



## Full wwPDB EM Validation Report ⓘ

Dec 17, 2022 – 03:40 pm GMT

PDB ID : 6ZFP  
EMDB ID : EMD-11185  
Title : Cryo-EM structure of DNA-PKcs (State 2)  
Authors : Chaplin, A.K.; Hardwick, S.W.; Chirgadze, D.Y.; Blundell, T.L.  
Deposited on : 2020-06-17  
Resolution : 3.24 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.dev43  
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) : 2.31.3

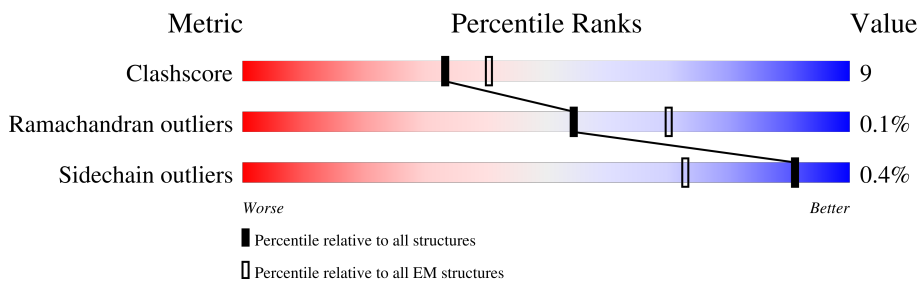
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.24 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	A	4156	 71% 18% 11%

## 2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 29385 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.

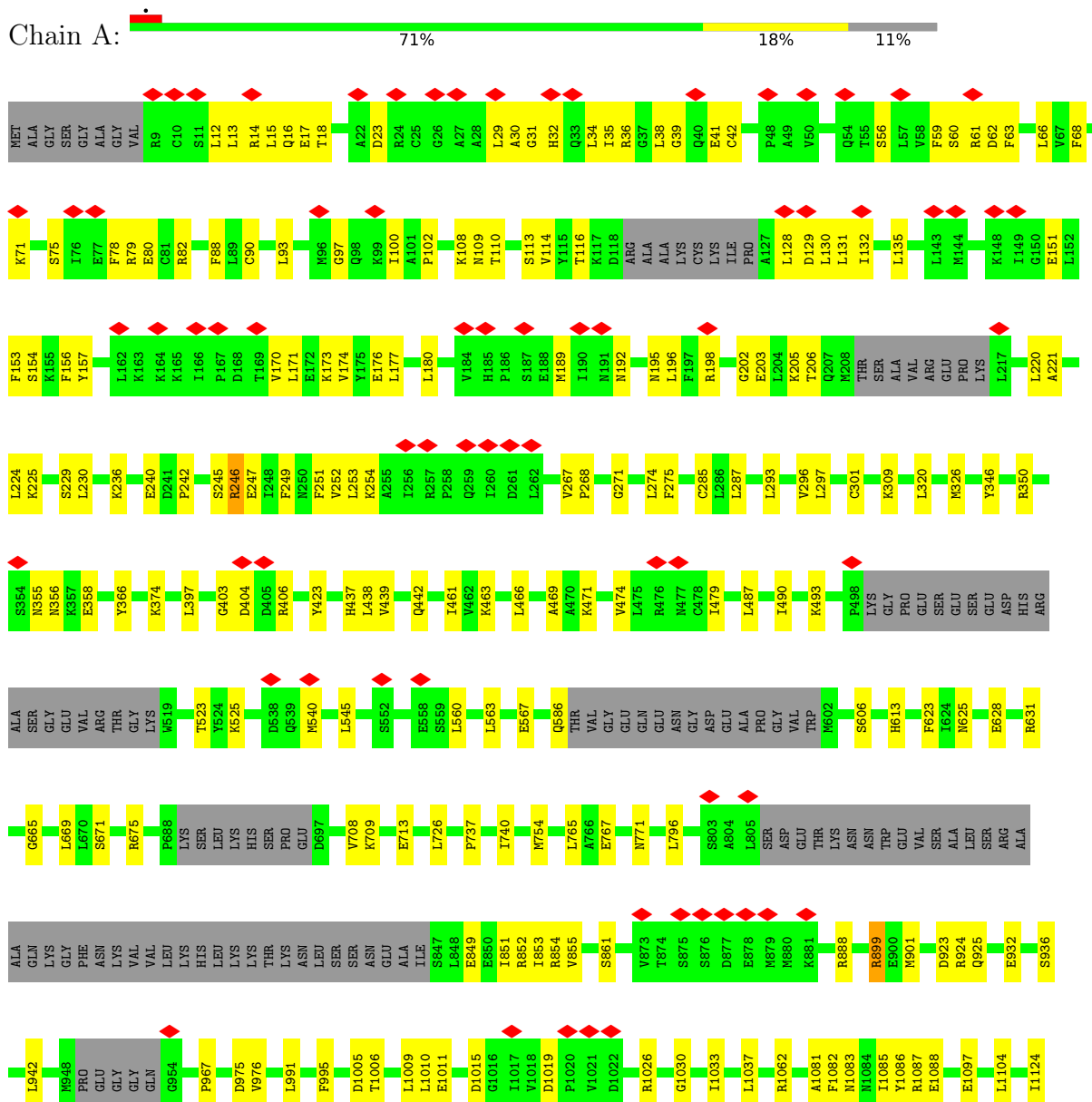
- Molecule 1 is a protein called DNA-dependent protein kinase catalytic subunit,DNA-PKcs, DNA-PKcs.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	3704	29385	18849	4964	5379	193	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: DNA-dependent protein kinase catalytic subunit,DNA-PKcs,DNA-PKCs



Q125	Q126	Q127	Q128	Q129	Q130	Q131	Q132	Q133	Q134	Q135	Q136	Q137	Q138	Q139	Q140	Q141	Q142	Q143	Q144	Q145	Q146	Q147	Q148	Q149	Q150	Q151	Q152	Q153	Q154	Q155	Q156	Q157	Q158	Q159	Q160	Q161	Q162	Q163	Q164	Q165	Q166	Q167	Q168	Q169	Q170	Q171	Q172	Q173	Q174	Q175	Q176	Q177	Q178	Q179	Q180	Q181	Q182	Q183	Q184	Q185	Q186	Q187	Q188	Q189	Q190	Q191	Q192	Q193	Q194	Q195	Q196	Q197	Q198	Q199	Q200	Q201	Q202	Q203	Q204	Q205	Q206	Q207	Q208	Q209	Q210	Q211	Q212	Q213	Q214	Q215	Q216	Q217	Q218	Q219	Q220	Q221	Q222	Q223	Q224	Q225	Q226	Q227	Q228	Q229	Q230	Q231	Q232	Q233	Q234	Q235	Q236	Q237	Q238	Q239	Q240	Q241	Q242	Q243	Q244	Q245	Q246	Q247	Q248	Q249	Q250	Q251	Q252	Q253	Q254	Q255	Q256	Q257	Q258	Q259	Q260	Q261	Q262	Q263	Q264	Q265	Q266	Q267	Q268	Q269	Q270	Q271	Q272	Q273	Q274	Q275	Q276	Q277	Q278	Q279	Q280	Q281	Q282	Q283	Q284	Q285	Q286	Q287	Q288	Q289	Q290	Q291	Q292	Q293	Q294	Q295	Q296	Q297	Q298	Q299	Q300	Q301	Q302	Q303	Q304	Q305	Q306	Q307	Q308	Q309	Q310	Q311	Q312	Q313	Q314	Q315	Q316	Q317	Q318	Q319	Q320	Q321	Q322	Q323	Q324	Q325	Q326	Q327	Q328	Q329	Q330	Q331	Q332	Q333	Q334	Q335	Q336	Q337	Q338	Q339	Q340	Q341	Q342	Q343	Q344	Q345	Q346	Q347	Q348	Q349	Q350	Q351	Q352	Q353	Q354	Q355	Q356	Q357	Q358	Q359	Q360	Q361	Q362	Q363	Q364	Q365	Q366	Q367	Q368	Q369	Q370	Q371	Q372	Q373	Q374	Q375	Q376	Q377	Q378	Q379	Q380	Q381	Q382	Q383	Q384	Q385	Q386	Q387	Q388	Q389	Q390	Q391	Q392	Q393	Q394	Q395	Q396	Q397	Q398	Q399	Q400	Q401	Q402	Q403	Q404	Q405	Q406	Q407	Q408	Q409	Q410	Q411	Q412	Q413	Q414	Q415	Q416	Q417	Q418	Q419	Q420	Q421	Q422	Q423	Q424	Q425	Q426	Q427	Q428	Q429	Q430	Q431	Q432	Q433	Q434	Q435	Q436	Q437	Q438	Q439	Q440	Q441	Q442	Q443	Q444	Q445	Q446	Q447	Q448	Q449	Q450	Q451	Q452	Q453	Q454	Q455	Q456	Q457	Q458	Q459	Q460	Q461	Q462	Q463	Q464	Q465	Q466	Q467	Q468	Q469	Q470	Q471	Q472	Q473	Q474	Q475	Q476	Q477	Q478	Q479	Q480	Q481	Q482	Q483	Q484	Q485	Q486	Q487	Q488	Q489	Q490	Q491	Q492	Q493	Q494	Q495	Q496	Q497	Q498	Q499	Q500	Q501	Q502	Q503	Q504	Q505	Q506	Q507	Q508	Q509	Q510	Q511	Q512	Q513	Q514	Q515	Q516	Q517	Q518	Q519	Q520	Q521	Q522	Q523	Q524	Q525	Q526	Q527	Q528	Q529	Q530	Q531	Q532	Q533	Q534	Q535	Q536	Q537	Q538	Q539	Q540	Q541	Q542	Q543	Q544	Q545	Q546	Q547	Q548	Q549	Q550	Q551	Q552	Q553	Q554	Q555	Q556	Q557	Q558	Q559	Q560	Q561	Q562	Q563	Q564	Q565	Q566	Q567	Q568	Q569	Q570	Q571	Q572	Q573	Q574	Q575	Q576	Q577	Q578	Q579	Q580	Q581	Q582	Q583	Q584	Q585	Q586	Q587	Q588	Q589	Q590	Q591	Q592	Q593	Q594	Q595	Q596	Q597	Q598	Q599	Q600	Q601	Q602	Q603	Q604	Q605	Q606	Q607	Q608	Q609	Q610	Q611	Q612	Q613	Q614	Q615	Q616	Q617	Q618	Q619	Q620	Q621	Q622	Q623	Q624	Q625	Q626	Q627	Q628	Q629	Q630	Q631	Q632	Q633	Q634	Q635	Q636	Q637	Q638	Q639	Q640	Q641	Q642	Q643	Q644	Q645	Q646	Q647	Q648	Q649	Q650	Q651	Q652	Q653	Q654	Q655	Q656	Q657	Q658	Q659	Q660	Q661	Q662	Q663	Q664	Q665	Q666	Q667	Q668	Q669	Q670	Q671	Q672	Q673	Q674	Q675	Q676	Q677	Q678	Q679	Q680	Q681	Q682	Q683	Q684	Q685	Q686	Q687	Q688	Q689	Q690	Q691	Q692	Q693	Q694	Q695	Q696	Q697	Q698	Q699	Q700	Q701	Q702	Q703	Q704	Q705	Q706	Q707	Q708	Q709	Q710	Q711	Q712	Q713	Q714	Q715	Q716	Q717	Q718	Q719	Q720	Q721	Q722	Q723	Q724	Q725	Q726	Q727	Q728	Q729	Q730	Q731	Q732	Q733	Q734	Q735	Q736	Q737	Q738	Q739	Q740	Q741	Q742	Q743	Q744	Q745	Q746	Q747	Q748	Q749	Q750	Q751	Q752	Q753	Q754	Q755	Q756	Q757	Q758	Q759	Q760	Q761	Q762	Q763	Q764	Q765	Q766	Q767	Q768	Q769	Q770	Q771	Q772	Q773	Q774	Q775	Q776	Q777	Q778	Q779	Q780	Q781	Q782	Q783	Q784	Q785	Q786	Q787	Q788	Q789	Q790	Q791	Q792	Q793	Q794	Q795	Q796	Q797	Q798	Q799	Q800	Q801	Q802	Q803	Q804	Q805	Q806	Q807	Q808	Q809	Q810	Q811	Q812	Q813	Q814	Q815	Q816	Q817	Q818	Q819	Q820	Q821	Q822	Q823	Q824	Q825	Q826	Q827	Q828	Q829	Q830	Q831	Q832	Q833	Q834	Q835	Q836	Q837	Q838	Q839	Q840	Q841	Q842	Q843	Q844	Q845	Q846	Q847	Q848	Q849	Q850	Q851	Q852	Q853	Q854	Q855	Q856	Q857	Q858	Q859	Q860	Q861	Q862	Q863	Q864	Q865	Q866	Q867	Q868	Q869	Q870	Q871	Q872	Q873	Q874	Q875	Q876	Q877	Q878	Q879	Q880	Q881	Q882	Q883	Q884	Q885	Q886	Q887	Q888	Q889	Q890	Q891	Q892	Q893	Q894	Q895	Q896	Q897	Q898	Q899	Q900	Q901	Q902	Q903	Q904	Q905	Q906	Q907	Q908	Q909	Q910	Q911	Q912	Q913	Q914	Q915	Q916	Q917	Q918	Q919	Q920	Q921	Q922	Q923	Q924	Q925	Q926	Q927	Q928	Q929	Q930	Q931	Q932	Q933	Q934	Q935	Q936	Q937	Q938	Q939	Q940	Q941	Q942	Q943	Q944	Q945	Q946	Q947	Q948	Q949	Q950	Q951	Q952	Q953	Q954	Q955	Q956	Q957	Q958	Q959	Q960	Q961	Q962	Q963	Q964	Q965	Q966	Q967	Q968	Q969	Q970	Q971	Q972	Q973	Q974	Q975	Q976	Q977	Q978	Q979	Q980	Q981	Q982	Q983	Q984	Q985	Q986	Q987	Q988	Q989	Q990	Q991	Q992	Q993	Q994	Q995	Q996	Q997	Q998	Q999	Q1000
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M4000	M4015	Q4018	K4019	M4020	K4023	G4024	M4027	I4028	Q4029	E4030	I4031	M4032	V4033	A4034	K4050	L4051	I4059	L4064	Y4077	A4081	R4090	Q4103	L4107	M4108	D4113	M4128	X5009	X6020																									
S3792	V3793	I3803	L3806	L3816	T3819	L3829	L3843	R3864	V3868	E3875	V3878	P3879	A3880	L3882	L3883	A3886	R3889	E3895	I3913	I3917	D3922	R3923	H3924	L3925	N3926	I3938	H3944	M3959	F3960	F3961	K3975	Y3981	A3987	R3992																			
I3633	F3636	G3637	K3638	E3639	H3643	K3646	G3647	G3648	S3649	K3650	D3661	N3664	K3665	L3666	M3670	D3673	L3680	K3681	E3682	C3683	S3684	P3685	M3686	M3687	V3689	R3696	E3700	K3710	P3711	E3714	R3718	F3722	D3723	E3724	L3751	S3779	A3780	R3789	F3796	Y3791													
E3520	I3521	T3522	D3523	N3524	Y3525	P3526	Q3527	A3528	S3537	Y3540	S3541	F3542	K3543	D3544	N3551	V3555	K3561	L3575	E3582	L3583	W3588	L3596	A3597	K3598	T3599	P3600	V3601	N3602	K3603	K3604	N3605	I3606	E3607	K3608	E3611	R3612	M3613	A3616	L3617	G3618	A3622	L3625	G3626	A3627	F3628	R3629							
PRO	PRO	SER	TRP	SER	CYS	GLY	P3405	I3410	R4225	N3430	ALA	SER	VAL	ILE	ASP	SER	ALA	GLU	L3439	A3444	L3445	V3446	V3447	E3448	K3449	M3450	L3456	R3467	L3468	I3471	E3477	E3478	S3481	L3482	M3483	T3484	F3495	I3496	M3502	L3505	L3506	D3507	A3513	V3514	Q3515	E3395	A3396	GLN					
K3257	L3258	L3259	D3271	C3281	S3284	H3285	S3288	R3289	E3295	L3298	L3301	E3309	N3310	N3311	V3312	S3313	S3314	Y3315	L3316	S3317	K3318	L3321	A3322	L3329	T3333	E3344	C3347	L3348	A3349	E3350	I3351	E3352	K3355	S3367	F3368	D3369	Q3383	E3387	E3395	A3396	GLN												
I3145	Q3148	L3151	Q3154	R3167	I3182	R3186	C3187	K3196	L3197	THR	LEU	PRO	PRO	GLU	ASP	ASN	SER	MET	ASN	VAL	ASP	GLN	ASP	GLY	L3092	Q3093	D3094	D3095	V3096	D3097	R3098	V2919	V2920	L2921	R2922	I3103	Q3104	Q3108	D3226	I3227	S3228	S3229	R3232	M3238	K3239	I3243	D3244	R3247					
K3009	E3012	Y3013	S3014	S3021	K3029	E3033	F3034	F3035	S3047	L3053	L3062	D3066	K3067	I3077	Y3078	L3088	L3091	L3092	Q3093	D3094	D3095	V3096	D3097	R3098	K3100	I3103	Q3104	Q3108	M3111	S3116	L3121	S2945	E2946	L2957	I3137	I3138	Q3139	I3142															
K2824	E2828	I2832	S2849	F2854	C2857	C2863	S2877	L2884	P2887	E2895	P2902	ALA	GLU	LEU	PRO	ALA	ALA	LYS	GLN	ASP	VAL	ARG	ALA	Q2768	L2771	Y2772	R2773	Y2775	R2776	D2782	I2785	K2786	H2787	S2788	Y2930	L2933	R2940	D2801	P2802	L2803	K2806	L2812	F2823										
GLU	LYS	LEU	SER	LEU	LEU	MET	TYR	ALA	ARG	LYS	GLY	VAL	ALA	GLU	GLN	LYS	LYS	ARG	GLU	GLY	LYS	ILE	LYS	SER	GLU	LEU	LYS	MET	LYS	GLN	ASP	ASP	ALA	Q2768	L2771	Y2772	R2773	Y2775	R2776	D2782	I2785	K2786	H2787	S2788	Y2930	L2933	R2940	D2801	P2802	L2803	K2806	L2812	F2823

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	80688	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 ( $e^-/\text{\AA}^2$ )	53.95	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.352	Depositor
Minimum map value	-0.149	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.012	Depositor
Recommended contour level	0.055	Depositor
Map size (Å)	280.36002, 280.36002, 280.36002	wwPDB
Map dimensions	430, 430, 430	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.652, 0.652, 0.652	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	A	0.33	0/29848	0.46	0/40366

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	A	29385	0	29509	506	0
All	All	29385	0	29509	506	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 9.

All (506) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3444:ALA:HA	1:A:3482:LEU:CD2	1.99	0.93
1:A:3618:GLY:H	1:A:3633:ILE:HD12	1.46	0.80
1:A:3444:ALA:O	1:A:3482:LEU:HD21	1.83	0.79
1:A:899:ARG:HE	1:A:2568:MET:HB2	1.48	0.78
1:A:403:GLY:H	1:A:406:ARG:HH12	1.29	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1212:LEU:HD11	1:A:1217:VAL:HA	1.69	0.75
1:A:3186:ARG:HD3	1:A:3238:MET:HE3	1.69	0.75
1:A:4050:LYS:HE3	1:A:4059:ILE:HG21	1.71	0.73
1:A:2796:ALA:O	1:A:2800:ARG:NH1	2.21	0.73
1:A:3298:LEU:HD12	1:A:3333:THR:HG23	1.69	0.73
1:A:3444:ALA:CA	1:A:3482:LEU:CD2	2.66	0.72
1:A:1933:LEU:HD13	1:A:1936:ARG:HB3	1.71	0.72
1:A:3288:SER:O	1:A:3289:ARG:NH1	2.20	0.71
1:A:3444:ALA:HB1	1:A:3482:LEU:HD22	1.72	0.71
1:A:356:ASN:ND2	1:A:404:ASP:O	2.24	0.71
1:A:3444:ALA:CB	1:A:3482:LEU:HD22	2.21	0.71
1:A:2151:ILE:HG21	1:A:2188:GLU:HG2	1.73	0.71
1:A:3520:GLU:OE2	1:A:3524:ASN:ND2	2.25	0.70
1:A:3187:CYS:SG	1:A:3239:LYS:NZ	2.62	0.70
1:A:1240:THR:HG22	1:A:1242:LEU:H	1.56	0.69
1:A:767:GLU:HG2	1:A:851:ILE:HD11	1.75	0.69
1:A:1097:GLU:OE2	1:A:1151:ARG:NH2	2.25	0.69
1:A:899:ARG:NH2	1:A:2568:MET:SD	2.65	0.69
1:A:1083:ASN:ND2	1:A:1126:GLN:OE1	2.26	0.68
1:A:3281:CYS:HB2	1:A:3329:LEU:HD23	1.75	0.68
1:A:936:SER:OG	1:A:2773:ARG:NH1	2.27	0.68
1:A:1484:LEU:HD11	1:A:1527:ARG:HH12	1.57	0.68
1:A:3145:ILE:HD11	1:A:3196:LYS:HD2	1.74	0.68
1:A:1225:GLU:HB3	1:A:1236:LEU:HB2	1.75	0.68
1:A:709:LYS:NZ	1:A:713:GLU:OE2	2.27	0.67
1:A:16:GLN:NE2	1:A:17:GLU:OE2	2.27	0.66
1:A:75:SER:H	1:A:78:PHE:HB3	1.59	0.66
1:A:1185:HIS:NE2	1:A:1265:GLU:OE2	2.26	0.66
1:A:1334:LYS:NZ	1:A:1382:ILE:O	2.29	0.66
1:A:38:LEU:O	1:A:41:GLU:HB3	1.95	0.66
1:A:4064:LEU:HD13	1:A:4077:TYR:HB3	1.78	0.66
1:A:247:GLU:HG2	1:A:285:CYS:HB3	1.76	0.65
1:A:1432:CYS:HB3	1:A:1486:LEU:HD11	1.79	0.65
1:A:90:CYS:O	1:A:93:LEU:HB3	1.98	0.64
1:A:93:LEU:O	1:A:97:GLY:N	2.25	0.64
1:A:2365:ASN:HD22	1:A:2396:LEU:HD13	1.63	0.64
1:A:1151:ARG:NH1	1:A:1163:LEU:O	2.31	0.64
1:A:2563:LEU:HD13	1:A:2812:LEU:HD11	1.79	0.63
1:A:1897:ASN:HB3	1:A:1903:SER:HB2	1.81	0.63
1:A:3924:HIS:ND1	1:A:3926:ASN:OD1	2.29	0.63
1:A:3009:LYS:O	1:A:3013:TYR:HB3	1.98	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:173:LYS:HA	1:A:176:GLU:HG3	1.81	0.63
1:A:374:LYS:HD2	1:A:423:TYR:HB3	1.82	0.62
1:A:1754:GLN:HA	1:A:1785:ILE:HD11	1.82	0.62
1:A:3444:ALA:HA	1:A:3482:LEU:HD21	1.82	0.62
1:A:463:LYS:HD3	1:A:545:LEU:HD22	1.80	0.61
1:A:2169:LEU:HD11	1:A:2215:LEU:HD22	1.80	0.61
1:A:2439:ILE:O	1:A:2443:MET:HG3	2.00	0.61
1:A:3515:GLN:NE2	1:A:3551:ASN:OD1	2.34	0.61
1:A:3448:GLU:HB3	1:A:3482:LEU:HD11	1.81	0.61
1:A:3495:PHE:HB3	1:A:3502:MET:HE3	1.82	0.61
1:A:3992:ARG:NH1	1:A:4103:GLN:OE1	2.33	0.61
1:A:2155:GLU:OE2	1:A:2158:ARG:NH2	2.34	0.60
1:A:3723:ASP:OD1	1:A:3724:GLU:N	2.35	0.60
1:A:2195:SER:O	1:A:5009:UNK:N	2.34	0.60
1:A:3864:ARG:NH1	1:A:3868:VAL:HG21	2.17	0.60
1:A:1733:THR:HG22	1:A:1735:ARG:H	1.67	0.60
1:A:3666:LEU:O	1:A:3670:MET:HG3	2.01	0.60
1:A:3477:GLU:HA	1:A:3477:GLU:OE1	2.01	0.60
1:A:3425:ARG:NH1	1:A:4000:ASN:OD1	2.35	0.60
1:A:2406:GLU:OE1	1:A:2441:LYS:NZ	2.34	0.59
1:A:4023:LYS:HG2	1:A:4024:GLY:H	1.67	0.59
1:A:1358:LEU:HD11	1:A:1410:PRO:HG2	1.84	0.59
1:A:3639:GLU:O	1:A:3643:HIS:N	2.28	0.59
1:A:3137:GLU:OE1	1:A:3186:ARG:NH2	2.35	0.59
1:A:3444:ALA:CA	1:A:3482:LEU:HD21	2.33	0.59
1:A:3646:LYS:H	1:A:3650:LYS:HB3	1.68	0.59
1:A:131:LEU:HD22	1:A:173:LYS:HD2	1.85	0.59
1:A:1871:MET:HG2	1:A:1940:TYR:HA	1.85	0.58
1:A:3444:ALA:HB2	1:A:3478:GLU:HG2	1.85	0.58
1:A:3154:GLN:OE1	1:A:3226:ASP:N	2.37	0.58
1:A:1125:GLN:NE2	1:A:1129:ASP:OD2	2.37	0.58
1:A:3684:SER:HB2	1:A:3685:PRO:HD3	1.85	0.58
1:A:2091:HIS:CE1	1:A:2093:CYS:SG	2.96	0.58
1:A:2357:GLU:HB3	1:A:2385:LEU:HD21	1.85	0.58
1:A:3284:SER:HB3	1:A:3301:LEU:HD12	1.84	0.58
1:A:1975:LEU:HD12	1:A:1976:LEU:HD12	1.86	0.58
1:A:4081:ALA:O	1:A:4090:ARG:NH1	2.36	0.58
1:A:4090:ARG:NH2	1:A:4113:ASP:OD2	2.37	0.57
1:A:1267:TYR:CD2	1:A:1290:LEU:HD22	2.39	0.57
1:A:205:LYS:HG2	1:A:249:PHE:HZ	1.70	0.57
1:A:628:GLU:OE2	1:A:631:ARG:NH2	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1104:LEU:HD23	1:A:1168:LEU:HD21	1.86	0.57
1:A:2361:ILE:HD12	1:A:2389:PHE:HE2	1.67	0.57
1:A:606:SER:OG	1:A:1026:ARG:NH2	2.37	0.56
1:A:108:LYS:HZ2	1:A:156:PHE:HZ	1.52	0.56
1:A:229:SER:HA	1:A:274:LEU:HD13	1.88	0.56
1:A:2919:ASP:OD1	1:A:2920:VAL:N	2.38	0.56
1:A:3961:PHE:HE2	1:A:4107:LEU:HD13	1.70	0.56
1:A:2260:PHE:O	1:A:2270:ASN:ND2	2.38	0.56
1:A:2347:LYS:O	1:A:2351:GLN:NE2	2.37	0.56
1:A:3244:ASP:OD1	1:A:3247:ARG:NH1	2.37	0.56
1:A:13:LEU:HD23	1:A:14:ARG:HE	1.70	0.56
1:A:1011:GLU:O	1:A:1015:ASP:N	2.38	0.56
1:A:1769:GLU:O	1:A:1822:ARG:NH2	2.24	0.56
1:A:3596:LEU:HD12	1:A:3601:VAL:HA	1.88	0.56
1:A:205:LYS:HG2	1:A:249:PHE:CZ	2.41	0.56
1:A:901:MET:SD	1:A:2535:THR:OG1	2.64	0.56
1:A:1525:CYS:SG	1:A:1574:ASN:ND2	2.78	0.56
1:A:3751:LEU:HD22	1:A:3803:ILE:HD11	1.87	0.56
1:A:203:GLU:O	1:A:206:THR:OG1	2.20	0.56
1:A:1754:GLN:HG3	1:A:1785:ILE:HG13	1.88	0.56
1:A:1541:ALA:HB2	1:A:1550:VAL:HG12	1.87	0.56
1:A:1961:PHE:O	1:A:1961:PHE:CD1	2.59	0.56
1:A:2224:PHE:HB2	1:A:2272:VAL:HG11	1.87	0.56
1:A:3295:GLU:OE2	1:A:3295:GLU:N	2.33	0.56
1:A:1819:PHE:O	1:A:1823:SER:OG	2.22	0.55
1:A:1867:ILE:O	1:A:1871:MET:HG3	2.06	0.55
1:A:1874:TYR:HE2	1:A:1940:TYR:HE1	1.54	0.55
1:A:771:ASN:OD1	1:A:854:ARG:NH2	2.40	0.55
1:A:1224:PHE:HD2	1:A:1267:TYR:HE1	1.55	0.55
1:A:3661:ASP:HA	1:A:3664:ASN:HD21	1.71	0.55
1:A:1442:GLN:HG3	1:A:1445:ARG:HH12	1.71	0.55
1:A:2254:ARG:NH1	1:A:2292:CYS:O	2.39	0.55
1:A:2443:MET:SD	1:A:2476:ILE:HG23	2.46	0.55
1:A:56:SER:HA	1:A:59:PHE:CD2	2.42	0.55
1:A:1484:LEU:HD11	1:A:1527:ARG:NH1	2.22	0.55
1:A:1759:LEU:HD12	1:A:1785:ILE:HD13	1.88	0.55
1:A:2168:LEU:HD22	1:A:2189:ILE:HD11	1.89	0.55
1:A:3608:LYS:O	1:A:3611:GLU:HG3	2.07	0.55
1:A:849:GLU:OE1	1:A:3108:GLN:NE2	2.38	0.54
1:A:3605:ASN:OD1	1:A:3606:ILE:N	2.40	0.54
1:A:4027:TRP:HE3	1:A:4030:GLU:HB3	1.72	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:129:ASP:OD1	1:A:129:ASP:N	2.40	0.54
1:A:1267:TYR:HD2	1:A:1290:LEU:HD22	1.72	0.54
1:A:2411:LEU:HD11	1:A:2415:LEU:HD23	1.90	0.54
1:A:932:GLU:OE2	1:A:2771:LEU:HD13	2.08	0.54
1:A:3680:LEU:HD23	1:A:3682:GLU:H	1.72	0.54
1:A:131:LEU:O	1:A:135:LEU:HG	2.08	0.54
1:A:1920:TYR:HE1	1:A:1963:GLN:CB	2.20	0.54
1:A:355:ASN:HB3	1:A:358:GLU:HG2	1.90	0.54
1:A:3710:LYS:HB2	1:A:3711:PRO:HD2	1.88	0.54
1:A:1920:TYR:CE1	1:A:1963:GLN:CB	2.91	0.54
1:A:267:VAL:HG23	1:A:268:PRO:HD3	1.90	0.54
1:A:79:ARG:HA	1:A:82:ARG:HB2	1.90	0.53
1:A:796:LEU:HD23	1:A:855:VAL:HG13	1.91	0.53
1:A:2474:TYR:HD2	1:A:2517:LEU:HD12	1.74	0.53
1:A:3627:ALA:HB3	1:A:3683:CYS:HB2	1.90	0.53
1:A:56:SER:HA	1:A:59:PHE:HD2	1.73	0.53
1:A:1351:THR:HG22	1:A:1353:PRO:HD2	1.90	0.53
1:A:1528:LEU:HD21	1:A:1567:ILE:HG23	1.90	0.53
1:A:1812:LEU:O	1:A:1815:THR:N	2.36	0.53
1:A:2918:PRO:HB2	1:A:2922:ARG:HH22	1.73	0.53
1:A:59:PHE:HA	1:A:62:ASP:HB2	1.91	0.53
1:A:2091:HIS:HE1	1:A:2093:CYS:SG	2.32	0.53
1:A:3495:PHE:HB3	1:A:3502:MET:CE	2.38	0.53
1:A:2999:LEU:HD21	1:A:3015:SER:O	2.09	0.53
1:A:3033:GLU:HG3	1:A:3034:PRO:HD3	1.91	0.53
1:A:1585:SER:O	1:A:1585:SER:OG	2.27	0.52
1:A:3661:ASP:HA	1:A:3664:ASN:ND2	2.24	0.52
1:A:2933:ILE:HD11	1:A:3121:LEU:HD22	1.91	0.52
1:A:2555:LEU:HD11	1:A:2854:PHE:HA	1.91	0.52
1:A:3348:LEU:O	1:A:3352:GLU:HG2	2.09	0.52
1:A:3622:ALA:HB3	1:A:3625:LEU:HB2	1.91	0.52
1:A:3097:ASP:OD1	1:A:3098:ARG:N	2.37	0.52
1:A:1519:PHE:CG	1:A:1570:GLU:HG3	2.45	0.52
1:A:3496:ILE:HD11	1:A:3521:ILE:HD11	1.92	0.52
1:A:170:VAL:O	1:A:171:LEU:HD22	2.10	0.52
1:A:1634:ALA:O	1:A:1642:LYS:NZ	2.29	0.52
1:A:2205:VAL:HB	1:A:2208:ASP:HB2	1.92	0.52
1:A:2121:ASP:OD1	1:A:2121:ASP:N	2.43	0.52
1:A:2457:PRO:O	1:A:2460:GLU:HG2	2.10	0.52
1:A:3053:LEU:HD11	1:A:3088:LEU:HD13	1.92	0.52
1:A:3507:ASP:HB3	1:A:3540:TYR:CD1	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:23:ASP:HA	1:A:30:ALA:HB1	1.93	0.51
1:A:3243:ILE:HD13	1:A:3259:LEU:HD13	1.92	0.51
1:A:1086:TYR:O	1:A:1087:ARG:HB2	2.11	0.51
1:A:13:LEU:O	1:A:14:ARG:NE	2.43	0.51
1:A:1378:GLU:HG2	1:A:1378:GLU:O	2.10	0.51
1:A:1586:SER:O	1:A:1632:TRP:NE1	2.43	0.51
1:A:708:VAL:HG22	1:A:740:ILE:HG23	1.92	0.51
1:A:1224:PHE:HD2	1:A:1267:TYR:CE1	2.28	0.51
1:A:1575:LEU:H	1:A:1575:LEU:HD23	1.76	0.51
1:A:967:PRO:HD3	1:A:1010:LEU:HD12	1.93	0.51
1:A:2256:ILE:HG22	1:A:2260:PHE:HE2	1.76	0.51
1:A:3629:ARG:O	1:A:3633:ILE:HG12	2.11	0.51
1:A:1037:LEU:HD23	1:A:1085:ILE:HB	1.93	0.50
1:A:1934:LEU:O	1:A:1938:ARG:N	2.43	0.50
1:A:3646:LYS:N	1:A:3650:LYS:HB3	2.25	0.50
1:A:1818:SER:HA	1:A:1821:ASP:HB3	1.94	0.50
1:A:2259:LYS:HB3	1:A:2272:VAL:HG23	1.94	0.50
1:A:242:PRO:O	1:A:245:SER:OG	2.24	0.50
1:A:1532:LEU:HD11	1:A:1560:TYR:HB2	1.94	0.50
1:A:2828:GLU:O	1:A:2832:ILE:HG12	2.12	0.50
1:A:1234:GLY:HA2	1:A:1259:LEU:HD22	1.93	0.50
1:A:2368:THR:HG23	1:A:2372:PRO:HA	1.93	0.50
1:A:2522:ARG:HG2	1:A:2561:PHE:HE1	1.76	0.50
1:A:3944:HIS:NE2	1:A:4020:MET:SD	2.85	0.50
1:A:59:PHE:HB3	1:A:63:PHE:CE1	2.47	0.50
1:A:1374:GLN:HE22	1:A:1381:SER:HB3	1.76	0.50
1:A:3444:ALA:CA	1:A:3482:LEU:HD22	2.42	0.49
1:A:1817:GLN:OE1	1:A:1936:ARG:NH2	2.41	0.49
1:A:2584:CYS:SG	1:A:2585:GLU:N	2.85	0.49
1:A:2806:LYS:HG3	1:A:2857:CYS:HB2	1.93	0.49
1:A:403:GLY:O	1:A:406:ARG:NH1	2.46	0.49
1:A:1082:PHE:HA	1:A:1085:ILE:HG12	1.94	0.49
1:A:1470:SER:HB3	1:A:1476:HIS:CD2	2.48	0.49
1:A:3596:LEU:HB2	1:A:3601:VAL:HG22	1.94	0.49
1:A:1006:THR:HG22	1:A:1009:LEU:HB2	1.94	0.49
1:A:1208:LEU:HD21	1:A:1220:LEU:HD11	1.94	0.49
1:A:1871:MET:HE1	1:A:1936:ARG:HH21	1.77	0.49
1:A:3062:LEU:HD13	1:A:3093:GLN:NE2	2.28	0.49
1:A:2542:LEU:HD21	1:A:2558:ALA:HA	1.95	0.49
1:A:36:ARG:HH21	1:A:39:GLY:HA3	1.76	0.49
1:A:251:PHE:HA	1:A:254:LYS:HZ2	1.78	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2463:SER:O	1:A:2463:SER:OG	2.31	0.49
1:A:3446:VAL:O	1:A:3450:MET:HG2	2.13	0.49
1:A:2261:SER:OG	1:A:2262:GLY:N	2.46	0.48
1:A:2877:SER:OG	1:A:2925:GLU:HB3	2.13	0.48
1:A:397:LEU:HD21	1:A:438:LEU:HD22	1.95	0.48
1:A:2415:LEU:HD12	1:A:2420:PHE:CD1	2.48	0.48
1:A:1685:ASP:OD1	1:A:1685:ASP:N	2.42	0.48
1:A:3227:ILE:HD12	1:A:3227:ILE:H	1.78	0.48
1:A:3444:ALA:HA	1:A:3482:LEU:HD23	1.92	0.48
1:A:1782:PHE:HA	1:A:1785:ILE:HG22	1.94	0.48
1:A:3104:GLN:OE1	1:A:3139:GLN:NE2	2.46	0.48
1:A:3151:LEU:HD21	1:A:3197:LEU:HA	1.95	0.48
1:A:3616:ALA:O	1:A:3629:ARG:NH2	2.47	0.48
1:A:975:ASP:OD1	1:A:976:VAL:N	2.45	0.48
1:A:1864:ASP:HA	1:A:1867:ILE:HG12	1.95	0.48
1:A:2301:GLN:OE1	1:A:2305:ASN:ND2	2.46	0.48
1:A:2313:LYS:HA	1:A:2316:TYR:CE2	2.48	0.48
1:A:2786:LYS:O	1:A:2788:SER:N	2.47	0.48
1:A:3313:SER:HA	1:A:3316:LEU:HB2	1.96	0.48
1:A:253:LEU:HD11	1:A:271:GLY:HA3	1.94	0.48
1:A:1339:VAL:HG23	1:A:1398:VAL:HG21	1.95	0.48
1:A:12:LEU:O	1:A:16:GLN:HG2	2.14	0.47
1:A:301:CYS:O	1:A:309:LYS:NZ	2.38	0.47
1:A:1912:THR:O	1:A:1916:ILE:HG12	2.14	0.47
1:A:1471:GLN:N	1:A:1471:GLN:OE1	2.48	0.47
1:A:2097:LEU:HD12	1:A:2145:PHE:HZ	1.78	0.47
1:A:2304:VAL:HG12	1:A:2323:LEU:HD11	1.96	0.47
1:A:3444:ALA:C	1:A:3482:LEU:HD21	2.33	0.47
1:A:346:TYR:HB3	1:A:350:ARG:HH12	1.78	0.47
1:A:1323:SER:O	1:A:1325:GLN:N	2.48	0.47
1:A:2884:LEU:HD12	1:A:3116:SER:HB2	1.96	0.47
1:A:2432:GLN:OE1	1:A:2464:HIS:NE2	2.45	0.47
1:A:63:PHE:O	1:A:66:LEU:HB2	2.15	0.47
1:A:439:VAL:O	1:A:442:GLN:HB3	2.15	0.47
1:A:1009:LEU:HD21	1:A:1062:ARG:NH1	2.29	0.47
1:A:1933:LEU:HD12	1:A:1937:ARG:HG3	1.96	0.47
1:A:2091:HIS:CE1	1:A:2093:CYS:HG	2.32	0.47
1:A:1231:GLN:O	1:A:1233:SER:N	2.47	0.47
1:A:1793:THR:O	1:A:1797:LEU:HG	2.15	0.47
1:A:2206:PRO:O	1:A:2210:VAL:HG23	2.14	0.47
1:A:2213:ASN:OD1	1:A:2214:ARG:N	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2269:ASP:OD1	1:A:2269:ASP:N	2.46	0.47
1:A:942:LEU:HD11	1:A:991:LEU:HD21	1.97	0.47
1:A:14:ARG:O	1:A:18:THR:HG23	2.15	0.47
1:A:540:MET:SD	1:A:540:MET:N	2.88	0.47
1:A:1689:LYS:O	1:A:1693:VAL:HG13	2.15	0.46
1:A:2107:SER:O	1:A:2107:SER:OG	2.32	0.46
1:A:1711:ARG:NH2	1:A:1760:GLU:OE1	2.48	0.46
1:A:2376:ASP:OD1	1:A:2404:ARG:NE	2.41	0.46
1:A:1484:LEU:HD21	1:A:1527:ARG:HH22	1.80	0.46
1:A:2940:ARG:HG2	1:A:2957:LEU:HD22	1.95	0.46
1:A:3066:ASP:OD1	1:A:3067:LYS:N	2.48	0.46
1:A:195:ASN:O	1:A:198:ARG:HG3	2.15	0.46
1:A:1572:LEU:HD21	1:A:1618:LEU:HD22	1.96	0.46
1:A:3344:GLU:OE2	1:A:3348:LEU:HD23	2.15	0.46
1:A:3444:ALA:HB2	1:A:3478:GLU:CG	2.44	0.46
1:A:3449:LYS:HD3	1:A:3449:LYS:HA	1.72	0.46
1:A:726:LEU:HD21	1:A:754:MET:SD	2.55	0.46
1:A:3137:GLU:CD	1:A:3186:ARG:HE	2.19	0.46
1:A:861:SER:O	1:A:3167:ARG:NH1	2.46	0.46
1:A:2785:ILE:O	1:A:2789:SER:HB2	2.16	0.46
1:A:3100:LYS:HB3	1:A:3100:LYS:HE3	1.77	0.46
1:A:100:ILE:HB	1:A:102:PRO:HD3	1.98	0.46
1:A:1158:PRO:N	1:A:1159:PRO:HD2	2.31	0.46
1:A:2559:THR:O	1:A:2563:LEU:HB2	2.16	0.46
1:A:2361:ILE:HD12	1:A:2389:PHE:CE2	2.50	0.46
1:A:3447:VAL:HG22	1:A:3468:LEU:HD22	1.98	0.46
1:A:586:GLN:HB2	1:A:613:HIS:CD2	2.51	0.45
1:A:189:MET:SD	1:A:189:MET:N	2.90	0.45
1:A:2365:ASN:ND2	1:A:2396:LEU:HD13	2.27	0.45
1:A:3779:SER:OG	1:A:3780:ALA:N	2.50	0.45
1:A:1786:ALA:HB2	1:A:1827:LEU:HD23	1.99	0.45
1:A:180:LEU:HA	1:A:230:LEU:HD21	1.97	0.45
1:A:242:PRO:C	1:A:246:ARG:HE	2.20	0.45
1:A:404:ASP:HB2	1:A:1732:GLY:O	2.17	0.45
1:A:487:LEU:HD12	1:A:490:ILE:HD11	1.99	0.45
1:A:1188:ILE:HD13	1:A:1269:THR:HG21	1.98	0.45
1:A:1372:LEU:HD13	1:A:1402:LEU:HD23	1.98	0.45
1:A:2576:MET:HB3	1:A:2787:HIS:CD2	2.52	0.45
1:A:3369:ASP:OD1	1:A:3369:ASP:N	2.49	0.45
1:A:2877:SER:HG	1:A:2925:GLU:HB3	1.82	0.45
1:A:114:VAL:HG12	1:A:130:LEU:HD21	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1221:ILE:HD12	1:A:1221:ILE:H	1.82	0.45
1:A:2372:PRO:O	1:A:2374:LEU:N	2.50	0.45
1:A:3444:ALA:CB	1:A:3482:LEU:CD2	2.93	0.45
1:A:1572:LEU:HB3	1:A:1614:GLN:HE21	1.81	0.45
1:A:2539:LEU:HD13	1:A:2562:LEU:HD11	1.97	0.45
1:A:2930:TYR:HA	1:A:2933:ILE:HG22	1.98	0.45
1:A:3410:ILE:HD11	1:A:3456:LEU:HB3	1.98	0.45
1:A:3922:ASP:O	1:A:3923:ARG:NE	2.49	0.45
1:A:2551:GLU:OE2	1:A:2849:SER:OG	2.28	0.45
1:A:3484:THR:HG23	1:A:3513:ALA:HA	1.97	0.45
1:A:1124:ILE:HG23	1:A:1182:GLU:HG2	1.99	0.44
1:A:3793:VAL:HG13	1:A:3803:ILE:HG22	1.99	0.44
1:A:1478:SER:O	1:A:1482:GLU:HG3	2.17	0.44
1:A:3636:PHE:CE2	1:A:3670:MET:HG2	2.52	0.44
1:A:1019:ASP:HA	1:A:1026:ARG:HH11	1.83	0.44
1:A:1458:LEU:HD13	1:A:1467:ILE:HD11	2.00	0.44
1:A:3467:ARG:O	1:A:3471:ILE:HG12	2.17	0.44
1:A:3925:LEU:HD23	1:A:3925:LEU:HA	1.75	0.44
1:A:154:SER:HA	1:A:157:TYR:HD2	1.82	0.44
1:A:225:LYS:HZ3	1:A:253:LEU:HD13	1.82	0.44
1:A:275:PHE:CZ	1:A:293:LEU:HD21	2.53	0.44
1:A:1538:LEU:HD12	1:A:1553:PHE:CE1	2.52	0.44
1:A:1815:THR:O	1:A:1818:SER:OG	2.25	0.44
1:A:1864:ASP:N	1:A:1864:ASP:OD1	2.50	0.44
1:A:2327:LEU:HA	1:A:2330:VAL:HG12	1.99	0.44
1:A:2945:SER:HB2	1:A:2946:GLU:OE1	2.17	0.44
1:A:849:GLU:OE2	1:A:852:ARG:NH1	2.50	0.44
1:A:1640:GLU:OE1	1:A:1640:GLU:N	2.50	0.44
1:A:2183:HIS:CE1	1:A:2186:VAL:HG23	2.52	0.44
1:A:2471:GLU:HA	1:A:2517:LEU:HD11	1.98	0.44
1:A:2575:PRO:HA	1:A:2786:LYS:H	1.83	0.44
1:A:2849:SER:OG	1:A:2849:SER:O	2.36	0.44
1:A:3575:LEU:HD23	1:A:3575:LEU:HA	1.81	0.44
1:A:3881:ASP:OD1	1:A:3881:ASP:N	2.50	0.44
1:A:1300:SER:O	1:A:1300:SER:OG	2.32	0.44
1:A:3088:LEU:HD23	1:A:3088:LEU:HA	1.74	0.44
1:A:3700:GLU:HA	1:A:3718:ARG:HA	1.99	0.44
1:A:131:LEU:HD12	1:A:132:ILE:N	2.33	0.44
1:A:151:GLU:HB3	1:A:153:PHE:CE1	2.53	0.44
1:A:923:ASP:C	1:A:925:GLN:H	2.21	0.44
1:A:2863:CYS:SG	1:A:2895:GLU:HG3	2.57	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3878:VAL:HG21	1:A:4128:MET:HB3	1.98	0.44
1:A:3981:TYR:HD1	1:A:4108:MET:HE2	1.82	0.44
1:A:1448:LEU:HD21	1:A:1514:LEU:HD11	1.99	0.44
1:A:1636:ASP:N	1:A:1636:ASP:OD1	2.50	0.44
1:A:1715:GLU:HA	1:A:1718:ILE:HG12	1.98	0.44
1:A:2097:LEU:HD23	1:A:2097:LEU:HA	1.81	0.44
1:A:3285:HIS:HD2	1:A:3298:LEU:HD11	1.83	0.44
1:A:3819:THR:HG21	1:A:3886:ALA:HB2	2.00	0.44
1:A:1178:ARG:O	1:A:1184:ARG:NH2	2.51	0.43
1:A:2887:PRO:HB2	1:A:3895:GLU:HG3	2.00	0.43
1:A:3626:GLY:HA3	1:A:3684:SER:O	2.18	0.43
1:A:4107:LEU:HD23	1:A:4107:LEU:HA	1.79	0.43
1:A:1427:SER:O	1:A:1431:LEU:HD23	2.18	0.43
1:A:1820:VAL:HG12	1:A:1824:LEU:HD23	2.00	0.43
1:A:225:LYS:HZ3	1:A:253:LEU:HD22	1.82	0.43
1:A:493:LYS:O	1:A:625:ASN:ND2	2.51	0.43
1:A:671:SER:O	1:A:675:ARG:HG3	2.18	0.43
1:A:3603:LYS:HB3	1:A:3606:ILE:HG22	1.98	0.43
1:A:59:PHE:O	1:A:63:PHE:N	2.52	0.43
1:A:1770:GLN:N	1:A:1770:GLN:OE1	2.51	0.43
1:A:2522:ARG:HG2	1:A:2561:PHE:CE1	2.52	0.43
1:A:3383:GLN:O	1:A:3387:GLU:HG3	2.17	0.43
1:A:1690:GLY:HA2	1:A:1693:VAL:HG22	2.00	0.43
1:A:1802:TYR:O	1:A:1806:ARG:HG2	2.19	0.43
1:A:3186:ARG:HD3	1:A:3238:MET:CE	2.44	0.43
1:A:3523:ASP:OD1	1:A:3561:LYS:NZ	2.31	0.43
1:A:3588:TRP:CD1	1:A:3613:MET:HB2	2.52	0.43
1:A:1586:SER:O	1:A:1586:SER:OG	2.34	0.43
1:A:1627:LYS:HD2	1:A:1627:LYS:HA	1.83	0.43
1:A:3604:LYS:HA	1:A:3607:GLU:HG2	2.00	0.43
1:A:3714:GLU:N	1:A:3714:GLU:OE1	2.51	0.43
1:A:79:ARG:O	1:A:82:ARG:HB2	2.19	0.43
1:A:1365:ASN:OD1	1:A:1366:THR:N	2.51	0.43
1:A:174:VAL:O	1:A:177:LEU:HG	2.18	0.43
1:A:253:LEU:HD12	1:A:254:LYS:N	2.34	0.43
1:A:346:TYR:HD1	1:A:366:TYR:HH	1.66	0.43
1:A:221:ALA:O	1:A:225:LYS:HE3	2.18	0.43
1:A:2220:MET:HB3	1:A:2255:LEU:HD22	2.01	0.43
1:A:320:LEU:HD23	1:A:320:LEU:HA	1.80	0.43
1:A:563:LEU:O	1:A:567:GLU:HG2	2.19	0.43
1:A:1391:VAL:HG13	1:A:1392:MET:SD	2.59	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1622:ILE:HG21	1:A:1652:ILE:HD11	2.00	0.43
1:A:287:LEU:HG	1:A:326:MET:SD	2.59	0.42
1:A:1476:HIS:HB3	1:A:1479:VAL:HG22	2.01	0.42
1:A:1935:GLU:OE2	1:A:1938:ARG:NE	2.34	0.42
1:A:2415:LEU:HD12	1:A:2420:PHE:CG	2.53	0.42
1:A:2531:LEU:HD12	1:A:2531:LEU:HA	1.88	0.42
1:A:3227:ILE:O	1:A:3228:SER:HB3	2.19	0.42
1:A:466:LEU:HB3	1:A:560:LEU:HD22	2.01	0.42
1:A:1218:SER:O	1:A:1222:ASN:ND2	2.52	0.42
1:A:3542:PHE:HZ	1:A:3555:VAL:HG11	1.84	0.42
1:A:3975:LYS:HA	1:A:3975:LYS:HD3	1.93	0.42
1:A:192:ASN:N	1:A:192:ASN:OD1	2.52	0.42
1:A:765:LEU:HD23	1:A:765:LEU:HA	1.72	0.42
1:A:853:ILE:HA	1:A:3111:MET:HE1	2.00	0.42
1:A:1714:LEU:HD23	1:A:1714:LEU:HA	1.86	0.42
1:A:3095:ASP:N	1:A:3095:ASP:OD1	2.52	0.42
1:A:240:GLU:HB3	1:A:242:PRO:HD2	2.01	0.42
1:A:469:ALA:HB2	1:A:479:ILE:HD11	2.02	0.42
1:A:737:PRO:HD2	1:A:740:ILE:HD12	2.01	0.42
1:A:1358:LEU:HD21	1:A:1410:PRO:HB2	2.01	0.42
1:A:1496:GLU:OE1	1:A:1496:GLU:N	2.42	0.42
1:A:2486:ASP:HB3	1:A:2489:SER:HB2	2.01	0.42
1:A:3789:ARG:HG2	1:A:3938:ILE:HG12	2.01	0.42
1:A:1395:LEU:O	1:A:1398:VAL:HG22	2.20	0.42
1:A:2166:SER:OG	1:A:2167:PRO:HD3	2.20	0.42
1:A:2455:LEU:HD22	1:A:2498:ILE:HG23	2.01	0.42
1:A:2576:MET:HB3	1:A:2787:HIS:NE2	2.34	0.42
1:A:3582:GLU:HG2	1:A:3583:LEU:N	2.35	0.42
1:A:3681:LYS:O	1:A:3685:PRO:HD2	2.19	0.42
1:A:3879:PRO:HB2	1:A:3882:LEU:HG	2.01	0.42
1:A:128:LEU:HD13	1:A:131:LEU:HD21	2.02	0.42
1:A:355:ASN:OD1	1:A:356:ASN:N	2.52	0.42
1:A:623:PHE:CE2	1:A:665:GLY:HA3	2.54	0.42
1:A:3077:ILE:HG13	1:A:3078:LEU:N	2.34	0.42
1:A:113:SER:O	1:A:116:THR:OG1	2.31	0.42
1:A:236:LYS:HD3	1:A:246:ARG:HH12	1.84	0.42
1:A:523:THR:HG23	1:A:525:LYS:H	1.85	0.42
1:A:1242:LEU:HA	1:A:1310:GLU:HB2	2.01	0.42
1:A:1376:LEU:HD13	1:A:1403:MET:HE1	2.01	0.42
1:A:1448:LEU:O	1:A:1452:VAL:HG13	2.20	0.42
1:A:3229:SER:OG	1:A:3232:ARG:NH1	2.43	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3318:LYS:O	1:A:3322:ALA:HB3	2.19	0.42
1:A:3526:PRO:C	1:A:3528:ALA:H	2.23	0.42
1:A:3829:LEU:HD23	1:A:3829:LEU:HA	1.92	0.42
1:A:3875:GLU:O	1:A:3878:VAL:HG12	2.19	0.42
1:A:3917:ILE:HD13	1:A:4051:LEU:HD21	2.00	0.42
1:A:109:ASN:OD1	1:A:110:THR:N	2.53	0.42
1:A:3006:ALA:HB3	1:A:3257:LYS:HE2	2.01	0.42
1:A:3138:ILE:O	1:A:3142:ILE:HG12	2.20	0.42
1:A:3271:ASP:HB2	1:A:3315:TYR:CE2	2.55	0.42
1:A:42:CYS:HA	1:A:88:PHE:CE1	2.55	0.42
1:A:195:ASN:OD1	1:A:196:LEU:N	2.52	0.42
1:A:1195:VAL:HG11	1:A:1204:PRO:HA	2.01	0.42
1:A:4015:ASN:O	1:A:4018:GLN:HG3	2.20	0.42
1:A:12:LEU:HA	1:A:15:LEU:HB3	2.00	0.42
1:A:60:SER:OG	1:A:61:ARG:N	2.53	0.42
1:A:251:PHE:HA	1:A:254:LYS:NZ	2.35	0.41
1:A:1431:LEU:HD11	1:A:1447:ARG:NH2	2.35	0.41
1:A:31:GLY:HA2	1:A:34:LEU:HB2	2.03	0.41
1:A:669:LEU:HD12	1:A:669:LEU:HA	1.90	0.41
1:A:1424:THR:HG23	1:A:1427:SER:H	1.85	0.41
1:A:1871:MET:O	1:A:1875:LYS:HG3	2.20	0.41
1:A:2802:PRO:HG2	1:A:2803:ILE:HD12	2.02	0.41
1:A:2921:LEU:O	1:A:2925:GLU:HG2	2.19	0.41
1:A:29:LEU:HD13	1:A:32:HIS:HB3	2.02	0.41
1:A:442:GLN:HG3	1:A:461:ILE:HD11	2.02	0.41
1:A:888:ARG:HB3	1:A:3889:ARG:HH21	1.85	0.41
1:A:995:PHE:HB3	1:A:1005:ASP:OD1	2.19	0.41
1:A:1374:GLN:HE22	1:A:1381:SER:CB	2.33	0.41
1:A:2252:PRO:C	1:A:2254:ARG:H	2.24	0.41
1:A:2397:CYS:O	1:A:2400:VAL:HG12	2.20	0.41
1:A:2771:LEU:HD12	1:A:2775:TYR:HE2	1.85	0.41
1:A:220:LEU:O	1:A:224:LEU:HG	2.21	0.41
1:A:3537:SER:HA	1:A:3540:TYR:CE2	2.55	0.41
1:A:202:GLY:HA2	1:A:205:LYS:HE2	2.02	0.41
1:A:1538:LEU:HD12	1:A:1553:PHE:HE1	1.86	0.41
1:A:1575:LEU:HD11	1:A:1617:LYS:HG3	2.03	0.41
1:A:3791:TYR:HB3	1:A:3806:LEU:HD21	2.02	0.41
1:A:3913:ILE:HG21	1:A:3987:ALA:HB3	2.02	0.41
1:A:36:ARG:NE	1:A:36:ARG:HA	2.36	0.41
1:A:2211:LEU:HA	1:A:2214:ARG:HG2	2.02	0.41
1:A:2277:LEU:O	1:A:2280:VAL:HG12	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3816:LEU:HD21	1:A:3883:LEU:HD13	2.01	0.41
1:A:275:PHE:HZ	1:A:293:LEU:HD21	1.84	0.41
1:A:1081:ALA:O	1:A:1085:ILE:HG23	2.21	0.41
1:A:1261:LEU:CD1	1:A:1340:ARG:HG3	2.51	0.41
1:A:1795:VAL:HG21	1:A:1838:GLU:HG3	2.03	0.41
1:A:2349:LEU:HA	1:A:2352:HIS:CE1	2.56	0.41
1:A:3687:MET:HB3	1:A:3722:PHE:CD1	2.56	0.41
1:A:68:PHE:O	1:A:71:LYS:HB2	2.21	0.41
1:A:991:LEU:HD23	1:A:991:LEU:HA	1.85	0.41
1:A:1086:TYR:C	1:A:1088:GLU:H	2.22	0.41
1:A:1219:PHE:O	1:A:1223:THR:HG23	2.21	0.41
1:A:35:ILE:HG21	1:A:80:GLU:HB3	2.02	0.41
1:A:296:VAL:HG23	1:A:297:LEU:HD12	2.03	0.41
1:A:1240:THR:HG23	1:A:1296:PHE:CG	2.56	0.41
1:A:1718:ILE:O	1:A:1722:PHE:HB2	2.20	0.41
1:A:1836:LEU:HD21	1:A:1883:ARG:HH21	1.85	0.41
1:A:2339:GLU:HG2	1:A:2340:SER:N	2.36	0.41
1:A:2392:VAL:O	1:A:2396:LEU:HD23	2.21	0.41
1:A:3012:GLU:HB2	1:A:3047:SER:HB2	2.02	0.41
1:A:3134:ALA:HB2	1:A:3182:ILE:HG22	2.03	0.41
1:A:3227:ILE:HG22	1:A:3228:SER:N	2.36	0.41
1:A:3692:VAL:HG13	1:A:3692:VAL:O	2.21	0.41
1:A:3843:LEU:HD23	1:A:3843:LEU:HA	1.87	0.41
1:A:397:LEU:HD22	1:A:437:HIS:HB3	2.03	0.41
1:A:1348:LEU:HD23	1:A:1348:LEU:HA	1.84	0.41
1:A:2231:PHE:O	1:A:2235:LEU:HD23	2.21	0.41
1:A:2371:PHE:CD1	1:A:2373:PRO:HD2	2.56	0.41
1:A:2392:VAL:HG12	1:A:2396:LEU:HD23	2.03	0.41
1:A:3959:MET:HE3	1:A:3959:MET:H	1.86	0.41
1:A:2164:TRP:C	1:A:2167:PRO:HD2	2.42	0.40
1:A:2917:PRO:HB2	1:A:2919:ASP:OD1	2.20	0.40
1:A:3483:MET:O	1:A:3483:MET:HG3	2.16	0.40
1:A:3685:PRO:HB2	1:A:3687:MET:H	1.86	0.40
1:A:1445:ARG:HG3	1:A:1510:LEU:HD13	2.03	0.40
1:A:2411:LEU:C	1:A:2413:PHE:H	2.24	0.40
1:A:3091:LEU:HD23	1:A:3091:LEU:HA	1.88	0.40
1:A:3505:LEU:HD23	1:A:3505:LEU:H	1.86	0.40
1:A:1754:GLN:HE22	1:A:1788:ARG:HD2	1.86	0.40
1:A:2133:LEU:HD23	1:A:2164:TRP:CZ3	2.56	0.40
1:A:2776:ARG:NE	1:A:2782:ASP:OD1	2.54	0.40
1:A:471:LYS:HB2	1:A:474:VAL:HB	2.04	0.40

*Continued on next page...*

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1030:GLY:O	1:A:1033:ILE:HG22	2.21	0.40
1:A:1562:LEU:HD23	1:A:1562:LEU:HA	1.85	0.40
1:A:2122:LEU:HD12	1:A:2122:LEU:HA	1.93	0.40
1:A:3100:LYS:O	1:A:3103:ILE:HG22	2.21	0.40
1:A:249:PHE:O	1:A:252:VAL:HG12	2.21	0.40
1:A:1790:SER:O	1:A:1794:GLN:HG3	2.21	0.40
1:A:2165:LEU:HA	1:A:2165:LEU:HD12	1.81	0.40
1:A:2823:PHE:CD2	1:A:2824:LYS:HG3	2.57	0.40
1:A:3478:GLU:N	1:A:3478:GLU:CD	2.75	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	A	3640/4156 (88%)	3332 (92%)	304 (8%)	4 (0%)	51 83

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3481	SER
1	A	2787	HIS
1	A	1968	SER
1	A	1813	SER

### 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	A	3234/3671 (88%)	3222 (100%)	12 (0%)	91 95

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	246	ARG
1	A	899	ARG
1	A	924	ARG
1	A	1321	ARG
1	A	1811	ARG
1	A	2105	HIS
1	A	3355	LYS
1	A	3477	GLU
1	A	3478	GLU
1	A	3483	MET
1	A	3696	ARG
1	A	3864	ARG

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

Mol	Chain	Res	Type
1	A	1083	ASN
1	A	1374	GLN
1	A	1574	ASN
1	A	2091	HIS
1	A	2305	ASN
1	A	2351	GLN
1	A	2365	ASN
1	A	3139	GLN
1	A	3515	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	4128:MET	C	5009:UNK	N	95.34
1	A	5016:UNK	C	6001:UNK	N	49.10



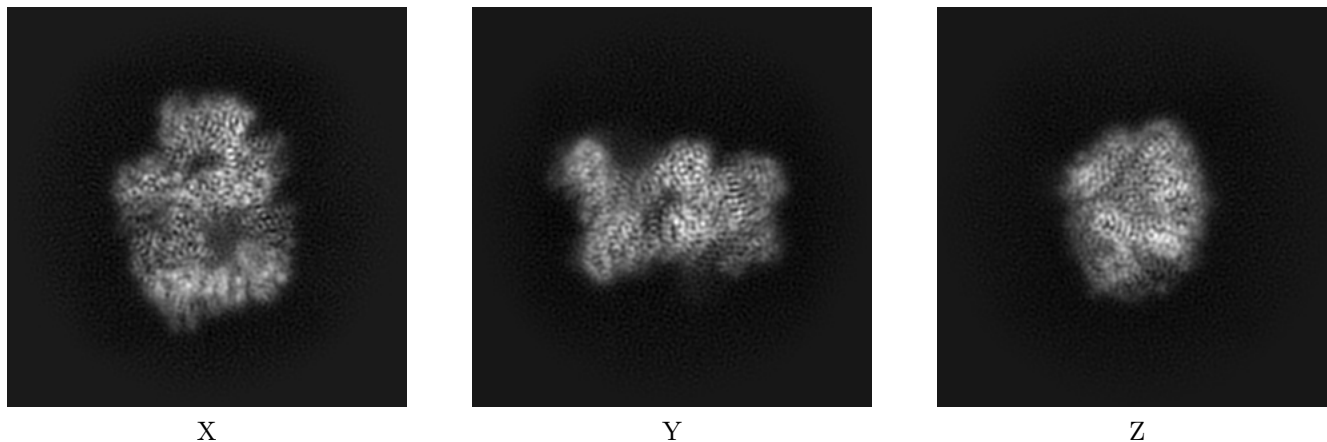
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-11185. These allow visual inspection of the internal detail of the map and identification of artifacts.

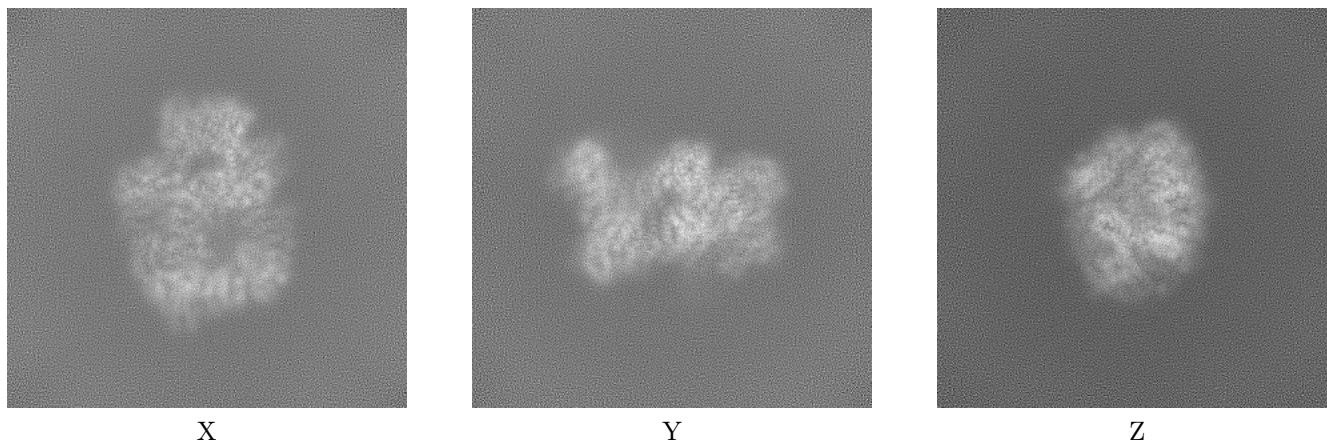
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

#### 6.1.1 Primary map



#### 6.1.2 Raw map

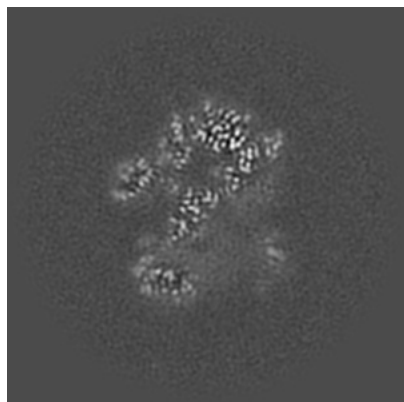


The images above show the map projected in three orthogonal directions.

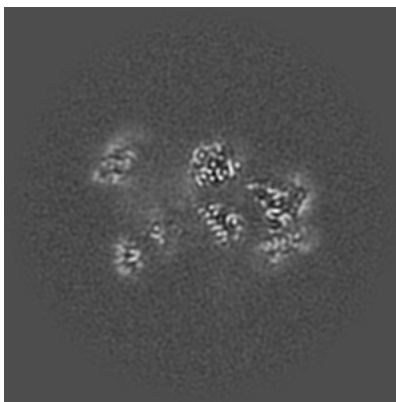


## 6.2 Central slices [i](#)

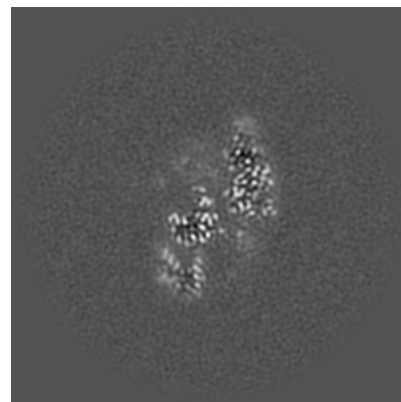
### 6.2.1 Primary map



X Index: 215

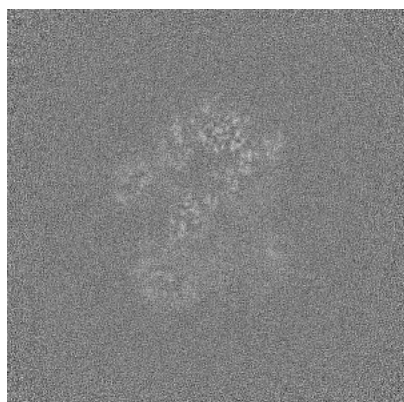


Y Index: 215

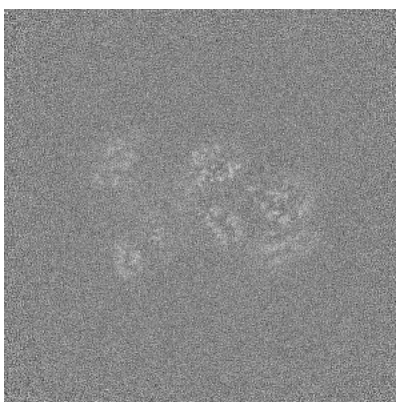


Z Index: 215

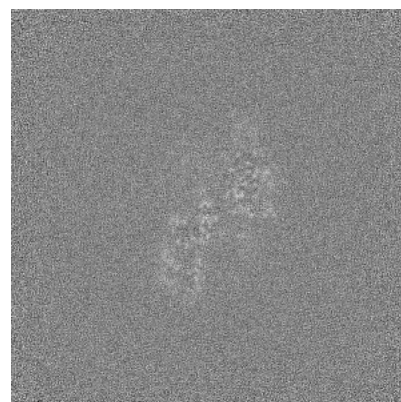
### 6.2.2 Raw map



X Index: 215



Y Index: 215

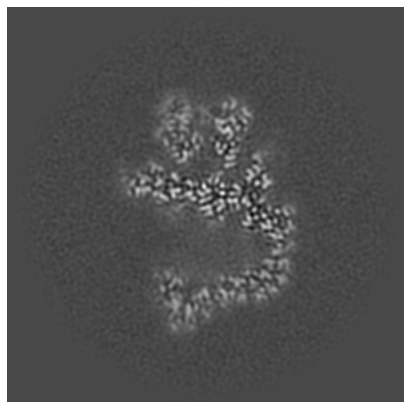


Z Index: 215

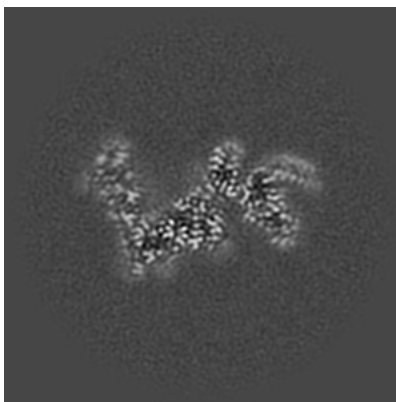
The images above show central slices of the map in three orthogonal directions.

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

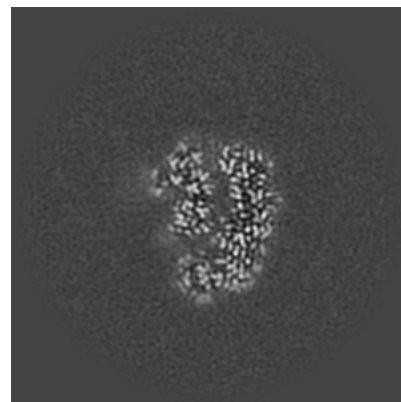
### 6.3.1 Primary map



X Index: 247

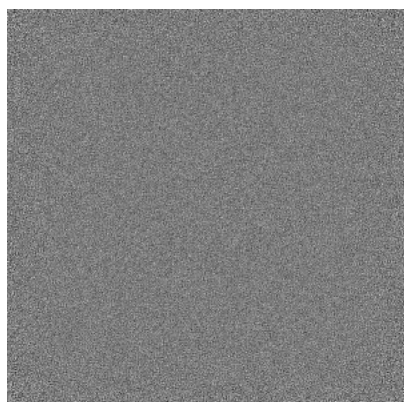


Y Index: 187

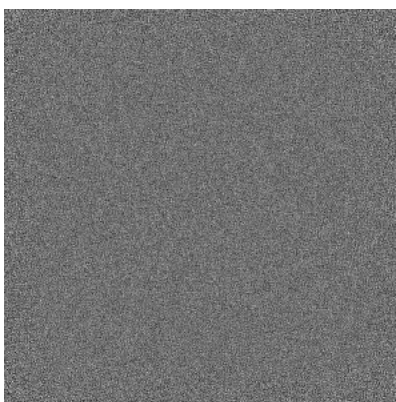


Z Index: 232

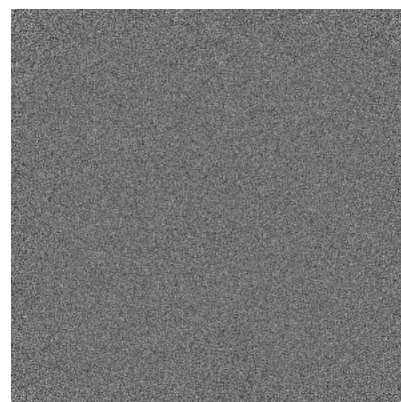
### 6.3.2 Raw map



X Index: 0



Y Index: 0

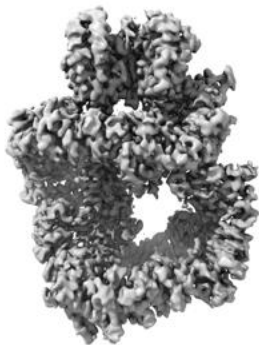


Z Index: 0

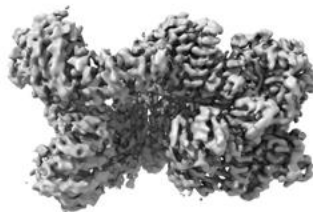
The images above show the largest variance slices of the map in three orthogonal directions.

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

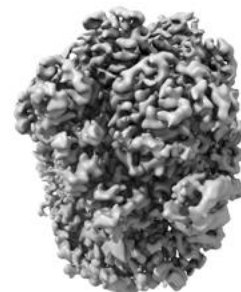
### 6.4.1 Primary map



X



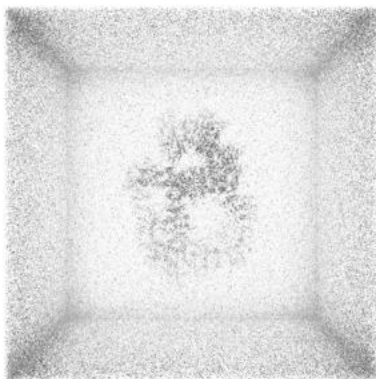
Y



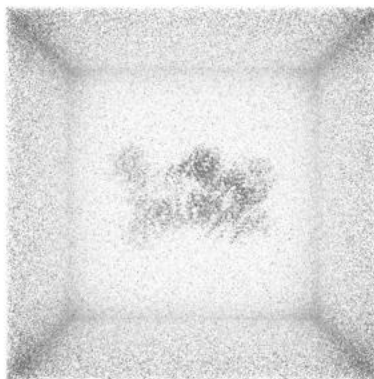
Z

The images above show the 3D surface view of the map at the recommended contour level 0.055. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

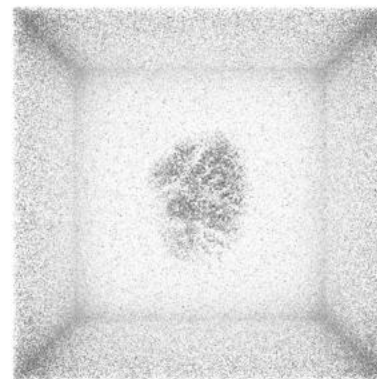
### 6.4.2 Raw map



X



Y



Z

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.

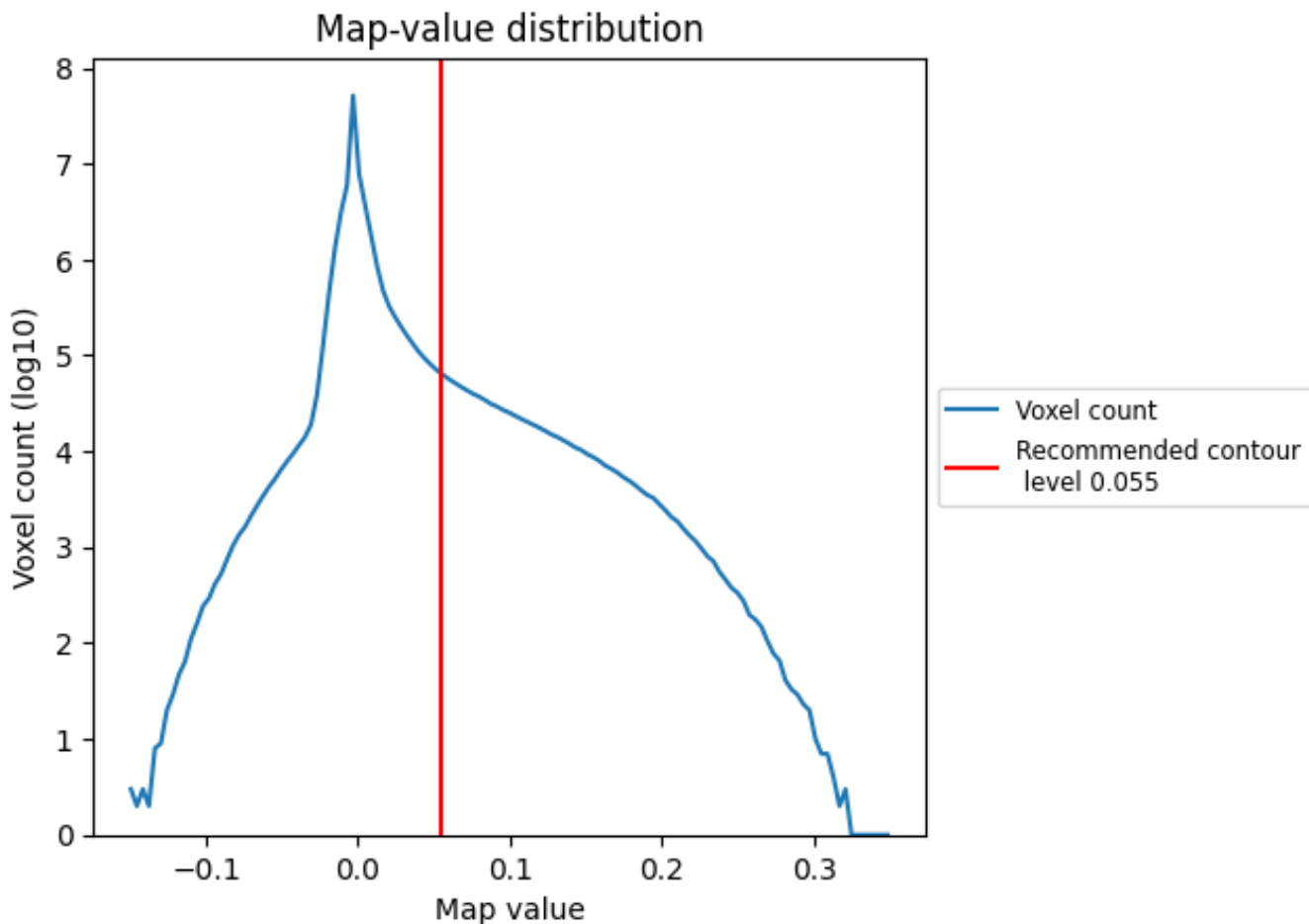
## 6.5 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

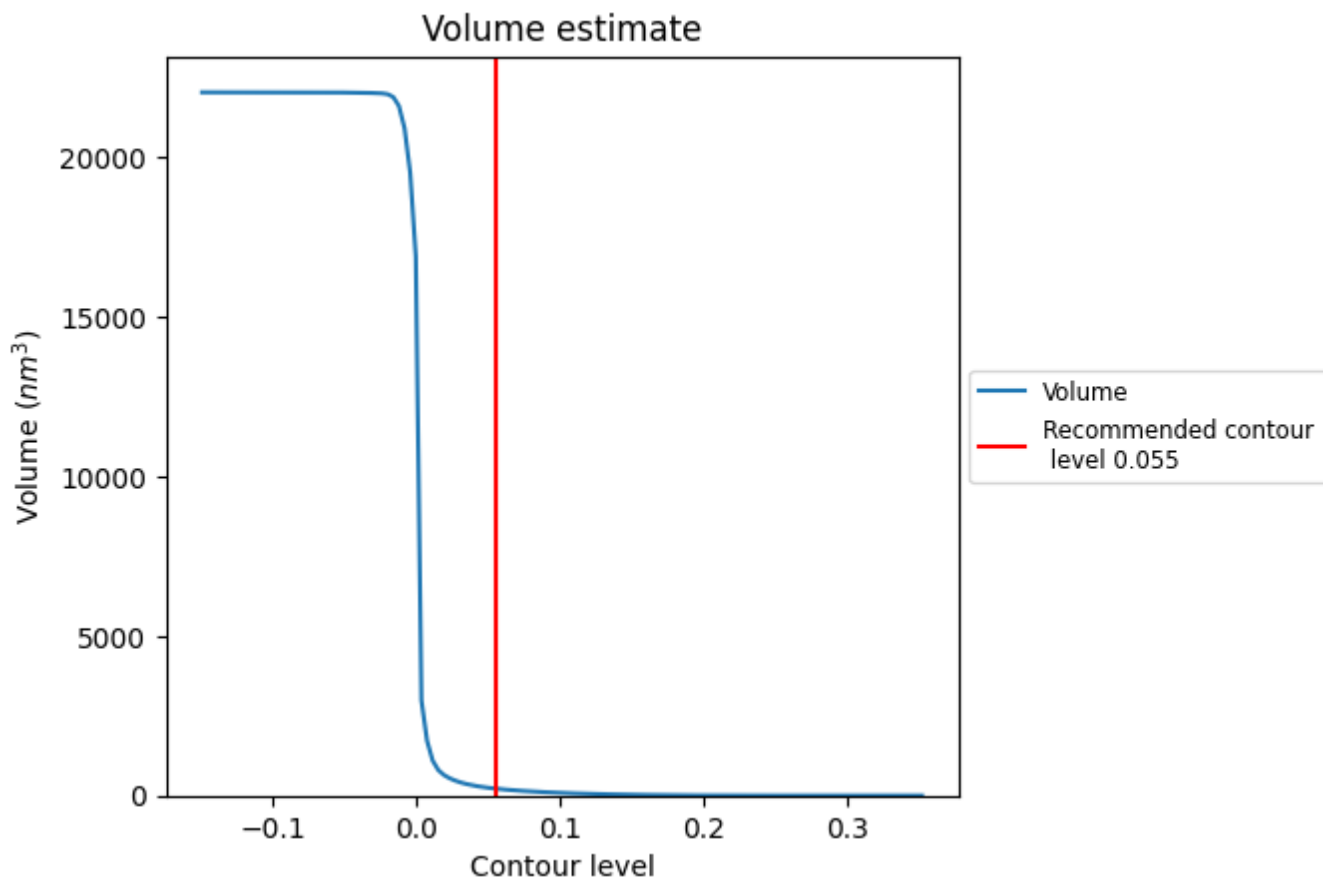
This section contains the results of statistical analysis of the map.

### 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.

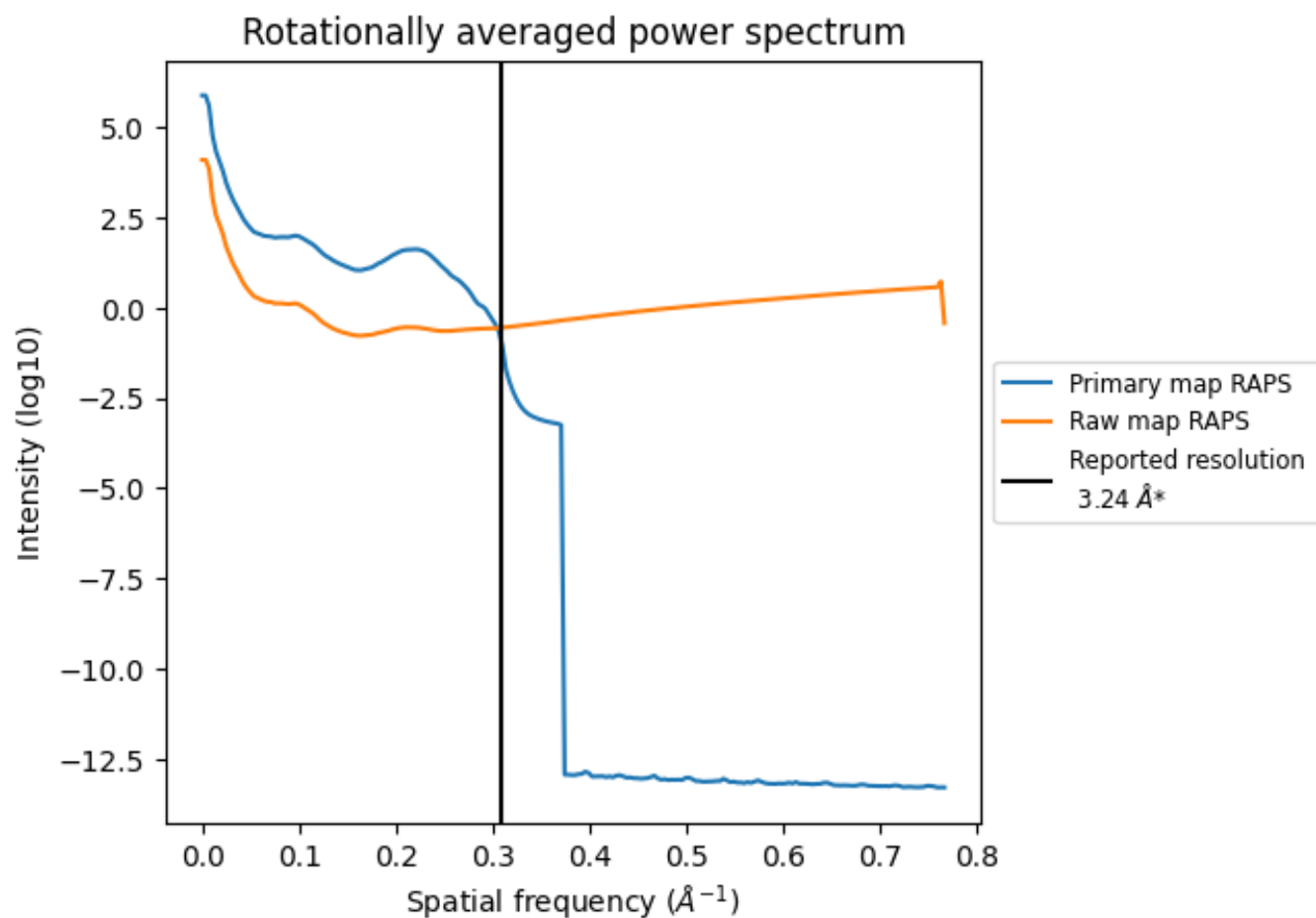
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 218 nm<sup>3</sup>; this corresponds to an approximate mass of 197 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](#)



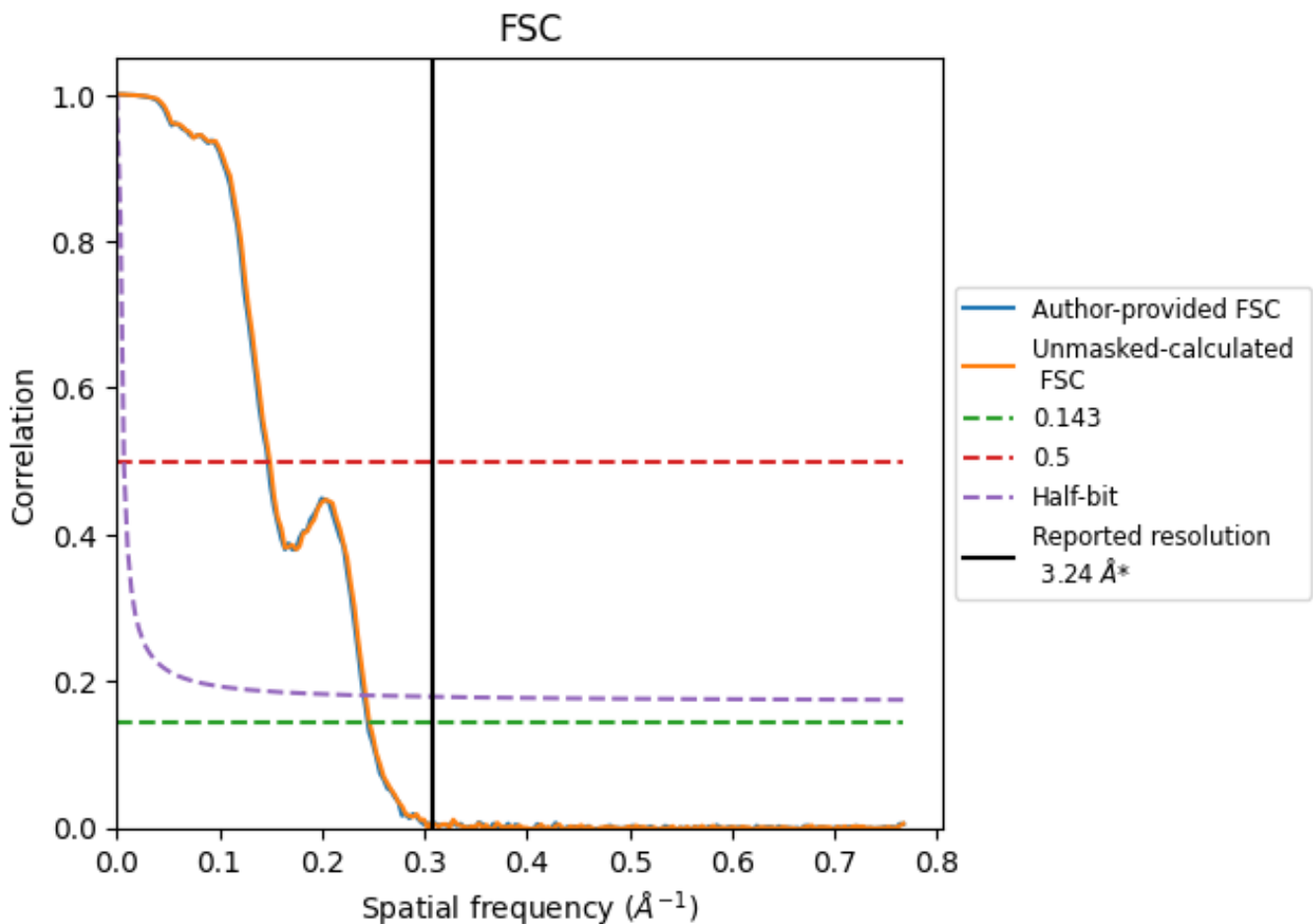
\*Reported resolution corresponds to spatial frequency of 0.309 Å<sup>-1</sup>



## 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 0.309 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	3.24	-	-
Author-provided FSC curve	4.08	6.78	4.15
Unmasked-calculated*	4.06	6.70	4.12

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 4.08 differs from the reported value 3.24 by more than 10 %

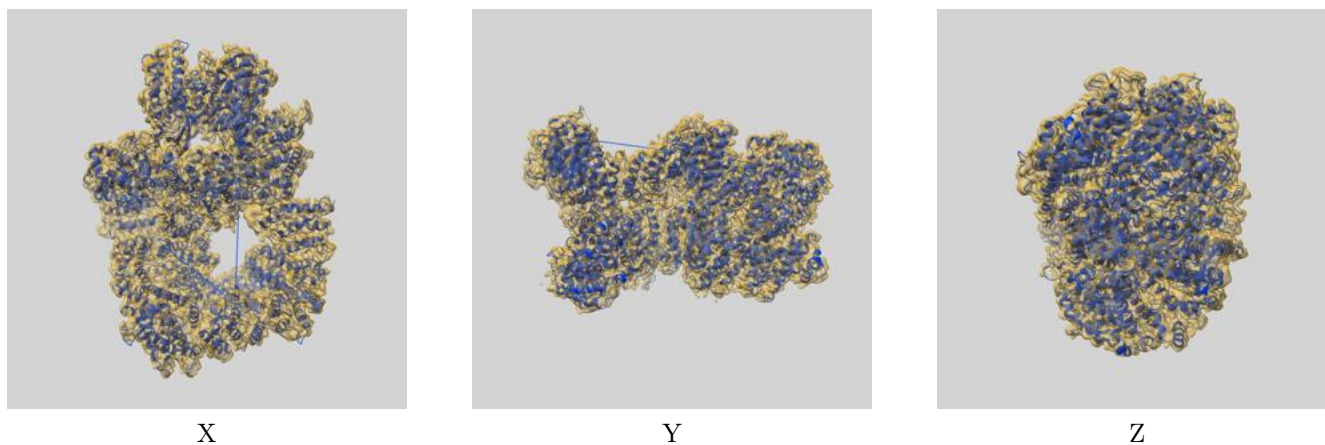
The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.06 differs from the reported value 3.24 by more than 10 %



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

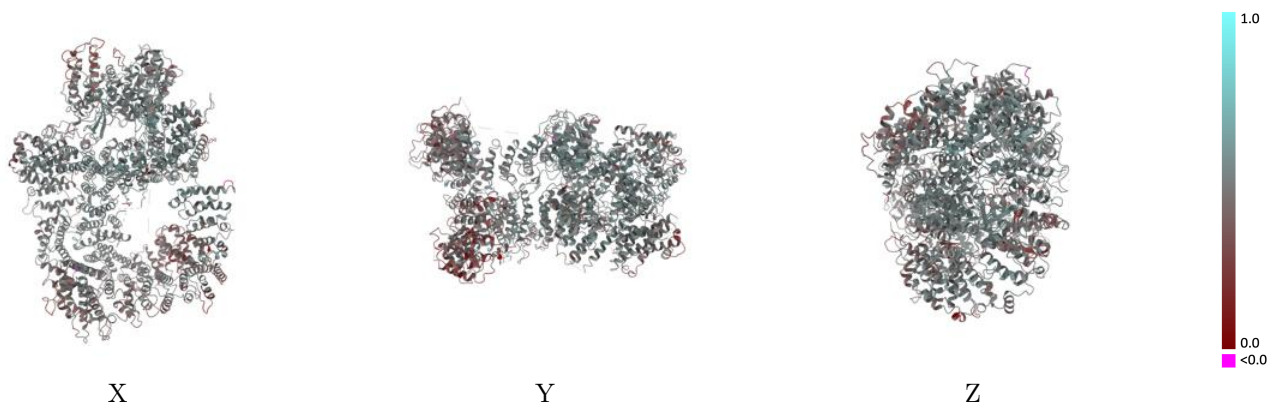
This section contains information regarding the fit between EMDB map EMD-11185 and PDB model 6ZFP. Per-residue inclusion information can be found in section 3 on page 4.

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



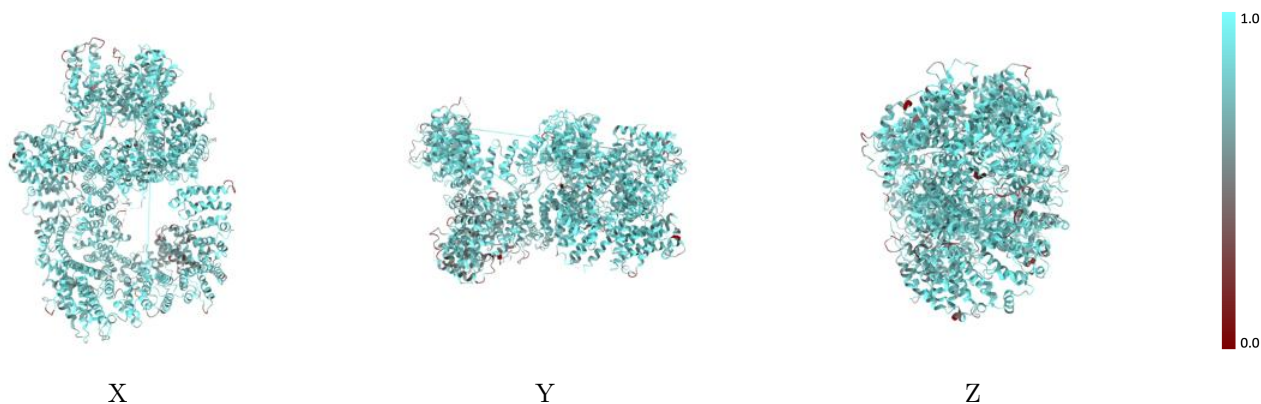
The images above show the 3D surface view of the map at the recommended contour level 0.055 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



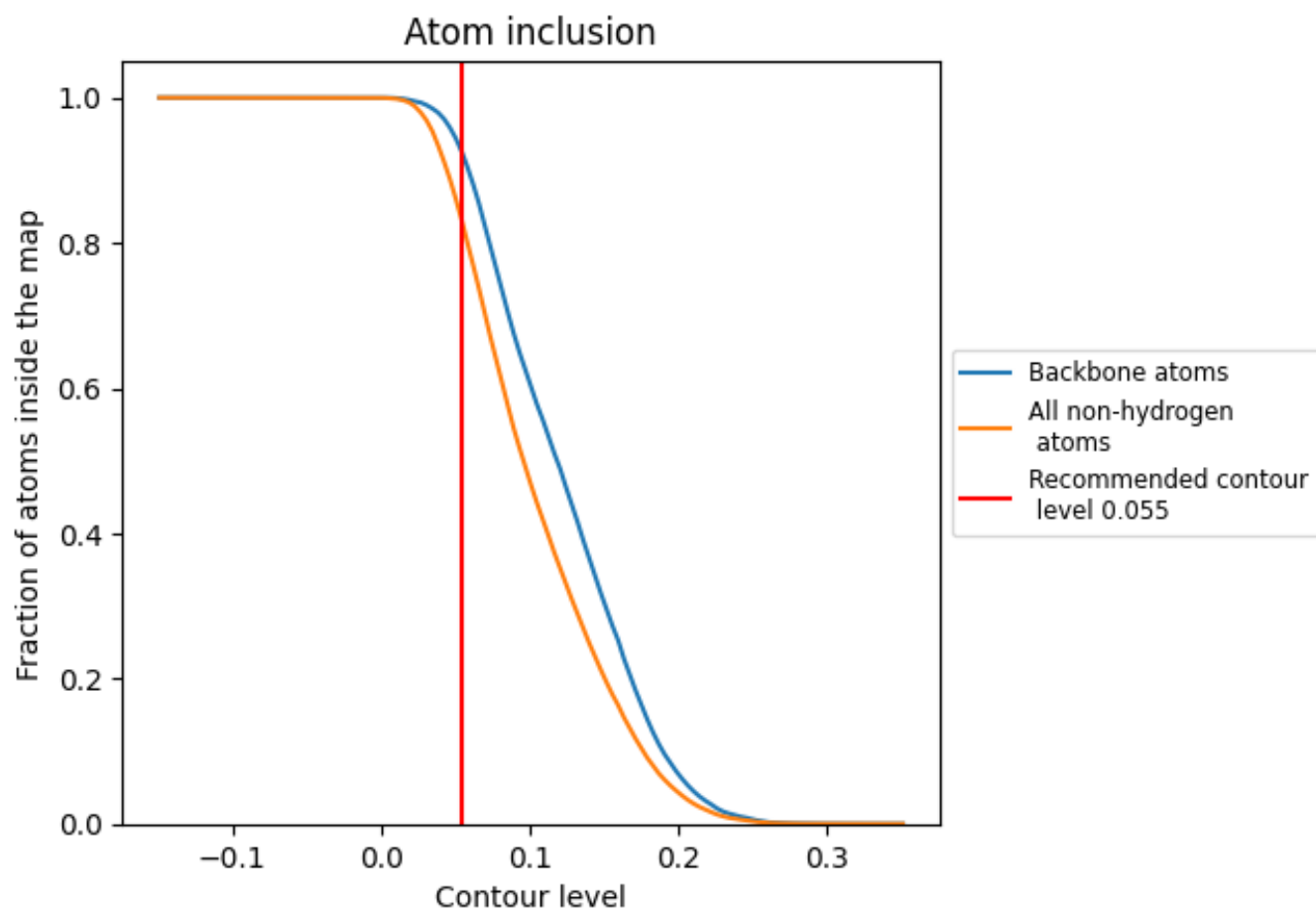
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.055).





## 9.4 Atom inclusion [i](#)



At the recommended contour level, 92% of all backbone atoms, 83% 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 (0.055) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8281	 0.4720
A	 0.8281	 0.4720

