1:Y:400:ASP:HB3	1:Y:423:LEU:HD11	1.87	0.55
1:0:409:ARG:HH11	1:0:423:LEU:HD21	1.72	0.54
1:0:640:TYR:HE1	1:0:651:LEU:N	2.05	0.54
1:0:63:GLN:O	1:0:65:LEU:N	2.40	0.54
1:0:468:THR:HG1	1:0:497:CYS:HG	1.56	0.54
1:Z:520:PRO:O	1:Z:539:ALA:HB2	2.07	0.54
1:0:126:VAL:HG23	1:0:126:VAL:O	2.08	0.54
1:Y:99:GLN:NE2	1:Y:102:TYR:HB2	2.22	0.54
1:Y:582:ASN:ND2	1:Y:589:SER:HB3	2.23	0.54
1:Z:168:ILE:HD12	1:Z:191:ILE:HG22	1.90	0.54
1:Y:374:THR:HG21	1:Y:412:ASP:OD1	2.08	0.54
1:0:464:ALA:HB1	1:0:466:LEU:CD1	2.38	0.54
1:Z:459:CYS:HB2	1:Z:481:THR:HG23	1.89	0.54
1:Z:562:LYS:HE2	1:Z:578:TYR:CE1	2.43	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:277:SER:OG	1:0:278:GLY:N	2.41	0.53
1:Y:84:THR:HG22	1:Y:85:VAL:H	1.73	0.53
1:Y:356:TYR:OH	1:Y:357:ARG:NH2	2.41	0.53
1:Z:584:GLY:O	1:Z:585:ALA:C	2.46	0.53
1:0:344:PHE:O	1:0:346:ARG:NH1	2.42	0.53
1:Z:277:SER:OG	1:Z:278:GLY:N	2.41	0.53
1:Y:276:ALA:HB3	1:Y:293:MET:HE2	1.89	0.53
1:Z:582:ASN:N	1:Z:590:ALA:HA	2.21	0.53
1:0:556:TYR:OH	1:Z:540:ASN:ND2	2.39	0.53
1:Y:625:ILE:HA	1:Y:640:TYR:CD2	2.44	0.53
1:0:312:LEU:O	1:0:339:ARG:NH1	2.37	0.53
1:Y:185:LEU:HD23	1:Y:186:GLY:N	2.23	0.53
1:Z:100:VAL:HG12	1:Z:101:ASP:OD1	2.08	0.53
1:Z:67:ILE:HG23	1:Z:72:LYS:O	2.08	0.53
1:Z:468:THR:O	1:Z:495:GLY:HA3	2.08	0.53
1:Y:569:SER:O	1:Y:572:LEU:N	2.40	0.53
1:Z:474:THR:HA	1:Z:500:ASN:OD1	2.08	0.53
1:Z:477:ALA:HA	1:Z:503:ARG:HB2	1.91	0.53
1:Z:517:ILE:HG23	1:Z:536:ILE:HG23	1.90	0.53
1:Z:582:ASN:HB3	1:Z:591:TYR:HB3	1.91	0.53
1:Z:463:GLY:HA3	1:Z:481:THR:HG21	1.91	0.52
1:0:622:VAL:HG13	1:0:640:TYR:CB	2.38	0.52
1:Y:173:LYS:HG3	1:Y:175:ILE:HD11	1.90	0.52
1:Z:619:ILE:HD12	1:Z:619:ILE:H	1.74	0.52
1:Y:17:PHE:HE1	1:Y:73:ILE:HD11	1.74	0.52
1:Z:445:ASP:OD1	1:Z:445:ASP:O	2.28	0.52
1:Z:582:ASN:HA	1:Z:591:TYR:HD2	1.74	0.52
1:0:607:LEU:HD23	1:0:607:LEU:O	2.10	0.52
1:Z:309:PHE:HE2	1:Z:322:VAL:HG22	1.75	0.52
1:Y:233:TYR:OH	1:Y:239:ASP:OD2	2.22	0.52
1:0:306:ILE:HG22	1:0:307:ILE:HD12	1.91	0.52
1:Z:10:VAL:O	1:Z:10:VAL:HG13	2.09	0.52
1:Z:85:VAL:HG23	1:Z:86:GLN:N	2.20	0.52
1:0:298:ASN:OD1	1:0:326:ARG:NE	2.34	0.52
1:0:579:SER:O	1:Z:565:ILE:HD11	2.09	0.52
1:Y:145:LEU:HD23	1:Y:146:LEU:N	2.25	0.52
1:Y:337:PHE:O	1:Y:366:TRP:HD1	1.93	0.52
1:Z:401:THR:O	1:Z:401:THR:HG22	2.10	0.52
1:0:404:ASN:HB3	1:0:407:LEU:HD11	1.91	0.52
1:Z:514:GLY:O	1:Z:535:ARG:NH1	2.42	0.51
1:Z:88:HIS:CE1	1:Z:106:VAL:HG21	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:93:TYR:HE1	1:0:99:GLN:HE21	1.58	0.51
1:Z:560:ALA:HA	1:Z:578:TYR:HD1	1.75	0.51
1:0:465:TYR:CZ	1:0:467:LEU:HD21	2.46	0.51
1:0:466:LEU:HD23	1:0:473:PHE:CE2	2.46	0.51
1:0:661:ARG:O	1:Y:667:LEU:HD13	2.10	0.51
1:Z:480:ASP:OD1	1:Z:508:ARG:HB3	2.11	0.51
1:0:409:ARG:HG3	1:0:413:TYR:O	2.10	0.51
1:Y:560:ALA:HA	1:Y:578:TYR:HB3	1.92	0.51
1:Y:230:THR:HG22	1:Y:231:ASP:N	2.26	0.51
1:0:455:THR:HG22	1:0:455:THR:O	2.11	0.51
1:0:559:ALA:HB2	1:Z:565:ILE:HD13	1.93	0.50
1:Z:644:ASN:OD1	1:Z:645:SER:N	2.43	0.50
1:Y:271:VAL:HG22	1:Y:291:CYS:SG	2.51	0.50
1:Y:360:GLU:O	1:Y:392:TRP:HB2	2.11	0.50
1:Z:31:ILE:HD13	1:Z:92:ILE:CD1	2.39	0.50
1:Z:195:PHE:HE1	1:Z:197:GLU:HB2	1.75	0.50
1:Z:543:GLU:HA	1:Z:543:GLU:OE2	2.12	0.50
1:0:465:TYR:CE2	1:0:467:LEU:HD21	2.47	0.50
1:Y:625:ILE:HG23	1:Y:640:TYR:CE2	2.46	0.50
1:Z:248:THR:O	1:Z:249:LEU:HD23	2.12	0.50
1:Z:652:VAL:HG13	1:Z:652:VAL:O	2.12	0.50
1:Y:376:ARG:HE	1:Y:400:ASP:HA	1.76	0.50
1:0:457:GLU:HG3	1:0:458:ASP:H	1.77	0.50
1:Y:103:ILE:HD13	1:Z:14:ARG:NH1	2.26	0.49
1:Y:294:VAL:HG22	1:Y:323:ILE:CG2	2.42	0.49
1:Z:26:VAL:HG23	1:Z:26:VAL:O	2.12	0.49
1:Z:464:ALA:HB1	1:Z:466:LEU:HD13	1.93	0.49
1:Z:569:SER:HB3	1:Z:572:LEU:HB2	1.92	0.49
1:0:183:THR:HG22	1:0:184:LYS:HG2	1.94	0.49
1:0:234:GLN:NE2	1:0:257:GLN:O	2.45	0.49
1:0:478:ILE:HG13	1:0:478:ILE:O	2.11	0.49
1:0:374:THR:HG22	1:0:376:ARG:H	1.77	0.49
1:Z:153:PHE:CZ	1:Z:176:GLY:HA3	2.47	0.49
1:Z:265:ILE:HD12	1:Z:285:PHE:CE2	2.48	0.49
1:Z:489:ASN:O	1:Z:490:GLN:C	2.49	0.49
1:0:615:ARG:HA	1:Z:605:VAL:HG11	1.94	0.49
1:Z:102:TYR:CG	1:Z:102:TYR:O	2.66	0.49
1:Z:271:VAL:HG22	1:Z:291:CYS:SG	2.53	0.49
1:0:595:THR:HG21	1:0:603:ASP:OD1	2.12	0.49
1:Z:581:ILE:HG21	1:Z:584:GLY:O	2.13	0.49
1:0:310:GLU:O	1:0:312:LEU:N	2.46	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:624:ASP:O	1:0:640:TYR:HB2	2.11	0.49
1:Y:468:THR:O	1:Y:469:HIS:ND1	2.46	0.49
1:Z:332:VAL:HG22	1:Z:333:SER:N	2.27	0.49
1:0:641:TRP:CZ3	1:Z:652:VAL:HG11	2.48	0.49
1:Y:605:VAL:HG21	1:Z:615:ARG:HA	1.93	0.49
1:Y:145:LEU:HD22	1:Y:168:ILE:HG23	1.95	0.49
1:Z:280:MET:N	1:Z:300:SER:O	2.46	0.48
1:0:641:TRP:HA	1:0:648:LEU:HD23	1.94	0.48
1:Z:84:THR:HG21	1:Z:88:HIS:CG	2.48	0.48
1:Y:209:THR:HG22	1:Y:210:ASP:N	2.27	0.48
1:Z:470:GLU:N	1:Z:470:GLU:OE2	2.46	0.48
1:0:423:LEU:HB2	1:0:425:LEU:HD21	1.96	0.48
1:0:642:GLU:O	1:0:646:THR:N	2.46	0.48
1:Y:82:ILE:O	1:Z:10:VAL:HG12	2.13	0.48
1:Z:329:TYR:HA	1:Z:357:ARG:HG2	1.95	0.48
1:Z:425:LEU:HD23	1:Z:425:LEU:H	1.77	0.48
1:Z:527:ILE:HD12	1:Z:541:LEU:HD11	1.94	0.48
1:0:576:ALA:H	1:0:595:THR:HG23	1.79	0.48
1:Y:622:VAL:HB	1:Y:640:TYR:HB2	1.94	0.48
1:Z:573:ASP:O	1:Z:597:ILE:HD13	2.13	0.48
1:0:414:PRO:HD2	1:0:417:GLN:OE1	2.13	0.48
1:Y:183:THR:HG23	1:Y:184:LYS:HG3	1.96	0.48
1:0:55:ASP:OD1	1:0:56:GLY:N	2.47	0.48
1:0:568:LEU:HD11	1:Y:581:ILE:HG22	1.95	0.48
1:Z:75:TYR:CG	1:Z:76:ASN:N	2.82	0.48
1:Z:478:ILE:HG22	1:Z:478:ILE:O	2.14	0.48
1:0:407:LEU:HD22	1:0:407:LEU:C	2.34	0.48
1:Y:196:MET:SD	1:Y:263:LEU:HB2	2.54	0.48
1:Y:401:THR:C	1:Y:403:MET:H	2.17	0.48
1:Z:496:ALA:HA	1:Z:521:ASN:O	2.13	0.48
1:Y:339:ARG:HA	1:Y:376:ARG:O	2.13	0.48
1:0:310:GLU:HA	1:0:338:LEU:HD12	1.96	0.47
1:Z:237:VAL:HA	1:Z:240:TYR:CE1	2.48	0.47
1:Y:298:ASN:OD1	1:Y:326:ARG:NH1	2.46	0.47
1:Z:429:ILE:CG2	1:Z:432:LEU:HD11	2.43	0.47
1:0:321:TYR:HB3	1:0:323:ILE:HD12	1.96	0.47
1:0:549:ILE:HD12	1:Y:549:ILE:HD11	1.95	0.47
1:Z:195:PHE:CE1	1:Z:197:GLU:HB2	2.49	0.47
1:Z:248:THR:C	1:Z:249:LEU:HD23	2.34	0.47
1:Y:430:ASP:OD1	1:Y:431:ASN:N	2.48	0.47
1:0:409:ARG:NE	1:0:415:ILE:HG12	2.28	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Z:561:ILE:HG23	1:Z:561:ILE:O	2.14	0.47
1:O:401:THR:CG2	1:O:404:ASN:HB2	2.41	0.47
1:O:451:VAL:CG2	1:O:454:ILE:HD11	2.44	0.47
1:Y:363:VAL:O	1:Y:363:VAL:CG1	2.61	0.47
1:Y:401:THR:OG1	1:Y:402:ASP:N	2.48	0.47
1:Y:402:ASP:O	1:Y:403:MET:HB3	2.15	0.47
1:Z:240:TYR:CG	1:Z:247:GLU:OE2	2.68	0.47
1:O:345:GLU:HA	1:Y:356:TYR:CD1	2.49	0.47
1:O:409:ARG:HH22	1:O:419:PRO:C	2.17	0.47
1:Z:263:LEU:HD23	1:Z:263:LEU:O	2.14	0.47
1:O:463:GLY:N	1:O:490:GLN:O	2.48	0.47
1:Z:208:TRP:CE3	1:Z:357:ARG:CZ	2.98	0.47
1:O:409:ARG:HB3	1:O:412:ASP:HB3	1.97	0.47
1:O:434:VAL:CG2	1:O:456:VAL:HG13	2.45	0.47
1:Y:165:VAL:HG12	1:Y:187:LYS:O	2.15	0.47
1:O:179:ASN:HD21	1:O:264:GLU:HB2	1.80	0.47
1:Y:31:ILE:HB	1:Y:65:LEU:HD12	1.97	0.47
1:Y:659:LEU:HD23	1:Y:659:LEU:H	1.79	0.47
1:Y:219:ALA:O	1:Y:222:VAL:HG12	2.14	0.46
1:Y:451:VAL:HG12	1:Y:452:SER:N	2.30	0.46
1:Y:568:LEU:HD23	1:Z:586:GLY:O	2.14	0.46
1:Y:638:LEU:HD11	1:Z:614:CYS:SG	2.55	0.46
1:Y:445:ASP:OD1	1:Y:445:ASP:N	2.49	0.46
1:O:68:ASN:HB3	1:O:74:VAL:HG21	1.98	0.46
1:O:406:GLU:HG2	1:O:407:LEU:N	2.30	0.46
1:Y:20:SER:CB	1:Z:79:LEU:HD11	2.45	0.46
1:Y:565:ILE:HD13	1:Z:559:ALA:HB2	1.96	0.46
1:O:400:ASP:OD2	1:O:420:LEU:HA	2.14	0.46
1:Z:49:VAL:O	1:Z:49:VAL:HG23	2.16	0.46
1:O:457:GLU:HG3	1:O:458:ASP:N	2.30	0.46
1:O:594:LEU:HD23	1:O:595:THR:N	2.31	0.46
1:Z:31:ILE:CD1	1:Z:92:ILE:HD13	2.45	0.46
1:Z:329:TYR:HA	1:Z:357:ARG:HB3	1.97	0.46
1:O:517:ILE:HG21	1:O:538:VAL:CG1	2.45	0.46
1:Y:621:PHE:CD1	1:Y:641:TRP:HB2	2.50	0.46
1:Y:637:PHE:HB2	1:Y:652:VAL:HG22	1.97	0.46
1:Z:363:VAL:HB	1:Z:395:PHE:CE1	2.51	0.46
1:Z:326:ARG:O	1:Z:326:ARG:HG3	2.16	0.46
1:Z:594:LEU:N	1:Z:594:LEU:HD12	2.31	0.46
1:O:434:VAL:O	1:O:457:GLU:HB3	2.15	0.46
1:Y:166:LEU:HD23	1:Y:166:LEU:H	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:263:LEU:HD12	1:0:263:LEU:O	2.16	0.46
1:0:421:HIS:CD2	1:0:467:LEU:HD12	2.50	0.46
1:Z:288:CYS:O	1:Z:311:ASN:ND2	2.49	0.46
1:Y:226:LYS:NZ	1:Y:228:SER:OG	2.27	0.46
1:Y:327:THR:HG22	1:Y:328:SER:N	2.30	0.46
1:Z:517:ILE:CG2	1:Z:536:ILE:HG23	2.46	0.46
1:0:174:PHE:HZ	1:0:180:LEU:HD13	1.78	0.45
1:Y:402:ASP:O	1:Y:405:PRO:HD2	2.16	0.45
1:0:271:VAL:HG23	1:0:271:VAL:O	2.16	0.45
1:Z:564:ARG:HD2	1:Z:573:ASP:OD1	2.16	0.45
1:0:543:GLU:OE2	1:Z:549:ILE:HA	2.16	0.45
1:0:597:ILE:O	1:Y:610:ASN:ND2	2.50	0.45
1:Y:598:SER:C	1:Z:589:SER:HB3	2.37	0.45
1:Z:235:PRO:O	1:Z:303:LYS:NZ	2.49	0.45
1:0:413:TYR:HB3	1:0:418:TYR:HD2	1.81	0.45
1:Y:50:TYR:O	1:Y:82:ILE:HA	2.16	0.45
1:0:174:PHE:N	1:0:195:PHE:O	2.50	0.45
1:0:429:ILE:HB	1:0:451:VAL:HG23	1.98	0.45
1:Y:456:VAL:HG12	1:Y:457:GLU:N	2.31	0.45
1:Y:516:THR:HG23	1:Y:517:ILE:N	2.32	0.45
1:Y:367:GLN:NE2	1:Y:396:ASP:OD1	2.50	0.45
1:0:409:ARG:HH21	1:0:420:LEU:HD22	1.82	0.45
1:Y:85:VAL:HG23	1:Y:86:GLN:HG2	1.99	0.45
1:Z:160:ASP:OD1	1:Z:160:ASP:O	2.35	0.45
1:Y:50:TYR:HE1	1:Y:85:VAL:HG13	1.82	0.45
1:Y:393:ASP:HA	1:Y:440:VAL:O	2.17	0.45
1:Z:294:VAL:HG12	1:Z:295:ASP:N	2.32	0.45
1:0:625:ILE:HD13	1:0:642:GLU:OE2	2.17	0.45
1:Y:165:VAL:HG23	1:Z:171:LYS:HD3	1.98	0.45
1:Y:261:SER:O	1:Y:282:GLY:N	2.50	0.45
1:Y:318:LYS:NZ	1:Y:345:GLU:OE2	2.41	0.45
1:Y:376:ARG:NH1	1:Y:409:ARG:HB2	2.32	0.45
1:Y:568:LEU:HD11	1:Z:581:ILE:HG12	1.99	0.45
1:Z:234:GLN:OE1	1:Z:257:GLN:NE2	2.50	0.45
1:0:25:ALA:HB2	1:Z:23:PHE:CD1	2.51	0.44
1:0:407:LEU:HD22	1:0:407:LEU:O	2.18	0.44
1:Y:217:ASP:OD2	1:Y:220:ALA:N	2.49	0.44
1:Y:400:ASP:HB3	1:Y:423:LEU:CD1	2.47	0.44
1:Y:547:GLY:N	1:Z:541:LEU:CD2	2.80	0.44
1:Z:532:ASP:OD1	1:Z:532:ASP:N	2.50	0.44
1:Z:634:SER:O	1:Z:635:SER:OG	2.33	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:152:ASN:HA	1:0:175:ILE:O	2.17	0.44
1:Y:16:ILE:O	1:Z:12:ASN:ND2	2.50	0.44
1:Y:369:THR:CB	1:Y:374:THR:HA	2.47	0.44
1:Z:361:SER:HB3	1:Z:364:LYS:HB2	1.98	0.44
1:Y:580:HIS:HE1	1:Y:593:GLN:HB3	1.82	0.44
1:Z:434:VAL:HG12	1:Z:435:ARG:N	2.32	0.44
1:0:457:GLU:OE2	1:Z:450:TYR:CB	2.66	0.44
1:Y:184:LYS:HD2	1:Y:184:LYS:O	2.17	0.44
1:Y:408:ASP:OD1	1:Y:415:ILE:HG12	2.17	0.44
1:0:626:ALA:HB2	1:0:640:TYR:CD1	2.53	0.44
1:Z:240:TYR:HA	1:Z:246:ILE:HG22	1.98	0.44
1:Z:417:GLN:HG2	1:Z:418:TYR:CD2	2.53	0.44
1:0:637:PHE:CE2	1:Y:619:ILE:HB	2.52	0.44
1:0:640:TYR:OH	1:0:661:ARG:HG3	2.17	0.44
1:0:628:ASP:CG	1:0:659:LEU:HG	2.38	0.44
1:0:212:ASN:OD1	1:Z:344:PHE:CZ	2.71	0.44
1:Z:147:ILE:HD13	1:Z:174:PHE:CE1	2.53	0.44
1:Z:365:THR:OG1	1:Z:397:LEU:O	2.35	0.44
1:0:36:ILE:HD11	1:0:87:GLY:C	2.37	0.44
1:0:214:TRP:HZ3	1:0:391:VAL:HG22	1.81	0.44
1:Y:181:ILE:HD12	1:Y:181:ILE:N	2.33	0.44
1:0:444:MET:HG2	1:0:445:ASP:N	2.32	0.43
1:0:546:LEU:HD11	1:Y:543:GLU:OE2	2.18	0.43
1:0:591:TYR:OH	1:Z:632:LYS:NZ	2.45	0.43
1:Y:20:SER:HB2	1:Z:79:LEU:HD11	1.99	0.43
1:Y:332:VAL:HG12	1:Y:333:SER:N	2.34	0.43
1:Y:376:ARG:HD2	1:Y:412:ASP:OD2	2.18	0.43
1:Y:651:LEU:HD21	1:Y:659:LEU:CD1	2.44	0.43
1:Z:180:LEU:HD23	1:Z:181:ILE:N	2.33	0.43
1:0:322:VAL:O	1:0:322:VAL:CG1	2.61	0.43
1:Y:70:ALA:HB1	1:Y:72:LYS:NZ	2.33	0.43
1:Z:391:VAL:HG13	1:Z:392:TRP:N	2.33	0.43
1:0:307:ILE:CD1	1:0:327:THR:HG21	2.48	0.43
1:0:350:VAL:N	1:0:381:GLN:O	2.46	0.43
1:0:376:ARG:HG3	1:0:399:ALA:O	2.19	0.43
1:0:385:SER:HG	1:0:395:PHE:HZ	1.65	0.43
1:Y:221:VAL:O	1:Y:224:THR:OG1	2.29	0.43
1:Z:51:ILE:HG22	1:Z:52:GLU:N	2.33	0.43
1:0:274:HIS:O	1:0:275:ARG:C	2.57	0.43
1:0:480:ASP:OD1	1:0:508:ARG:N	2.52	0.43
1:Y:84:THR:O	1:Z:6:ALA:N	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Z:499:VAL:HB	1:Z:524:VAL:HG23	2.01	0.43
1:Z:617:ALA:HB3	1:Z:619:ILE:HD11	2.01	0.43
1:Z:625:ILE:HD12	1:Z:640:TYR:HE2	1.83	0.43
1:0:364:LYS:HG2	1:0:366:TRP:H	1.84	0.43
1:Y:51:ILE:HG12	1:Y:82:ILE:CD1	2.48	0.43
1:0:145:LEU:HD23	1:0:146:LEU:N	2.34	0.43
1:Z:344:PHE:O	1:Z:345:GLU:HB2	2.19	0.43
1:0:387:VAL:O	1:0:387:VAL:HG23	2.18	0.43
1:0:442:PHE:O	1:0:442:PHE:CG	2.72	0.43
1:Y:597:ILE:O	1:Z:589:SER:HB2	2.18	0.43
1:Z:66:ILE:HG22	1:Z:67:ILE:N	2.34	0.43
1:0:521:ASN:N	1:0:521:ASN:OD1	2.52	0.43
1:0:637:PHE:HD1	1:Y:621:PHE:CD2	2.36	0.43
1:Y:399:ALA:HB2	1:Y:425:LEU:HD11	1.99	0.43
1:Y:563:LEU:H	1:Y:576:ALA:HB2	1.83	0.43
1:Z:31:ILE:CG2	1:Z:65:LEU:HB2	2.48	0.43
1:Z:499:VAL:HG12	1:Z:502:LEU:HB2	2.00	0.43
1:0:308:THR:HG22	1:0:309:PHE:N	2.34	0.43
1:0:430:ASP:OD1	1:0:452:SER:OG	2.32	0.43
1:Y:91:ALA:HB2	1:Y:102:TYR:HD1	1.84	0.43
1:0:105:ASN:HB3	1:0:108:LYS:HA	2.01	0.42
1:Y:126:VAL:HG23	1:Y:126:VAL:O	2.19	0.42
1:Y:344:PHE:CD1	1:Z:212:ASN:OD1	2.72	0.42
1:Z:84:THR:HG21	1:Z:88:HIS:HB3	2.01	0.42
1:Z:147:ILE:HD13	1:Z:174:PHE:CZ	2.54	0.42
1:Y:46:GLN:NE2	1:Y:63:GLN:CD	2.72	0.42
1:Y:626:ALA:HB2	1:Y:640:TYR:HB3	2.00	0.42
1:Z:51:ILE:CG2	1:Z:52:GLU:N	2.82	0.42
1:Z:406:GLU:HG2	1:Z:407:LEU:N	2.33	0.42
1:Z:512:GLY:HA2	1:Z:535:ARG:CZ	2.49	0.42
1:Z:583:GLY:O	1:Z:585:ALA:N	2.52	0.42
1:0:577:LEU:HG	1:0:577:LEU:O	2.18	0.42
1:Y:516:THR:H	1:Y:535:ARG:HB3	1.84	0.42
1:Z:179:ASN:O	1:Z:181:ILE:HG13	2.18	0.42
1:Z:295:ASP:N	1:Z:295:ASP:OD1	2.52	0.42
1:0:517:ILE:CG2	1:0:538:VAL:CG1	2.97	0.42
1:0:626:ALA:HB1	1:0:651:LEU:HD22	2.01	0.42
1:Y:277:SER:OG	1:Y:278:GLY:N	2.52	0.42
1:Y:368:GLY:HA2	1:Y:376:ARG:NH2	2.34	0.42
1:Z:357:ARG:CG	1:Z:358:ALA:N	2.83	0.42
1:Y:650:ALA:HB2	1:Y:664:LEU:HB2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:409:ARG:CZ	1:0:415:ILE:HG12	2.49	0.42
1:Z:50:TYR:HD2	1:Z:58:HIS:HB3	1.84	0.42
1:Z:357:ARG:O	1:Z:358:ALA:CB	2.67	0.42
1:Z:425:LEU:HD12	1:Z:427:HIS:NE2	2.35	0.42
1:0:153:PHE:CE1	1:0:176:GLY:HA3	2.55	0.42
1:0:566:HIS:CD2	1:0:570:LYS:HB2	2.55	0.42
1:0:637:PHE:HE1	1:Y:621:PHE:HB3	1.82	0.42
1:Z:337:PHE:HB3	1:Z:377:ASN:ND2	2.35	0.42
1:Z:346:ARG:HB3	1:Z:381:GLN:HB2	2.02	0.42
1:Z:564:ARG:NH1	1:Z:571:THR:O	2.52	0.42
1:0:88:HIS:CD2	1:0:106:VAL:HG21	2.54	0.42
1:0:360:GLU:O	1:0:392:TRP:HB3	2.20	0.42
1:Z:38:THR:HG22	1:Z:39:ASP:N	2.35	0.42
1:Z:209:THR:OG1	1:Z:213:GLN:HG2	2.20	0.42
1:Y:625:ILE:HD12	1:Y:642:GLU:OE1	2.20	0.42
1:Z:406:GLU:HG2	1:Z:407:LEU:H	1.84	0.42
1:Z:412:ASP:N	1:Z:412:ASP:OD1	2.51	0.42
1:Z:628:ASP:OD1	1:Z:628:ASP:O	2.37	0.42
1:Z:480:ASP:OD2	1:Z:507:ILE:HG22	2.20	0.41
1:Z:524:VAL:CG1	1:Z:538:VAL:HG11	2.50	0.41
1:0:65:LEU:HD11	1:0:82:ILE:HG21	2.02	0.41
1:0:181:ILE:HG23	1:0:266:ARG:HG3	2.03	0.41
1:Y:507:ILE:C	1:Y:509:SER:H	2.23	0.41
1:Z:510:THR:HG21	1:Z:535:ARG:HD2	2.02	0.41
1:0:264:GLU:HG3	1:0:284:LEU:HD11	2.02	0.41
1:0:299:PRO:HD2	1:0:327:THR:HA	2.02	0.41
1:Z:180:LEU:HD23	1:Z:180:LEU:C	2.40	0.41
1:Z:262:THR:HA	1:Z:282:GLY:O	2.21	0.41
1:Z:473:PHE:O	1:Z:499:VAL:HA	2.20	0.41
1:Z:481:THR:HG22	1:Z:482:ASN:N	2.36	0.41
1:0:153:PHE:HD1	1:0:154:TYR:O	2.04	0.41
1:0:438:LEU:HA	1:0:460:ALA:O	2.21	0.41
1:0:628:ASP:O	1:0:631:ILE:HG22	2.20	0.41
1:Y:577:LEU:C	1:Y:577:LEU:HD23	2.40	0.41
1:0:152:ASN:OD1	1:0:152:ASN:O	2.38	0.41
1:0:310:GLU:O	1:0:310:GLU:HG3	2.20	0.41
1:Y:142:VAL:HG23	1:Y:143:ASP:N	2.35	0.41
1:Y:428:LEU:HD12	1:Y:428:LEU:O	2.21	0.41
1:Z:208:TRP:CZ3	1:Z:357:ARG:HD3	2.53	0.41
1:Z:451:VAL:HG22	1:Z:473:PHE:HA	2.02	0.41
1:Z:598:SER:O	1:Z:599:GLY:C	2.59	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:310:GLU:O	1:0:310:GLU:CG	2.69	0.41
1:Y:65:LEU:O	1:Y:66:ILE:HD13	2.21	0.41
1:Y:75:TYR:HB3	1:Y:80:VAL:CG1	2.50	0.41
1:Y:240:TYR:HA	1:Y:246:ILE:HG22	2.02	0.41
1:0:298:ASN:N	1:0:299:PRO:HD3	2.36	0.41
1:0:419:PRO:HB2	1:0:422:GLN:HG3	2.02	0.41
1:Y:386:VAL:HG12	1:Y:387:VAL:N	2.36	0.41
1:Y:451:VAL:CG1	1:Y:454:ILE:HD11	2.51	0.41
1:Y:493:ILE:HB	1:Y:519:ALA:HB2	2.02	0.41
1:Y:595:THR:HG22	1:Y:606:SER:HB3	2.03	0.41
1:Z:84:THR:HG21	1:Z:88:HIS:CB	2.51	0.41
1:Z:339:ARG:O	1:Z:377:ASN:ND2	2.53	0.41
1:Z:480:ASP:OD2	1:Z:507:ILE:N	2.53	0.41
1:Z:646:THR:O	1:Z:646:THR:CG2	2.68	0.41
1:0:407:LEU:HD13	1:0:407:LEU:N	2.20	0.41
1:0:466:LEU:HD12	1:0:466:LEU:N	2.35	0.41
1:0:637:PHE:CD1	1:Y:621:PHE:HB3	2.55	0.41
1:Y:49:VAL:HG23	1:Y:61:ILE:HG22	2.02	0.41
1:Y:196:MET:HE3	1:Y:261:SER:OG	2.21	0.41
1:Y:340:ASN:N	1:Y:377:ASN:OD1	2.39	0.41
1:Y:356:TYR:CE2	1:Y:357:ARG:HB2	2.56	0.41
1:Z:161:PHE:CD1	1:Z:185:LEU:HD11	2.56	0.41
1:Z:211:ASP:O	1:Z:212:ASN:HB2	2.21	0.41
1:Z:215:LEU:HD13	1:Z:220:ALA:CB	2.48	0.41
1:Z:389:TYR:N	1:Z:390:PRO:CD	2.84	0.41
1:Z:524:VAL:HG11	1:Z:538:VAL:HG11	2.03	0.41
1:Z:153:PHE:CE1	1:Z:176:GLY:CA	3.03	0.41
1:Z:385:SER:O	1:Z:386:VAL:HG23	2.21	0.41
1:0:485:ASP:O	1:0:486:PHE:CG	2.73	0.40
1:0:633:ASP:CG	1:Y:608:LYS:HZ3	2.24	0.40
1:0:637:PHE:HD1	1:Y:621:PHE:HD2	1.68	0.40
1:Y:273:VAL:O	1:Y:273:VAL:CG1	2.67	0.40
1:Z:297:ASN:OD1	1:Z:297:ASN:N	2.52	0.40
1:0:83:VAL:HG12	1:Y:9:VAL:CG1	2.44	0.40
1:0:407:LEU:HD23	1:0:410:PRO:HD3	2.02	0.40
1:0:179:ASN:HA	1:0:262:THR:O	2.21	0.40
1:0:321:TYR:CE1	1:0:347:ASP:OD1	2.75	0.40
1:0:427:HIS:HB3	1:0:429:ILE:HD11	2.03	0.40
1:Y:454:ILE:CG2	1:Y:456:VAL:HG23	2.48	0.40
1:Y:593:GLN:HG2	1:Y:608:LYS:HG3	2.02	0.40
1:Y:627:SER:H	1:Y:630:PHE:HD2	1.67	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Y:629:ASP:OD1	1:Y:630:PHE:N	2.54	0.40
1:Z:156:GLY:HA2	1:Z:179:ASN:O	2.21	0.40
1:0:86:GLN:HG2	1:0:87:GLY:N	2.36	0.40
1:0:234:GLN:O	1:0:331:SER:OG	2.39	0.40
1:Y:538:VAL:HG21	1:Y:541:LEU:HB2	2.03	0.40
1:0:321:TYR:CB	1:0:323:ILE:HD12	2.51	0.40
1:0:502:LEU:HD23	1:0:504:LEU:HG	2.04	0.40
1:Y:272:GLU:HB3	1:Y:274:HIS:CD2	2.57	0.40
1:Z:317:GLY:O	1:Z:340:ASN:OD1	2.40	0.40
1:Z:569:SER:HB2	1:Z:572:LEU:HB2	2.03	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM 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	0	660/662 (100%)	561 (85%)	96 (14%)	3 (0%)	29	66
1	Y	660/662 (100%)	553 (84%)	107 (16%)	0	100	100
1	Z	660/662 (100%)	539 (82%)	112 (17%)	9 (1%)	11	45
All	All	1980/1986 (100%)	1653 (84%)	315 (16%)	12 (1%)	29	62

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	0	505	ILE
1	Z	360	GLU
1	Z	599	GLY
1	Z	366	TRP
1	Z	379	ASN
1	Z	490	GLN
1	Z	584	GLY

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Mol	Chain	Res	Type
1	Z	600	SER
1	0	504	LEU
1	Z	358	ALA
1	0	526	GLY
1	Z	585	ALA

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM 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	0	543/543 (100%)	540 (99%)	3 (1%)	86	93
1	Y	543/543 (100%)	540 (99%)	3 (1%)	86	93
1	Z	543/543 (100%)	538 (99%)	5 (1%)	78	88
All	All	1629/1629 (100%)	1618 (99%)	11 (1%)	84	91

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	0	376	ARG
1	0	407	LEU
1	0	622	VAL
1	Y	184	LYS
1	Y	275	ARG
1	Y	407	LEU
1	Z	357	ARG
1	Z	360	GLU
1	Z	361	SER
1	Z	376	ARG
1	Z	577	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	Y	46	GLN

*Continued on next page...*



*Continued from previous page...*

Mol	Chain	Res	Type
1	Y	63	GLN
1	Y	99	GLN
1	Y	179	ASN
1	Y	367	GLN
1	Y	404	ASN
1	Z	88	HIS
1	Z	320	ASN
1	Z	377	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

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

There are no ligands in this entry.

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

There are no such residues in this entry.

### 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

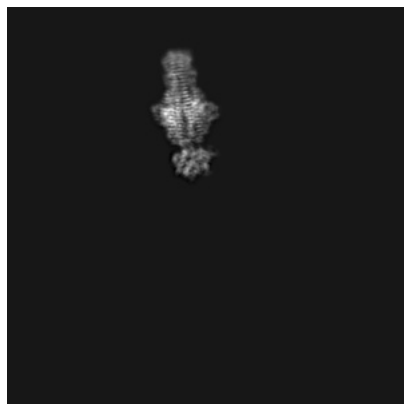
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-27791. These allow visual inspection of the internal detail of the map and identification of artifacts.

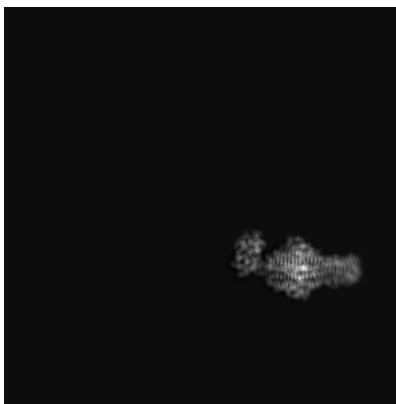
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

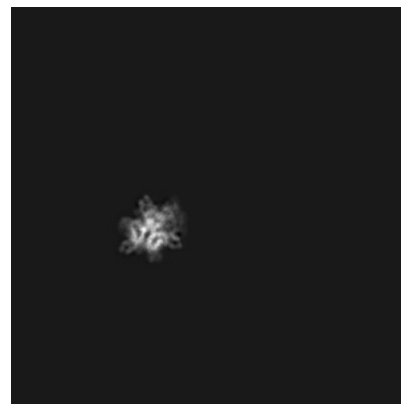
#### 6.1.1 Primary map



X

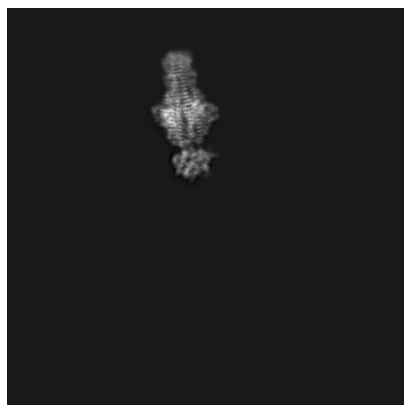


Y

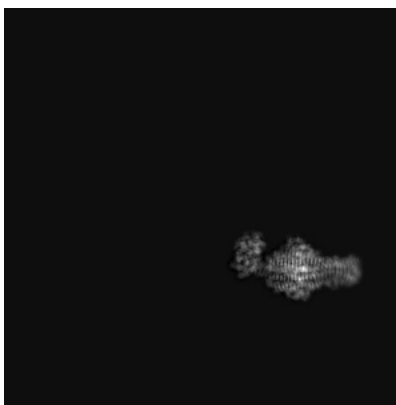


Z

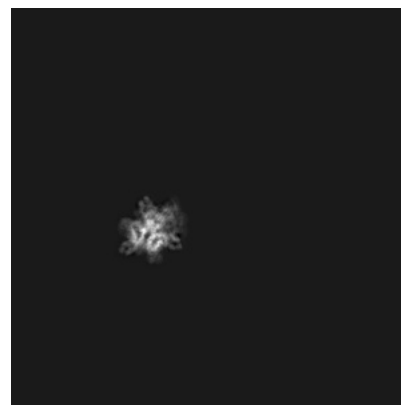
#### 6.1.2 Raw map



X



Y

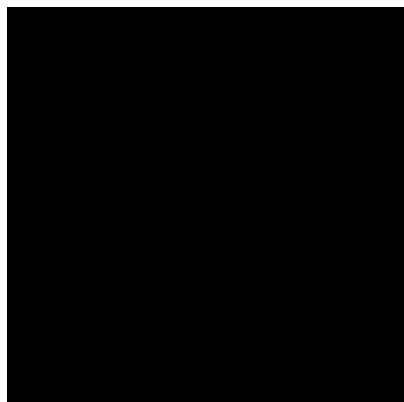


Z

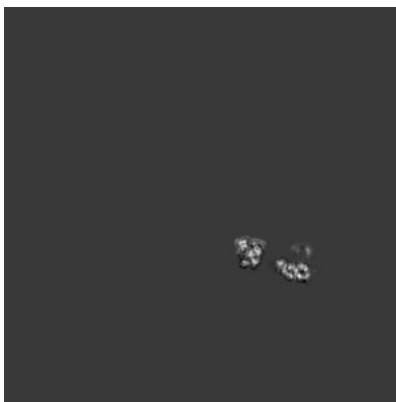
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

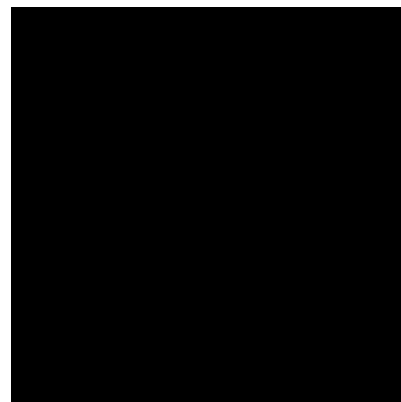
### 6.2.1 Primary map



X Index: 240

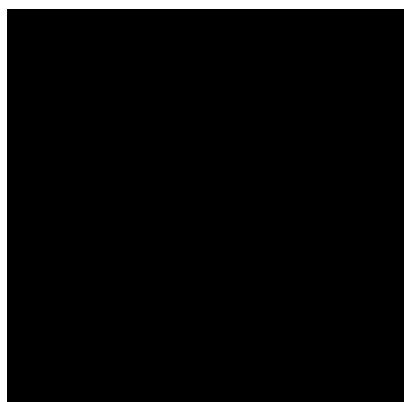


Y Index: 240



Z Index: 240

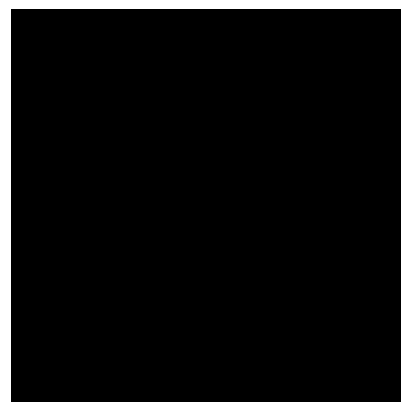
### 6.2.2 Raw map



X Index: 240



Y Index: 240



Z Index: 240

The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

### 6.3.1 Primary map



X Index: 168



Y Index: 199

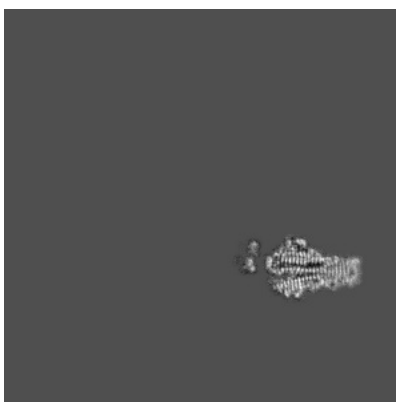


Z Index: 355

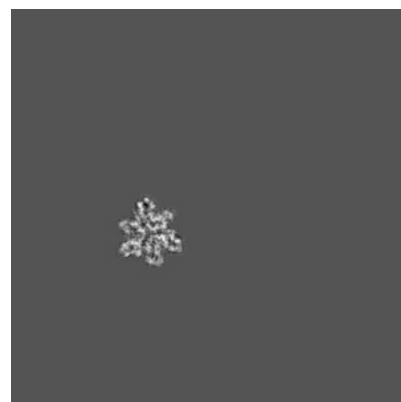
### 6.3.2 Raw map



X Index: 168



Y Index: 199

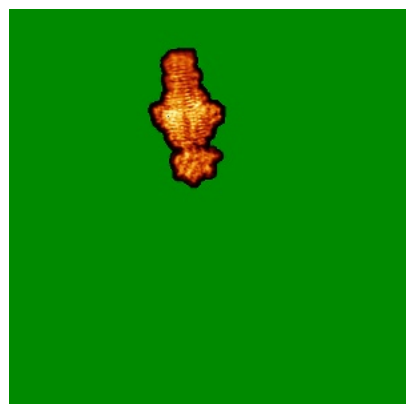


Z Index: 355

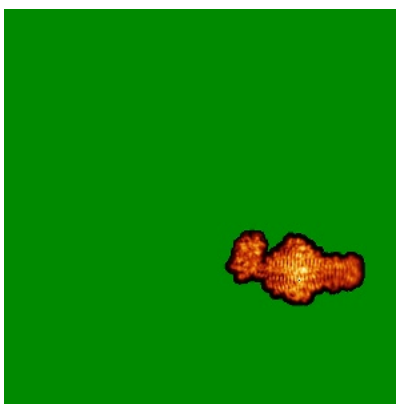
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

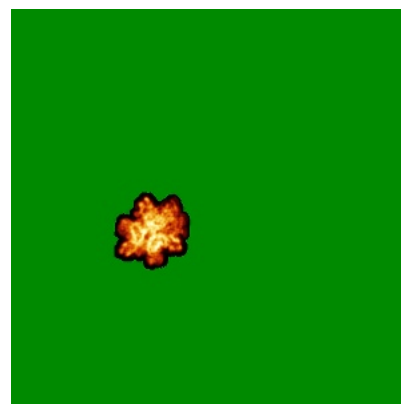
### 6.4.1 Primary map



X

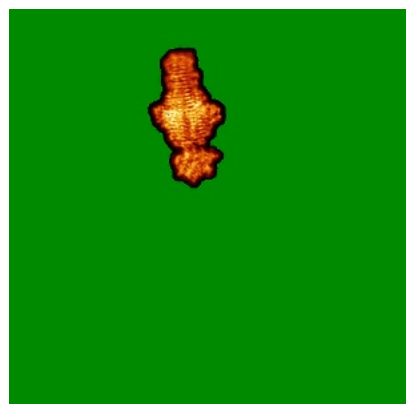


Y

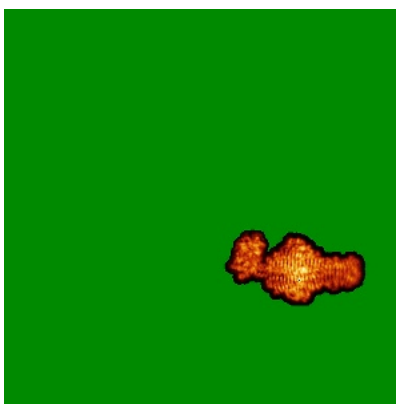


Z

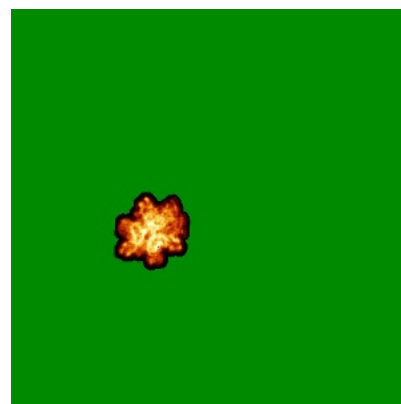
### 6.4.2 Raw map



X



Y

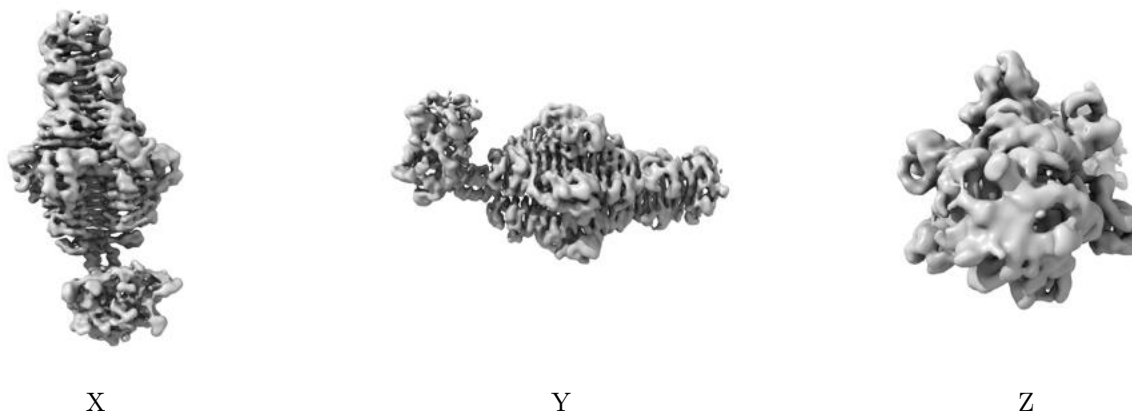


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

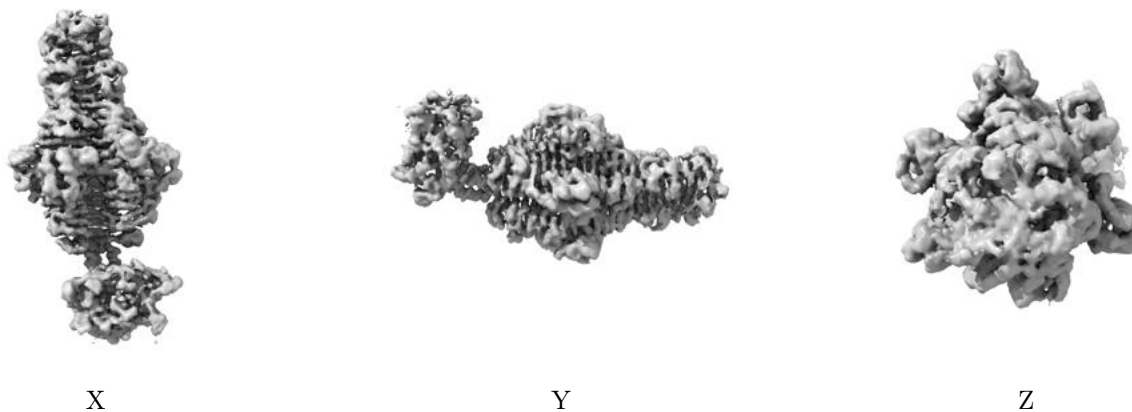
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

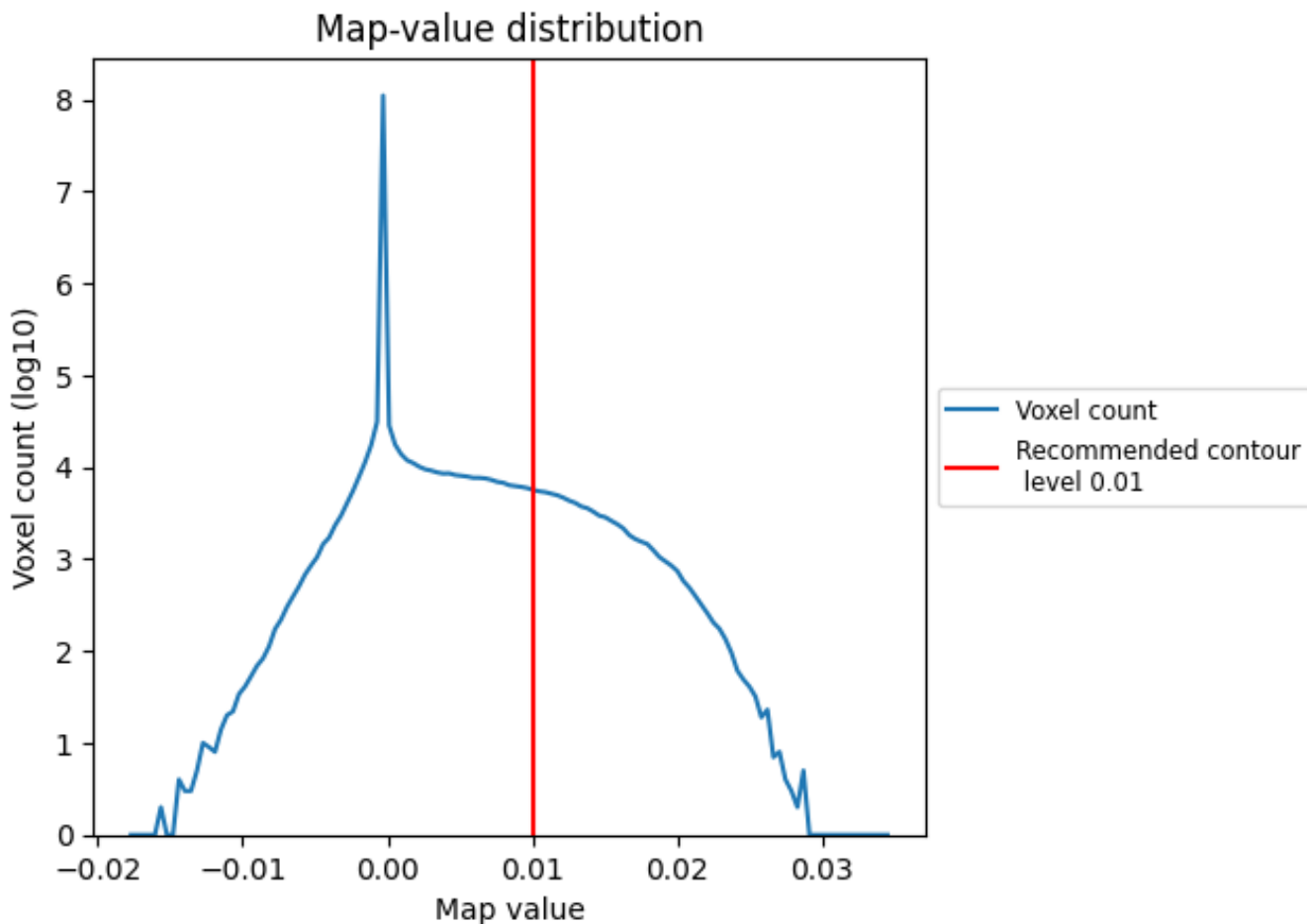
## 6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

## 7 Map analysis [i](#)

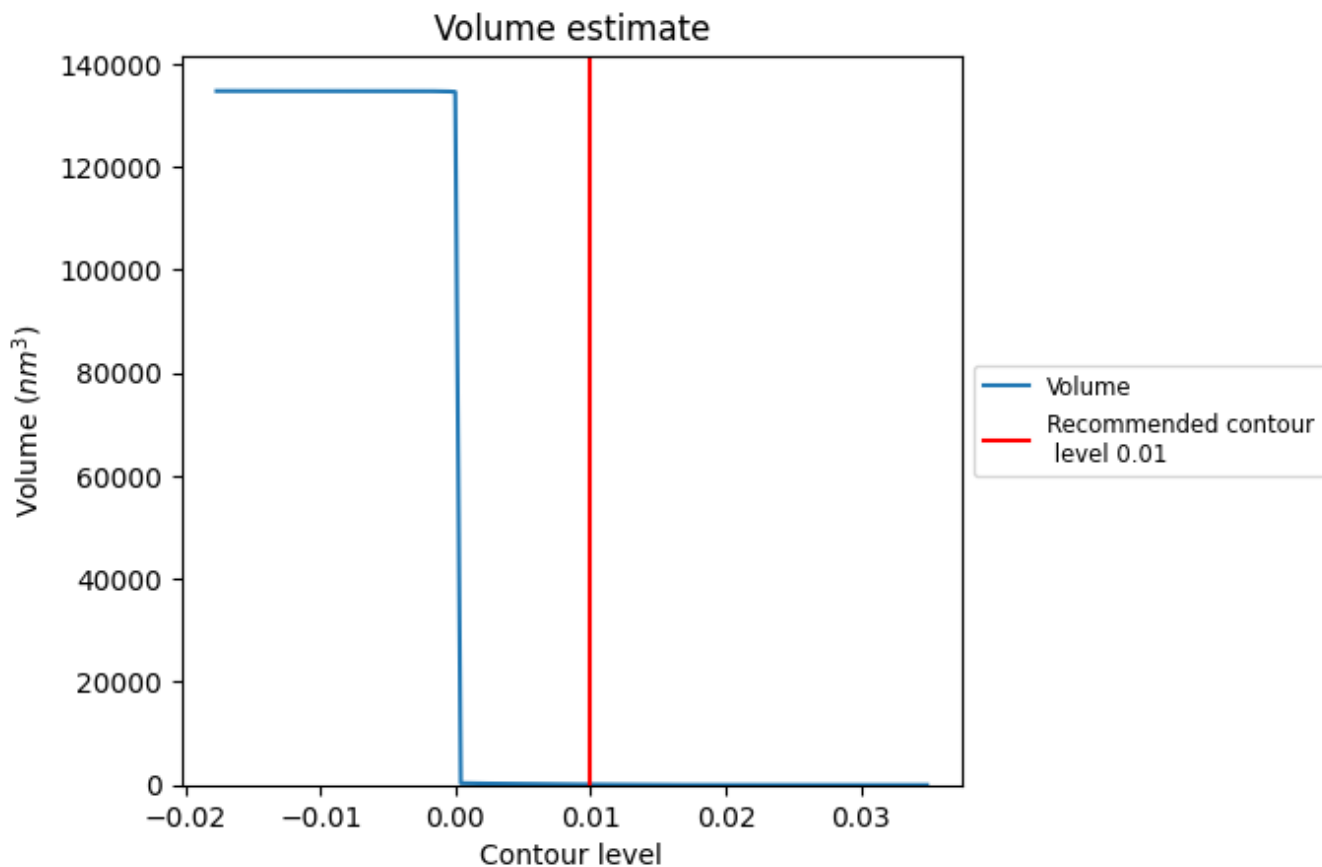
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

## 7.2 Volume estimate [i](#)

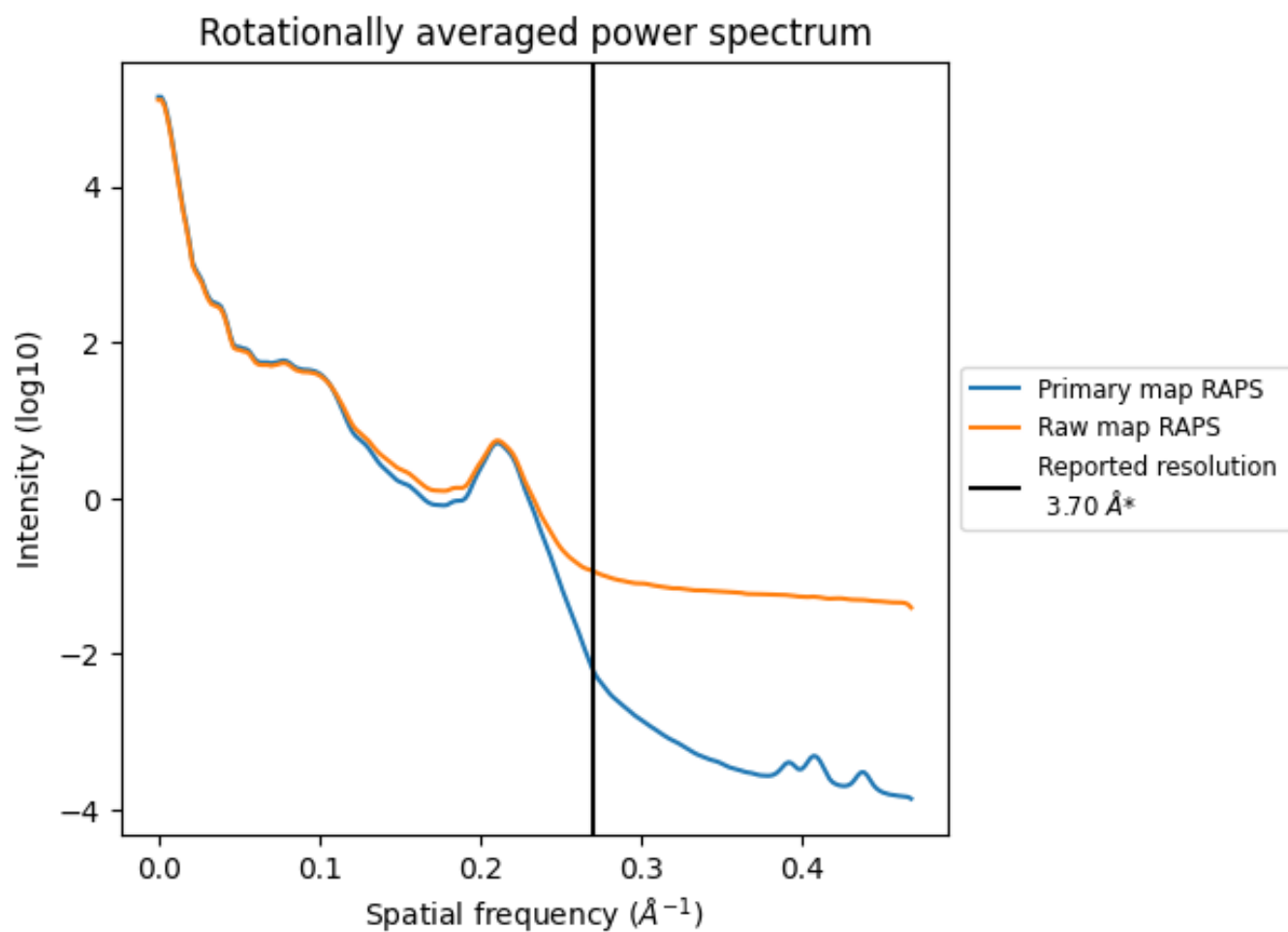


The volume at the recommended contour level is 95 nm<sup>3</sup>; this corresponds to an approximate mass of 86 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.



### 7.3 Rotationally averaged power spectrum i

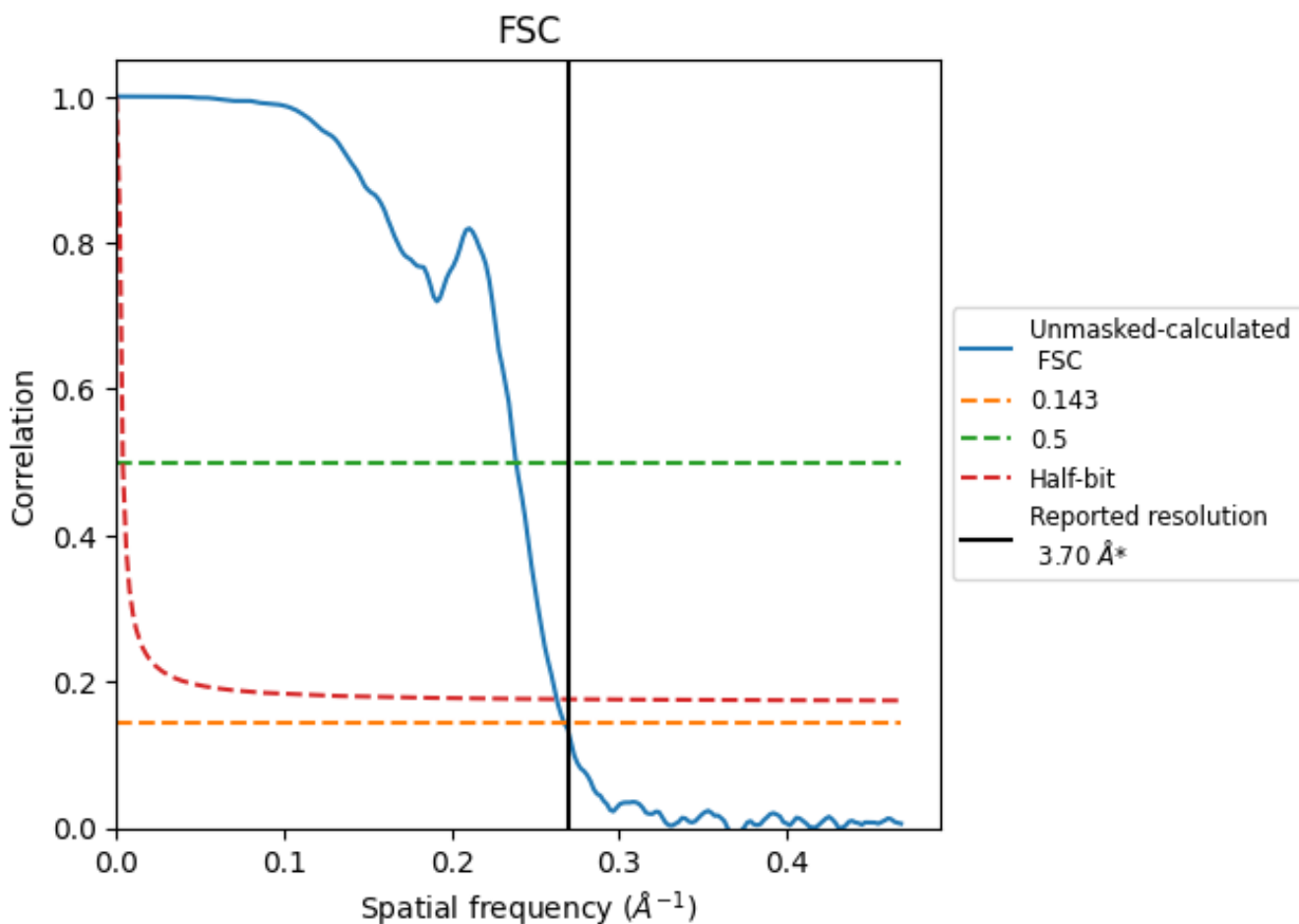


\*Reported resolution corresponds to spatial frequency of 0.270 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.270 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

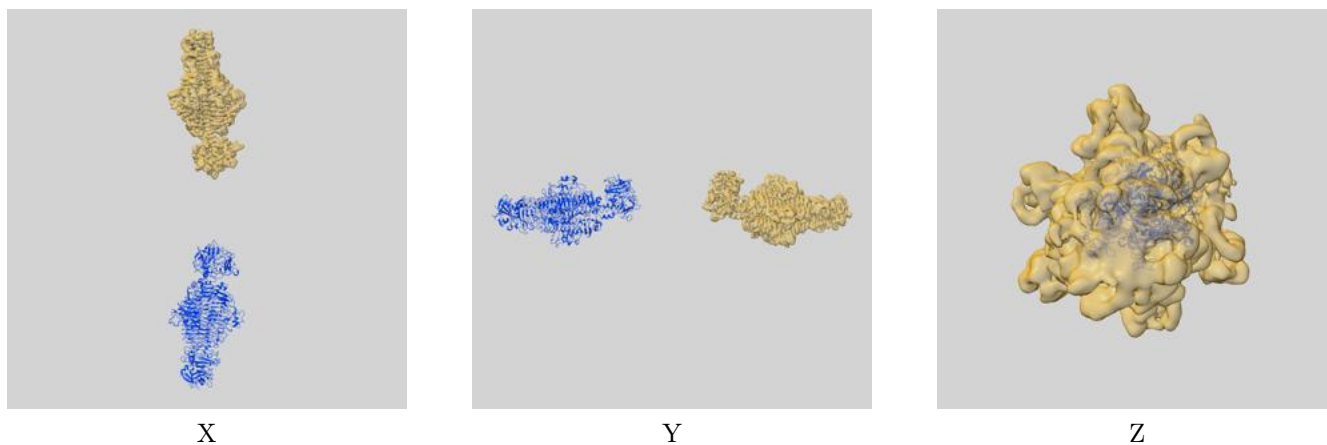
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.70	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.74	4.19	3.81

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

## 9 Map-model fit [i](#)

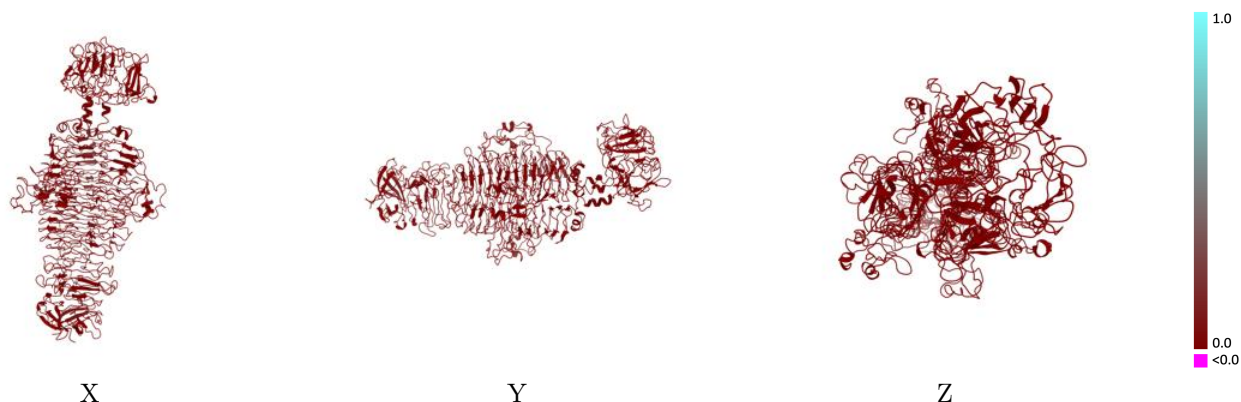
This section contains information regarding the fit between EMDB map EMD-27791 and PDB model 8EAN. Per-residue inclusion information can be found in section 3 on page 4.

### 9.1 Map-model overlay [i](#)



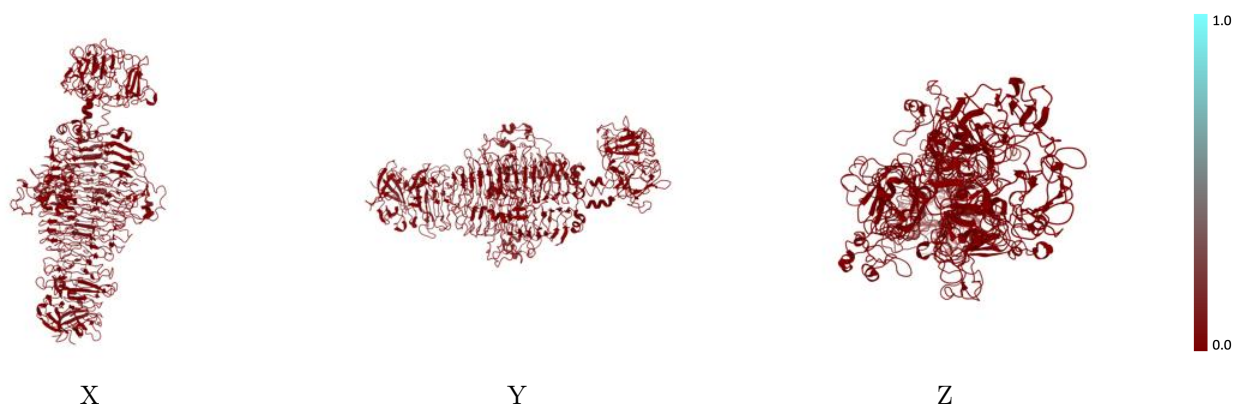
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [\(i\)](#)



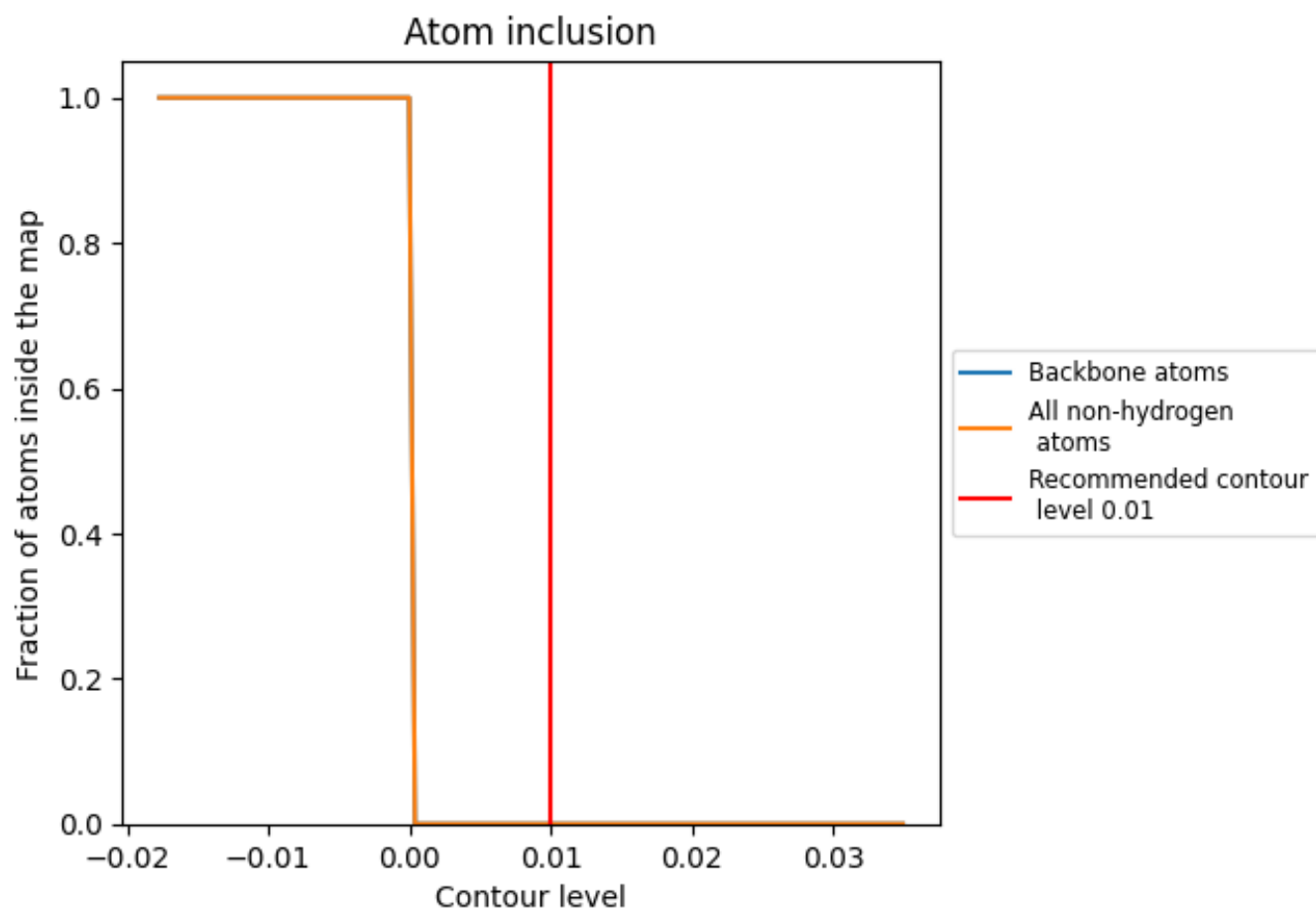
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [\(i\)](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.01).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 0% of all backbone atoms, 0% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.0000	0.0000
O	0.0000	0.0000
Y	0.0000	0.0000
Z	0.0000	0.0000

