

Electronic Supplementary Materials

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Core-drilling kinematic modeling and analysis of Jiaolong submersible manipulator

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Table S1 Key points of desired core-drilling trajectory A, calculated joint trajectory, resulted core-drilling tip trajectory

Desired drilling trajectory A (mm)	Calculated joint trajectory						Resulted drilling trajectory (mm)
	θ_1 (°)	θ_2 (°)	θ_3 (°)	θ_4 (°)	θ_5 (°)	θ_6 (°)	
1000, 0, -1200	-2.362	20.400	-16.300	20.826	163.658	-173.304	1000, 0, -1200
1000, 0, -1185	-2.773	21.380	-17.084	24.486	163.542	-171.865	1000, 0, -1185
1000, 0, -1170	-3.171	22.360	-17.870	28.035	163.400	-170.445	1000, 0, -1170
1000, 0, -1155	-3.560	23.339	-18.655	31.501	163.232	-169.063	1000, 0, -1155
1000, 0, -1140	-3.943	24.320	-19.440	34.898	163.037	-167.739	1000, 0, -1140
1000, 0, -1125	-4.320	25.300	-20.225	38.231	162.817	-166.492	1000, 0, -1125
1000, 0, -1110	-4.690	26.280	-21.010	41.504	162.570	-165.337	1000, 0, -1110
1000, 0, -1095	-5.057	27.260	-21.795	44.719	162.298	-164.288	1000, 0, -1095
1000, 0, -1080	-5.418	28.240	-22.580	47.876	162.000	-163.350	1000, 0, -1080
1000, 0, -1065	-5.775	29.220	-23.365	50.973	161.676	-162.528	1000, 0, -1065
1000, 0, -1050	-6.127	30.199	-24.150	54.012	161.327	-161.820	1000, 0, -1050
1000, 0, -1035	-6.473	31.180	-24.935	56.990	160.955	-161.226	1000, 0, -1035
1000, 0, -1020	-6.814	32.160	-25.720	59.910	160.558	-160.738	1000, 0, -1020
1000, 0, -1005	-7.149	33.140	-26.504	62.771	160.139	-160.350	1000, 0, -1005
1000, 0, -990	-7.478	34.120	-27.290	65.574	159.698	-160.055	1000, 0, -990
1000, 0, -975	-7.801	35.100	-28.075	68.322	159.235	-159.843	1000, 0, -975
1000, 0, -960	-8.117	36.080	-28.860	71.015	158.752	-159.709	1000, 0, -960
1000, 0, -945	-8.424	37.059	-29.645	73.656	158.249	-159.642	1000, 0, -945
1000, 0, -930	-8.724	38.040	-30.430	76.248	157.727	-159.636	1000, 0, -930
1000, 0, -915	-9.015	39.020	-31.215	78.793	157.186	-159.683	1000, 0, -915
1000, 0, -900	-9.296	40.000	-32.000	81.294	156.629	-159.778	1000, 0, -900