

Coupled 3D Time-Dependent Wave-Packet Approach in Hyperspherical Coordinates: The $D^+ + H_2$ Reaction on the Triple-Sheeted DMBE Potential Energy Surface

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Supplementary Information

Figure 1 shows the positions of the three atoms in both space-fixed coordinate system (X', Y', Z') and body-fixed coordinate system (x, y, z) . The important features of the adiabatic PESs, such as, well depth, exoergicity, etc are depicted in the schematic diagram of Figure 2.

Tables 1 to 10 compile the data corresponding to Figures 2 to 4 in the article, where each table represents magnitudes of total reaction probabilities (P_J) for a particular J as a function of the collision energy for all the four competing processes, namely, NRNCT, RNCT, NRCT and RCT. Some intermediate energy values are skipped in order to have a better visibility.

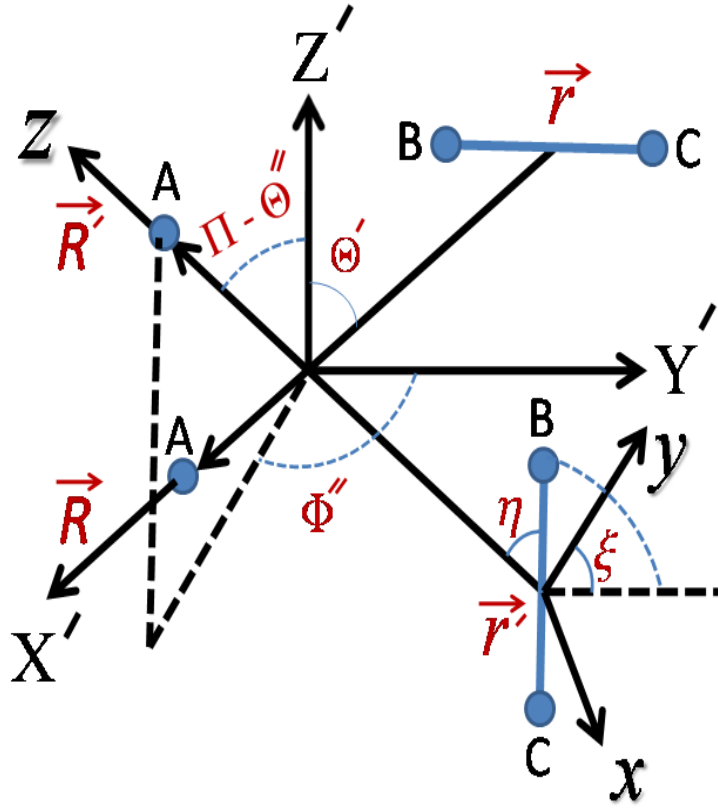


Figure 1: Position of the three atoms in space-fixed coordinate system (X', Y', Z') and body-fixed coordinate system (x, y, z)

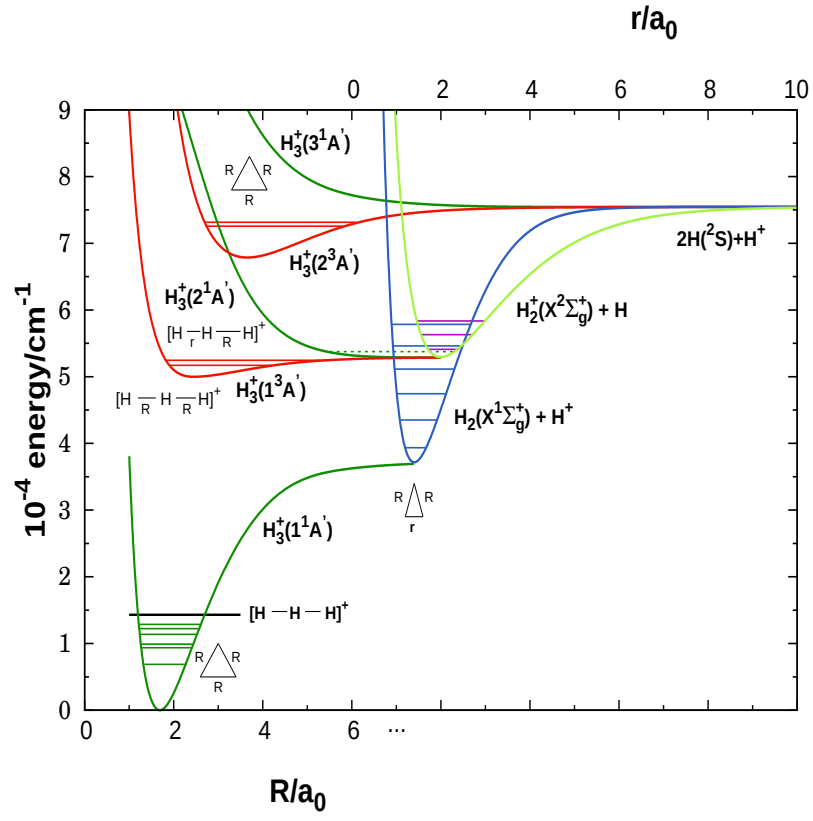


Figure 2: Schematic representation of the PECs which define the energetics.

Table 1: Total Reaction probability for $J = 0$

Energy (eV)	NRNCT Probability	RNCT Probability	NRCT Probability	RCT Probability
1.701109	0.339739	0.660276	0.000069	0.000054
1.716255	0.338799	0.660903	0.000253	0.000045
1.731400	0.340112	0.656851	0.002240	0.000797
1.746545	0.333704	0.658997	0.004676	0.002623
1.761690	0.333707	0.656938	0.006868	0.002487
1.776836	0.334088	0.651828	0.007648	0.006436
1.791981	0.327465	0.656908	0.008305	0.007322
1.807126	0.327930	0.656593	0.009484	0.005994
1.822272	0.330530	0.652041	0.010475	0.006954
1.837417	0.325471	0.657895	0.010014	0.006620
1.852562	0.325882	0.657841	0.010687	0.005590
1.867707	0.325938	0.655140	0.011290	0.007633
1.882853	0.318656	0.658565	0.012212	0.010567
1.897998	0.320213	0.656873	0.012417	0.010497
1.913143	0.322603	0.655021	0.011978	0.010397
1.928288	0.318094	0.660178	0.012375	0.009352
1.943434	0.321437	0.658820	0.013087	0.006657
1.958579	0.324269	0.658208	0.012866	0.004657
1.973724	0.318017	0.661214	0.013206	0.007563
1.988869	0.319637	0.657010	0.013757	0.009596
2.004015	0.321759	0.655858	0.013636	0.008748
2.019160	0.316917	0.658055	0.013637	0.011391
2.034305	0.319446	0.654614	0.013814	0.012126
2.049451	0.320706	0.653083	0.013234	0.012978
2.064596	0.314236	0.656304	0.013898	0.015562
2.079741	0.316196	0.653265	0.013872	0.016666
2.094886	0.317093	0.651963	0.013778	0.017166
2.110032	0.309746	0.651567	0.014595	0.024092
2.125177	0.313152	0.649761	0.014498	0.022589
2.140322	0.308387	0.638741	0.014619	0.038252
2.155467	0.307692	0.649456	0.016356	0.026496
2.170613	0.309819	0.644751	0.019602	0.025829
2.185758	0.306219	0.636800	0.016235	0.040746
2.200903	0.296781	0.629186	0.021576	0.052456
2.216049	0.303841	0.635906	0.020589	0.039663
2.231194	0.303684	0.636020	0.019944	0.040352
2.246339	0.298096	0.637050	0.019565	0.045289
2.261484	0.300197	0.635180	0.020386	0.044238
2.276630	0.300876	0.637521	0.019574	0.042029
2.291775	0.294148	0.629552	0.020437	0.055863
2.306920	0.293591	0.618295	0.020875	0.067240
2.322065	0.291582	0.619812	0.023441	0.065165
2.337211	0.288962	0.626480	0.023070	0.061488
2.352356	0.294049	0.629189	0.019752	0.057010
2.367501	0.294127	0.633402	0.015965	0.056507
2.382646	0.292066	0.642332	0.017307	0.048294
2.397792	0.291085	0.637329	0.021399	0.050187
2.412937	0.293019	0.634012	0.024512	0.048457
2.428082	0.290766	0.636595	0.026666	0.045973
2.443228	0.285090	0.618364	0.030006	0.066540
2.458373	0.286324	0.627331	0.031267	0.055078
2.473518	0.281337	0.628275	0.028703	0.061685
2.478567	0.280310	0.624945	0.026815	0.067929
2.493712	0.276443	0.608828	0.023418	0.091311
2.498760	0.273959	0.603424	0.023572	0.099046

Table 2: Total Reaction probability for $J = 4$

Energy (eV)	NRNCT Probability	RNCT Probability	NRCT Probability	RCT Probability
1.701109	0.429744	0.570421	0.000031	0.000134
1.716255	0.426064	0.572644	0.000701	0.000591
1.731400	0.424568	0.571651	0.003509	0.000271
1.746545	0.421832	0.570486	0.006339	0.001343
1.761690	0.421245	0.567986	0.007410	0.003360
1.776836	0.415299	0.564339	0.010238	0.010123
1.791981	0.413019	0.566343	0.010048	0.010589
1.807126	0.409109	0.568640	0.012031	0.010220
1.822272	0.406310	0.567586	0.012136	0.013967
1.837417	0.406052	0.567543	0.013595	0.012809
1.852562	0.404000	0.567725	0.014078	0.014196
1.867707	0.403143	0.568968	0.012735	0.015153
1.872756	0.403173	0.569330	0.013007	0.014490
1.887901	0.401170	0.571448	0.014892	0.012490
1.903046	0.399434	0.569748	0.015298	0.015520
1.918192	0.398564	0.570760	0.015486	0.015190
1.933337	0.398213	0.569368	0.014860	0.017560
1.948482	0.396556	0.568335	0.014643	0.020466
1.963627	0.396391	0.566683	0.015410	0.021515
1.978773	0.398320	0.569567	0.016053	0.016060
1.993918	0.397698	0.571717	0.016293	0.014292
2.009063	0.396108	0.571494	0.016157	0.016241
2.024208	0.395869	0.571259	0.016650	0.016222
2.039354	0.397183	0.570543	0.016309	0.015965
2.054499	0.395762	0.571766	0.016770	0.015702
2.069644	0.395361	0.573017	0.016024	0.015598
2.084790	0.392779	0.571556	0.016480	0.019184
2.099935	0.390415	0.569821	0.016081	0.023683
2.115080	0.388453	0.569718	0.016171	0.025659
2.130225	0.383066	0.562713	0.016432	0.037789
2.145371	0.383408	0.565319	0.016584	0.034689
2.160516	0.382046	0.566410	0.017550	0.033993
2.175661	0.376525	0.559177	0.019431	0.044867
2.190806	0.379963	0.565906	0.018128	0.036003
2.205952	0.374551	0.560114	0.027025	0.038309
2.221097	0.373731	0.559200	0.018278	0.048791
2.236242	0.370157	0.555970	0.026555	0.047319
2.251387	0.370698	0.557985	0.024717	0.046600
2.266533	0.369137	0.559731	0.024172	0.046959
2.281678	0.369336	0.561119	0.023688	0.045857
2.296823	0.365607	0.559071	0.023248	0.052074
2.311969	0.367679	0.558963	0.022886	0.050472
2.327114	0.362468	0.553369	0.024288	0.059875
2.342259	0.361749	0.552753	0.024366	0.061133
2.357404	0.361982	0.558144	0.027320	0.052554
2.372550	0.361573	0.560708	0.030322	0.047398
2.387695	0.360840	0.558715	0.027094	0.053350
2.402840	0.359892	0.557123	0.022027	0.060957
2.417985	0.354469	0.551819	0.020748	0.072965
2.433131	0.353840	0.556985	0.020493	0.068683
2.448276	0.356200	0.552593	0.024252	0.066955
2.463421	0.354787	0.550353	0.027793	0.067067
2.478567	0.355820	0.549807	0.033570	0.060802
2.493712	0.351933	0.547373	0.038733	0.061961
2.498760	0.350623	0.547073	0.039186	0.063118

Table 3: Total Reaction probability for $J = 8$

Energy (eV)	NRNCT Probability	RNCT Probability	NRCT Probability	RCT Probability
1.701109	0.542718	0.453224	0.000540	0.003519
1.716255	0.514462	0.484696	0.000081	0.000761
1.731400	0.534686	0.460705	0.002718	0.001891
1.746545	0.489279	0.502796	0.003684	0.004241
1.761690	0.515522	0.475504	0.006088	0.002886
1.776836	0.478598	0.505498	0.005412	0.010492
1.791981	0.483936	0.499816	0.008387	0.007861
1.807126	0.474562	0.506598	0.006875	0.011965
1.822272	0.451677	0.526845	0.008065	0.013413
1.837417	0.469515	0.504524	0.009458	0.016503
1.852562	0.430329	0.546927	0.008449	0.014295
1.867707	0.455773	0.521676	0.008467	0.014084
1.882853	0.416990	0.554987	0.008422	0.019601
1.897998	0.428034	0.542726	0.009763	0.019477
1.913143	0.413731	0.551294	0.009145	0.025829
1.928288	0.397799	0.568387	0.009889	0.023925
1.943434	0.415593	0.553989	0.009322	0.021095
1.958579	0.379126	0.587179	0.009566	0.024129
1.973724	0.407585	0.560534	0.009323	0.022557
1.988869	0.371556	0.595027	0.008752	0.024665
2.004015	0.387538	0.579042	0.009399	0.024021
2.019160	0.373094	0.593386	0.008482	0.025039
2.034305	0.363163	0.602763	0.009798	0.024276
2.049451	0.374670	0.591584	0.009314	0.024433
2.064596	0.341190	0.620857	0.010279	0.027674
2.079741	0.365909	0.596072	0.009997	0.028022
2.094886	0.329426	0.625768	0.009848	0.034958
2.110032	0.348682	0.609958	0.009933	0.031427
2.125177	0.329351	0.625487	0.008889	0.036273
2.140322	0.323081	0.623377	0.009109	0.044432
2.155467	0.330208	0.618928	0.007722	0.043143
2.170613	0.300560	0.640688	0.018557	0.040195
2.185758	0.324286	0.616818	0.023995	0.034902
2.200903	0.287759	0.643738	0.027531	0.040972
2.216049	0.306456	0.625483	0.020212	0.047849
2.231194	0.283430	0.637544	0.026350	0.052676
2.246339	0.281039	0.628335	0.032213	0.058413
2.261484	0.286466	0.629154	0.026042	0.058338
2.276630	0.270121	0.659954	0.017542	0.052383
2.291775	0.291583	0.640644	0.020214	0.047559
2.306920	0.262031	0.670003	0.029466	0.038501
2.322065	0.283213	0.641257	0.035284	0.040246
2.337211	0.258291	0.657164	0.032542	0.052003
2.352356	0.263700	0.646341	0.024659	0.065300
2.367501	0.264919	0.648630	0.018539	0.067912
2.382646	0.246701	0.666153	0.016083	0.071063
2.397792	0.262956	0.643902	0.017238	0.075903
2.412937	0.237581	0.660937	0.020910	0.080572
2.428082	0.253816	0.635277	0.025025	0.085881
2.443228	0.231975	0.663998	0.027468	0.076559
2.458373	0.237506	0.650775	0.029362	0.082357
2.473518	0.233776	0.650618	0.028726	0.086879
2.488663	0.226653	0.663528	0.028738	0.081080
2.493712	0.221991	0.668732	0.028213	0.081064
2.498760	0.230818	0.659619	0.027406	0.082157

Table 4: Total Reaction probability for $J = 12$

Energy (eV)	NRNCT Probability	RNCT Probability	NRCT Probability	RCT Probability
1.701109	0.631488	0.366415	0.000571	0.001526
1.716255	0.631507	0.365650	0.001260	0.001583
1.731400	0.618148	0.379037	0.002219	0.000595
1.746545	0.614698	0.379803	0.004695	0.000804
1.761690	0.600783	0.388921	0.006068	0.004227
1.776836	0.592435	0.391036	0.007855	0.008674
1.791981	0.584389	0.398321	0.008099	0.009191
1.807126	0.576414	0.407637	0.007756	0.008193
1.822272	0.570950	0.411075	0.011147	0.006828
1.837417	0.560274	0.422235	0.009128	0.008363
1.852562	0.552145	0.423417	0.009922	0.014516
1.867707	0.534697	0.438015	0.008835	0.018453
1.882853	0.534531	0.434725	0.011430	0.019313
1.897998	0.518949	0.454738	0.009819	0.016494
1.913143	0.522055	0.448204	0.011974	0.017767
1.928288	0.502509	0.468766	0.009887	0.018839
1.943434	0.512243	0.460217	0.012141	0.015399
1.958579	0.489350	0.481387	0.009658	0.019605
1.973724	0.499843	0.468382	0.011606	0.020169
1.988869	0.473690	0.494404	0.009402	0.022505
2.004015	0.484253	0.477254	0.011248	0.027244
2.019160	0.458403	0.503824	0.009699	0.028075
2.034305	0.472522	0.487329	0.011712	0.028437
2.049451	0.444259	0.515954	0.010776	0.029012
2.064596	0.459547	0.499393	0.012001	0.029059
2.079741	0.431923	0.532105	0.011295	0.024677
2.094886	0.448031	0.513757	0.011448	0.026764
2.110032	0.417136	0.542456	0.010629	0.029779
2.125177	0.438221	0.524456	0.010482	0.026840
2.140322	0.405372	0.550722	0.009721	0.034185
2.155467	0.414481	0.527664	0.009182	0.048672
2.170613	0.379574	0.553612	0.016082	0.050732
2.185758	0.394791	0.536632	0.024756	0.043820
2.200903	0.367529	0.565024	0.021340	0.046107
2.216049	0.379201	0.545938	0.023045	0.051816
2.231194	0.344908	0.558709	0.034169	0.062214
2.246339	0.362692	0.550192	0.028894	0.058223
2.261484	0.342260	0.579767	0.021072	0.056900
2.276630	0.354151	0.565644	0.017763	0.062442
2.291775	0.324735	0.575359	0.029218	0.070687
2.306920	0.332140	0.559120	0.033640	0.075099
2.322065	0.312353	0.575442	0.035695	0.076511
2.337211	0.323801	0.573930	0.026762	0.075507
2.352356	0.309080	0.590858	0.021599	0.078462
2.367501	0.313302	0.589685	0.015110	0.081903
2.382646	0.299456	0.601024	0.017998	0.081522
2.397792	0.305600	0.599471	0.018882	0.076047
2.412937	0.296670	0.609341	0.024409	0.069580
2.428082	0.295692	0.610536	0.027534	0.066238
2.443228	0.284432	0.614946	0.029401	0.071220
2.458373	0.278541	0.614877	0.029161	0.077421
2.473518	0.272855	0.612321	0.028684	0.086140
2.488663	0.269234	0.621746	0.025982	0.083038
2.493712	0.276219	0.615773	0.024592	0.083416
2.498760	0.275674	0.614837	0.024226	0.085262

Table 5: Total Reaction probability for J = 16

Energy (eV)	NRNCT Probability	RNCT Probability	NRCT Probability	RCT Probability
1.701109	0.462877	0.529268	0.007427	0.000428
1.716255	0.457178	0.537921	0.004632	0.000269
1.731400	0.453597	0.539605	0.006795	0.000003
1.746545	0.435173	0.556174	0.008468	0.000185
1.761690	0.434391	0.556676	0.008000	0.000933
1.776836	0.419470	0.567700	0.010773	0.002057
1.791981	0.407254	0.579389	0.010255	0.003103
1.807126	0.405402	0.579831	0.011561	0.003206
1.822272	0.388014	0.595948	0.012240	0.003798
1.837417	0.386980	0.598478	0.009473	0.005070
1.852562	0.379084	0.603122	0.011656	0.006138
1.867707	0.365386	0.617080	0.011387	0.006147
1.882853	0.367699	0.615641	0.010512	0.006147
1.897998	0.353083	0.626239	0.012362	0.008316
1.913143	0.349192	0.632547	0.010308	0.007953
1.928288	0.347447	0.635289	0.010519	0.006745
1.943434	0.332512	0.647531	0.010835	0.009122
1.958579	0.335500	0.645693	0.008555	0.010252
1.973724	0.325942	0.653605	0.009944	0.010509
1.988869	0.317685	0.660999	0.008964	0.012351
2.004015	0.319793	0.658723	0.008205	0.013279
2.019160	0.307137	0.671123	0.009727	0.012014
2.034305	0.307953	0.671799	0.008069	0.012179
2.049451	0.302847	0.676352	0.008594	0.012207
2.064596	0.291010	0.685804	0.008682	0.014504
2.079741	0.294464	0.683557	0.006474	0.015505
2.094886	0.283295	0.694244	0.007409	0.015052
2.110032	0.281263	0.697596	0.005946	0.015195
2.125177	0.280634	0.698587	0.004446	0.016334
2.140322	0.266976	0.707794	0.005345	0.019885
2.155467	0.269212	0.706413	0.003307	0.021068
2.170613	0.261355	0.713787	0.003990	0.020868
2.185758	0.252739	0.713940	0.009808	0.023513
2.200903	0.253363	0.707600	0.015128	0.023909
2.216049	0.240916	0.714561	0.022247	0.022277
2.231194	0.242888	0.717301	0.017103	0.022708
2.246339	0.241613	0.727700	0.009320	0.021368
2.261484	0.231996	0.733833	0.011937	0.022234
2.276630	0.232147	0.721622	0.018004	0.028226
2.291775	0.221040	0.724740	0.023407	0.030814
2.306920	0.219553	0.726102	0.023147	0.031198
2.322065	0.222218	0.729252	0.016282	0.032248
2.337211	0.212063	0.740717	0.011395	0.035825
2.352356	0.214618	0.745690	0.007540	0.032152
2.367501	0.208115	0.749302	0.007306	0.035277
2.382646	0.204105	0.745845	0.011114	0.038936
2.397792	0.206619	0.742645	0.013122	0.037614
2.412937	0.194721	0.750452	0.016179	0.038648
2.428082	0.194274	0.746708	0.018742	0.040276
2.443228	0.191726	0.749382	0.017450	0.041442
2.458373	0.185455	0.752318	0.017317	0.044910
2.473518	0.188996	0.745541	0.015752	0.049710
2.488663	0.181352	0.753457	0.013114	0.052078
2.493712	0.179189	0.755269	0.012563	0.052979
2.498760	0.179020	0.754916	0.012010	0.054054

Table 6: Total Reaction probability for $J = 18$

Energy (eV)	NRNCT Probability	RNCT Probability	NRCT Probability	RCT Probability
1.701109	0.651444	0.341742	0.005214	0.001600
1.716255	0.634871	0.357779	0.004746	0.002604
1.731400	0.633441	0.362506	0.003956	0.000097
1.746545	0.622403	0.375461	0.000586	0.001549
1.761690	0.626158	0.372626	0.000591	0.000624
1.776836	0.611221	0.383010	0.002103	0.003667
1.791981	0.612927	0.378660	0.005414	0.002999
1.807126	0.597588	0.393952	0.003888	0.004573
1.822272	0.596154	0.399219	0.001988	0.002638
1.837417	0.577261	0.417981	-0.000350	0.005108
1.852562	0.582769	0.410891	0.001583	0.004757
1.867707	0.574433	0.415307	0.003904	0.006356
1.882853	0.576488	0.409855	0.007941	0.005716
1.897998	0.557418	0.429415	0.005718	0.007449
1.913143	0.551152	0.437339	0.004610	0.006899
1.928288	0.536755	0.449326	0.004925	0.008994
1.943434	0.545443	0.436018	0.008824	0.009715
1.958579	0.545314	0.433857	0.010250	0.010579
1.973724	0.544218	0.436061	0.010955	0.008766
1.988869	0.523392	0.459337	0.007638	0.009633
2.004015	0.516934	0.465727	0.006515	0.010825
2.019160	0.512638	0.466386	0.008189	0.012788
2.034305	0.520130	0.453788	0.012700	0.013382
2.049451	0.517843	0.456742	0.012229	0.013186
2.064596	0.506814	0.470953	0.009946	0.012287
2.079741	0.489727	0.491236	0.006701	0.012336
2.094886	0.486266	0.493474	0.007153	0.013107
2.110032	0.492079	0.484136	0.009464	0.014321
2.125177	0.495171	0.477055	0.012852	0.014922
2.140322	0.485785	0.488664	0.010294	0.015256
2.155467	0.470251	0.507267	0.007802	0.014680
2.170613	0.459800	0.517681	0.006708	0.015812
2.185758	0.459356	0.514242	0.009109	0.017292
2.200903	0.467826	0.505220	0.011433	0.015521
2.216049	0.464559	0.506184	0.011588	0.017669
2.231194	0.451309	0.520037	0.007912	0.020742
2.246339	0.437468	0.536259	0.004856	0.021417
2.261484	0.436256	0.537077	0.005095	0.021572
2.276630	0.438886	0.527023	0.008289	0.025801
2.291775	0.442737	0.520817	0.008911	0.027535
2.306920	0.434705	0.530258	0.008324	0.026713
2.322065	0.416935	0.544923	0.011920	0.026222
2.337211	0.406300	0.549621	0.016379	0.027700
2.352356	0.412587	0.536566	0.018554	0.032293
2.367501	0.425399	0.520851	0.017141	0.036609
2.382646	0.426347	0.527733	0.014037	0.031883
2.397792	0.410174	0.543737	0.017932	0.028156
2.412937	0.392646	0.558247	0.022746	0.026361
2.428082	0.388899	0.557517	0.025765	0.027819
2.443228	0.398918	0.546159	0.024205	0.030718
2.458373	0.409136	0.531768	0.020625	0.038472
2.483615	0.396705	0.541856	0.011155	0.050284
2.488663	0.394600	0.544564	0.010147	0.050689
2.493712	0.392700	0.547596	0.009412	0.050292
2.498760	0.390373	0.550373	0.009563	0.049691

Table 7: Total Reaction probability for $J = 20$

Energy (eV)	NRNCT Probability	RNCT Probability	NRCT Probability	RCT Probability
1.701109	0.851272	0.139390	0.000171	0.009168
1.716255	0.851499	0.145867	0.000035	0.002600
1.731400	0.861250	0.136745	0.000024	0.001981
1.746545	0.864390	0.125820	0.000126	0.009664
1.761690	0.845090	0.141718	0.000127	0.013066
1.776836	0.837591	0.156507	0.000163	0.005739
1.791981	0.853314	0.142574	0.001197	0.002916
1.807126	0.854963	0.132817	0.001817	0.010403
1.822272	0.834835	0.146655	0.002399	0.016111
1.837417	0.830083	0.160411	0.002767	0.006739
1.852562	0.846350	0.146339	0.003128	0.004184
1.867707	0.844887	0.140555	0.003665	0.010894
1.882853	0.835217	0.146777	0.003998	0.014009
1.897998	0.819216	0.167785	0.003730	0.009269
1.913143	0.832070	0.161404	0.003044	0.003482
1.928288	0.847431	0.142248	0.002528	0.007794
1.943434	0.831444	0.150769	0.002411	0.015376
1.958579	0.819531	0.168505	0.002730	0.009234
1.973724	0.824708	0.169166	0.003348	0.002777
1.988869	0.839178	0.149929	0.004264	0.006629
2.004015	0.825990	0.154306	0.005029	0.014676
2.019160	0.814247	0.170903	0.005225	0.009625
2.034305	0.821963	0.168614	0.004907	0.004515
2.049451	0.830417	0.158795	0.004466	0.006322
2.064596	0.829282	0.154260	0.003845	0.012613
2.079741	0.807531	0.177141	0.003045	0.012283
2.094886	0.808561	0.185257	0.002526	0.003656
2.110032	0.829733	0.163303	0.002390	0.004574
2.125177	0.826520	0.158533	0.002481	0.012466
2.140322	0.809355	0.176329	0.002698	0.011617
2.155467	0.798622	0.194564	0.003034	0.003780
2.170613	0.820459	0.173229	0.002944	0.003368
2.185758	0.813944	0.169461	0.005898	0.010698
2.200903	0.803804	0.179336	0.004614	0.012245
2.216049	0.798458	0.195122	0.001204	0.005215
2.231194	0.802396	0.187055	0.006775	0.003774
2.246339	0.807130	0.164965	0.018279	0.009625
2.261484	0.775465	0.184000	0.026082	0.014453
2.276630	0.761755	0.205864	0.026094	0.006286
2.291775	0.789887	0.188013	0.019190	0.002910
2.306920	0.806069	0.173449	0.010304	0.010179
2.322065	0.797803	0.182903	0.004202	0.015091
2.337211	0.777988	0.210517	0.003096	0.008399
2.352356	0.789243	0.199950	0.006793	0.004013
2.367501	0.795327	0.183007	0.013075	0.008591
2.382646	0.784791	0.182071	0.019723	0.013415
2.397792	0.753587	0.212045	0.025324	0.009043
2.412937	0.758760	0.210404	0.028546	0.002290
2.428082	0.784627	0.182464	0.028086	0.004823
2.443228	0.769631	0.192386	0.024464	0.013518
2.458373	0.754418	0.216618	0.020108	0.008856
2.473518	0.762325	0.220060	0.015470	0.002145
2.488663	0.788752	0.194131	0.010953	0.006165
2.493712	0.795425	0.186118	0.009620	0.008837
2.498760	0.793755	0.186274	0.008402	0.011569

Table 8: Total Reaction probability for $J = 22$

Energy (eV)	NRNCT Probability	RNCT Probability	NRCT Probability	RCT Probability
1.701109	0.895404	0.101075	0.001356	0.002165
1.716255	0.893286	0.103543	0.000883	0.002288
1.731400	0.894585	0.101438	0.002043	0.001935
1.746545	0.896320	0.098746	0.003333	0.001601
1.761690	0.895692	0.100798	0.002085	0.001426
1.776836	0.898557	0.099292	0.000942	0.001210
1.791981	0.895668	0.101226	0.002096	0.001009
1.807126	0.888276	0.107649	0.003017	0.001058
1.822272	0.885066	0.110014	0.003580	0.001340
1.837417	0.881736	0.113177	0.003690	0.001397
1.852562	0.880719	0.113917	0.004164	0.001200
1.867707	0.877329	0.116978	0.004675	0.001018
1.882853	0.872668	0.122131	0.004533	0.000667
1.897998	0.874355	0.121093	0.004029	0.000524
1.913143	0.869239	0.127896	0.001987	0.000878
1.928288	0.861950	0.135693	0.000934	0.001423
1.943434	0.860241	0.134974	0.003038	0.001748
1.958579	0.855021	0.138682	0.004458	0.001839
1.973724	0.850541	0.143024	0.004440	0.001995
1.988869	0.848075	0.145514	0.004420	0.001991
2.004015	0.848764	0.145304	0.004511	0.001421
2.019160	0.850395	0.144071	0.004827	0.000707
2.034305	0.848047	0.148320	0.003414	0.000218
2.049451	0.849758	0.148497	0.001673	0.000072
2.064596	0.851180	0.147204	0.001295	0.000321
2.079741	0.846740	0.151047	0.001490	0.000723
2.094886	0.843059	0.152895	0.002596	0.001450
2.110032	0.844443	0.149712	0.004017	0.001827
2.125177	0.848720	0.144877	0.004583	0.001820
2.140322	0.846500	0.146819	0.004797	0.001885
2.155467	0.845625	0.147850	0.005087	0.001438
2.170613	0.850819	0.142664	0.004951	0.001566
2.185758	0.849308	0.146715	0.001895	0.002081
2.200903	0.842620	0.150551	0.004262	0.002567
2.216049	0.836682	0.148431	0.012309	0.002578
2.231194	0.827945	0.150705	0.019495	0.001856
2.246339	0.817778	0.153837	0.026460	0.001925
2.261484	0.811110	0.161002	0.025406	0.002482
2.276630	0.814559	0.164767	0.018217	0.002457
2.291775	0.818369	0.166896	0.011819	0.002916
2.306920	0.812058	0.179864	0.003948	0.004130
2.322065	0.811427	0.183403	0.000168	0.005002
2.337211	0.811150	0.182297	0.000847	0.005706
2.352356	0.793933	0.192152	0.007513	0.006402
2.367501	0.780800	0.195477	0.017736	0.005987
2.382646	0.780947	0.192628	0.021373	0.005053
2.397792	0.782548	0.191059	0.021677	0.004717
2.412937	0.777723	0.193655	0.023570	0.005053
2.428082	0.776672	0.197040	0.021345	0.004943
2.443228	0.784319	0.192297	0.019114	0.004270
2.458373	0.783925	0.194181	0.017418	0.004476
2.473518	0.783021	0.200771	0.010710	0.005498
2.488663	0.788999	0.197757	0.006814	0.006430
2.493712	0.790262	0.196046	0.006992	0.006700
2.498760	0.790771	0.194849	0.007480	0.006901

Table 9: Total Reaction probability for $J = 25$

Energy (eV)	NRNCT Probability	RNCT Probability	NRCT Probability	RCT Probability
1.701109	0.988521	0.011429	0.000031	0.000019
1.716255	0.987585	0.012350	0.000056	0.000008
1.731400	0.986501	0.013222	0.000128	0.000149
1.746545	0.986352	0.013259	0.000075	0.000313
1.761690	0.986998	0.012706	0.000004	0.000292
1.776836	0.987281	0.012445	0.000087	0.000188
1.791981	0.986076	0.012949	0.000850	0.000124
1.807126	0.984115	0.014106	0.001640	0.000139
1.822272	0.982582	0.015139	0.001988	0.000292
1.837417	0.982214	0.015202	0.002164	0.000419
1.852562	0.982710	0.014679	0.002225	0.000386
1.867707	0.982999	0.014628	0.002067	0.000306
1.882853	0.982517	0.015510	0.001716	0.000257
1.897998	0.981174	0.017090	0.001479	0.000258
1.913143	0.979634	0.018346	0.001645	0.000375
1.928288	0.979013	0.018333	0.002180	0.000473
1.943434	0.979083	0.017626	0.002856	0.000435
1.958579	0.978654	0.017477	0.003499	0.000370
1.973724	0.977201	0.018425	0.004024	0.000350
1.988869	0.975313	0.020024	0.004253	0.000411
2.004015	0.974435	0.020986	0.003992	0.000587
2.019160	0.975425	0.020474	0.003370	0.000732
2.034305	0.977039	0.019486	0.002735	0.000740
2.049451	0.977641	0.019313	0.002250	0.000796
2.064596	0.977078	0.020355	0.001861	0.000706
2.079741	0.975822	0.021878	0.001571	0.000730
2.094886	0.975189	0.022390	0.001556	0.000865
2.110032	0.975616	0.021480	0.001870	0.001034
2.125177	0.976242	0.020452	0.002299	0.001006
2.140322	0.975818	0.020471	0.002695	0.001016
2.155467	0.974087	0.021708	0.003137	0.001068
2.170613	0.971974	0.023296	0.003645	0.001085
2.185758	0.968159	0.023617	0.007057	0.001168
2.200903	0.962343	0.022467	0.013989	0.001201
2.216049	0.959954	0.021470	0.017438	0.001138
2.231194	0.960053	0.021772	0.017068	0.001107
2.246339	0.962117	0.023439	0.013338	0.001106
2.261484	0.965355	0.025425	0.008049	0.001171
2.276630	0.968899	0.026064	0.003708	0.001329
2.291775	0.970986	0.025167	0.002433	0.001414
2.306920	0.969764	0.024314	0.004550	0.001372
2.322065	0.964718	0.024816	0.009100	0.001366
2.337211	0.957196	0.026619	0.014752	0.001433
2.352356	0.950293	0.028446	0.019674	0.001587
2.367501	0.947162	0.028571	0.022545	0.001722
2.382646	0.947757	0.027280	0.023273	0.001691
2.397792	0.949828	0.026433	0.022116	0.001624
2.412937	0.951990	0.027092	0.019400	0.001518
2.428082	0.953062	0.028988	0.015915	0.002035
2.443228	0.955414	0.030619	0.012306	0.001661
2.458373	0.958983	0.030362	0.008860	0.001796
2.473518	0.962855	0.028939	0.006236	0.001970
2.488663	0.964877	0.028209	0.004885	0.002029
2.493712	0.964969	0.028304	0.004700	0.002026
2.498760	0.964744	0.028581	0.004624	0.002052