

Naduvalath Balakrishnan

List of Publications by Year in Descending Order

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

113
papers

3,648
citations

34
h-index

55
g-index

118
ext. papers

3,958
ext. citations

4.3
avg, IF

5.72
L-index

#	Paper	IF	Citations
113	On the use of stereodynamical effects to control cold chemical reactions: The H + D ? D + HD case study.. <i>Journal of Chemical Physics</i> , 2022 , 156, 044305	3.9	
112	Role of Low Energy Resonances in the Stereodynamics of Cold He + D Collisions.. <i>Journal of Physical Chemistry Letters</i> , 2022 , 4064-4072	6.4	4
111	Full-Dimensional Potential Energy Surface for Ro-vibrationally Inelastic Scattering between H Molecules. <i>Journal of Chemical Theory and Computation</i> , 2021 , 17, 6747-6756	6.4	3
110	Rainbow scattering in rotationally inelastic collisions of HCl and H. <i>Journal of Chemical Physics</i> , 2021 , 154, 104304	3.9	0
109	Stereodynamic control of cold rotationally inelastic CO + HD collisions. <i>Physical Chemistry Chemical Physics</i> , 2021 , 23, 19364-19374	3.6	4
108	Inelastic, exchange, and reactive processes in rovibrationally excited collisions of HD with H. <i>Monthly Notices of the Royal Astronomical Society</i> , 2021 , 507, 6012-6019	4.3	0
107	Non-adiabatic quantum interference in the ultracold Li + LiNa -> Li + Na reaction. <i>Physical Chemistry Chemical Physics</i> , 2021 , 23, 5096-5112	3.6	14
106	Prediction of a Feshbach Resonance in the Below-the-Barrier Reactive Scattering of Vibrationally Excited HD with H. <i>Journal of Physical Chemistry Letters</i> , 2020 , 11, 4970-4975	6.4	7
105	Stereodynamic control of overlapping resonances in cold molecular collisions. <i>Physical Review Research</i> , 2020 , 2,	3.9	10
104	Machine learning corrected quantum dynamics calculations. <i>Physical Review Research</i> , 2020 , 2,	3.9	4
103	Stereodynamics of ultracold rotationally inelastic collisions. <i>Journal of Chemical Physics</i> , 2020 , 153, 184307	3.9	5
102	Stereodynamics of rotationally inelastic scattering in cold He + HD collisions. <i>Journal of Chemical Physics</i> , 2020 , 153, 091101	3.9	11
101	Photon catalysis of deuterium iodide photodissociation. <i>Physical Chemistry Chemical Physics</i> , 2019 , 21, 14195-14204	3.6	8
100	Rotational quenching of HD induced by collisions with H ₂ molecules. <i>Monthly Notices of the Royal Astronomical Society</i> , 2019 , 488, 381-386	4.3	3
99	Stereodynamical Control of a Quantum Scattering Resonance in Cold Molecular Collisions. <i>Physical Review Letters</i> , 2019 , 123, 043401	7.4	19
98	Controlling rotational quenching rates in cold molecular collisions. <i>Journal of Chemical Physics</i> , 2019 , 150, 164302	3.9	13
97	Globally Accurate Full-Dimensional Potential Energy Surface for H + HCl Inelastic Scattering. <i>Journal of Physical Chemistry A</i> , 2019 , 123, 6578-6586	2.8	6

96	Geometric Phase Effects in Ultracold Chemical Reactions. <i>Atoms</i> , 2019 , 7, 65	2.1	2
95	Full-Dimensional Quantum Dynamics of SiO in Collision with H. <i>Journal of Physical Chemistry A</i> , 2018 , 122, 1511-1520	2.8	16
94	Fine-structure resolved rotational transitions and database for CN+H ₂ collisions. <i>Molecular Astrophysics</i> , 2018 , 11, 23-32	1.7	6
93	Inelastic vibrational dynamics of CS in collision with H using a full-dimensional potential energy surface. <i>Physical Chemistry Chemical Physics</i> , 2018 , 20, 28425-28434	3.6	6
92	Rotational Quenching of HD in Collisions with H ₂ : Resolving Discrepancies for Low-lying Rotational Transitions. <i>Astrophysical Journal</i> , 2018 , 866, 95	4.7	7
91	Collisional Quenching of Highly Excited H ₂ due to H ₂ Collisions. <i>Astrophysical Journal</i> , 2018 , 862, 132	4.7	12
90	Unraveling the Stereodynamics of Cold Controlled HD-H ₂ Collisions. <i>Physical Review Letters</i> , 2018 , 121, 113401	7.4	28
89	Geometric Phase and Interference Effects in Ultracold Chemical Reactions. <i>Progress in Theoretical Chemistry and Physics</i> , 2018 , 265-277	0.6	
88	Inelastic cross sections and rate coefficients for collisions between CO and H ₂ . <i>Molecular Astrophysics</i> , 2017 , 6, 47-58	1.7	5
87	Symmetry and the geometric phase in ultracold hydrogen-exchange reactions. <i>Journal of Chemical Physics</i> , 2017 , 147, 074302	3.9	11
86	Universality and chaoticity in ultracold K+KRb chemical reactions. <i>Nature Communications</i> , 2017 , 8, 15897	7.4	43
85	Long-lived complexes and signatures of chaos in ultracold K ₂ +Rb collisions. <i>Physical Review A</i> , 2017 , 96,	2.6	19
84	Geometric phase effects in the ultracold H + H reaction. <i>Journal of Chemical Physics</i> , 2016 , 145, 164303	3.9	18
83	Geometric phase effects in the ultracold D + HD \rightarrow D + HD and D + HD \leftarrow H + D ₂ reactions. <i>New Journal of Physics</i> , 2016 , 18, 123020	2.9	12
82	Full-dimensional quantum dynamics of CO in collision with H ₂ . <i>Journal of Chemical Physics</i> , 2016 , 145, 034308	3.9	23
81	Perspective: Ultracold molecules and the dawn of cold controlled chemistry. <i>Journal of Chemical Physics</i> , 2016 , 145, 150901	3.9	14 ⁰
80	Geometric phase effects in ultracold hydrogen exchange reaction. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2016 , 49, 194004	1.3	16
79	Full-dimensional quantum dynamics of rovibrationally inelastic scattering between CN and H. <i>Journal of Chemical Physics</i> , 2016 , 145, 224307	3.9	18

78	The geometric phase controls ultracold chemistry. <i>Nature Communications</i> , 2015 , 6, 7918	17.4	60
77	Mutual vibrational quenching in CO + H ₂ collisions. <i>Chemical Physics</i> , 2015 , 462, 71-78	2.3	10
76	Quantum dynamics of tunneling dominated reactions at low temperatures. <i>New Journal of Physics</i> , 2015 , 17, 055027	2.9	10
75	Ultracold chemistry with alkali-metal rare-earth molecules. <i>Physical Review A</i> , 2015 , 91,	2.6	28
74	Quantum dynamics of CO-H ₂ in full dimensionality. <i>Nature Communications</i> , 2015 , 6, 6629	17.4	46
73	QUANTUM CALCULATION OF INELASTIC CO COLLISIONS WITH H. II. PURE ROTATIONAL QUENCHING OF HIGH ROTATIONAL LEVELS. <i>Astrophysical Journal</i> , 2015 , 811, 27	4.7	15
72	Quantum scattering calculations for ro-vibrational de-excitation of CO by hydrogen atoms. <i>Journal of Chemical Physics</i> , 2015 , 142, 204303	3.9	7
71	Importance of Geometric Phase Effects in Ultracold Chemistry. <i>Journal of Physical Chemistry A</i> , 2015 , 119, 12291-303	2.8	17
70	Geometric Phase Appears in the Ultracold Hydrogen Exchange Reaction. <i>Physical Review Letters</i> , 2015 , 115, 153201	7.4	46
69	QUANTUM CALCULATION OF INELASTIC CO COLLISIONS WITH H. III. RATE COEFFICIENTS FOR RO-VIBRATIONAL TRANSITIONS. <i>Astrophysical Journal</i> , 2015 , 813, 96	4.7	5
68	Collisions and Reactions in Ultracold Gases 2015 , 241-260		
67	Quantum dynamics of O(1D)+D ₂ reaction: isotope and vibrational excitation effects. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2014 , 47, 135202	1.3	6
66	Quantum defect theory for cold chemistry with product-quantum-state resolution. <i>Physical Review A</i> , 2014 , 90,	2.6	12
65	Multichannel quantum defect theory for rovibrational transitions in ultracold molecule-molecule collisions. <i>Physical Review A</i> , 2014 , 90,	2.6	8
64	A full-dimensional quantum dynamical study of H ₂ +H ₂ collisions: coupled-states versus close-coupling formulation. <i>Journal of Chemical Physics</i> , 2014 , 140, 064308	3.9	9
63	QUANTUM CALCULATION OF INELASTIC CO COLLISIONS WITH H. I. ROTATIONAL QUENCHING OF LOW-LYING ROTATIONAL LEVELS. <i>Astrophysical Journal</i> , 2013 , 771, 49	4.7	33
62	Vibration-vibration and vibration-translation energy transfer in H ₂ -H ₂ collisions: a critical test of experiment with full-dimensional quantum dynamics. <i>Journal of Chemical Physics</i> , 2013 , 138, 104302	3.9	35
61	Ultracold collisions of O(1D) and H ₂ : the effects of H ₂ vibrational excitation on the production of vibrationally and rotationally excited OH. <i>Journal of Chemical Physics</i> , 2013 , 138, 164310	3.9	12

60	Chemical reaction versus vibrational quenching in low energy collisions of vibrationally excited OH with O. <i>Journal of Chemical Physics</i> , 2013 , 139, 194305	3.9	16
59	Quantum dynamics of the Cl+H ₂ reaction at ultracold temperatures#. <i>Journal of Chemical Sciences</i> , 2012 , 124, 311-316	1.8	6
58	ROVIBRATIONAL QUENCHING RATE COEFFICIENTS OF HD IN COLLISIONS WITH He. <i>Astrophysical Journal</i> , 2012 , 744, 62	4.7	15
57	Zero-energy resonances of hydrogen diatom isotopologs: tuning quasiresonant transitions in vibration space. <i>Physical Review Letters</i> , 2012 , 109, 233201	7.4	3
56	Quantum dynamics of rovibrational transitions in H ₂ -H ₂ collisions: internal energy and rotational angular momentum conservation effects. <i>Journal of Chemical Physics</i> , 2011 , 134, 214303	3.9	44
55	Ultracold collisions and reactions of vibrationally excited OH radicals with oxygen atoms. <i>Physical Chemistry Chemical Physics</i> , 2011 , 13, 19067-76	3.6	20
54	Full-dimensional quantum dynamics calculations of H(2)-H(2) collisions. <i>Journal of Chemical Physics</i> , 2011 , 134, 014301	3.9	34
53	ROTATIONAL QUENCHING OF CO DUE TO H ₂ COLLISIONS. <i>Astrophysical Journal</i> , 2010 , 718, 1062-1069	4.7	263
52	Complex scattering lengths for ultracold He collisions with rotationally excited linear and nonlinear molecules. <i>Physical Review A</i> , 2010 , 82,	2.6	5
51	Isotope effects in complex scattering lengths for He collisions with molecular hydrogen. <i>Physical Review A</i> , 2010 , 81,	2.6	10
50	Geometric and electronic structures of hydrogenated transition metal (Sc, Ti, Zr) clusters. <i>Physical Review B</i> , 2009 , 79,	3.3	23
49	Quantum calculations of H ₂ -H ₂ collisions: from ultracold to thermal energies. <i>Journal of Chemical Physics</i> , 2009 , 130, 114303	3.9	43
48	Hydrogen multicenter bonds and reversible hydrogen storage. <i>Journal of Chemical Physics</i> , 2009 , 130, 114301	3.9	23
47	Formation of molecular oxygen in ultracold O+OH collisions. <i>Physical Review A</i> , 2009 , 79,	2.6	30
46	Quantum dynamics of the O + OH → H + O ₂ reaction at low temperatures. <i>Journal of Chemical Physics</i> , 2008 , 129, 224309	3.9	34
45	Nature of hydrogen interaction and saturation on small titanium clusters. <i>Journal of Physical Chemistry A</i> , 2008 , 112, 2846-54	2.8	26
44	Cold and ultracold chemical reactions of F+HCl and F+DCl. <i>Journal of Chemical Physics</i> , 2008 , 128, 224304	3.9	34
43	Vibrational energy transfer in ultracold molecule-molecule collisions. <i>Physical Review A</i> , 2008 , 77,	2.6	47

42	Structural, energetic, and electronic properties of hydrogenated titanium clusters. <i>Journal of Chemical Physics</i> , 2008 , 128, 194714	3.9	19
41	Rotational Quenching Rate Coefficients for H ₂ in Collisions with H ₂ from 2 to 10,000 K. <i>Astrophysical Journal</i> , 2008 , 689, 1105-1111	4.7	24
40	Evolution of Small Ti Clusters and the Dissociative Chemisorption of H ₂ on Ti. <i>Journal of Physical Chemistry C</i> , 2007 , 111, 7494-7500	3.8	54
39	Low energy H+CO scattering revisited. <i>Astronomy and Astrophysics</i> , 2007 , 475, L15-L18	5.1	29
38	First principles study of small palladium cluster growth and isomerization. <i>International Journal of Quantum Chemistry</i> , 2007 , 107, 1632-1641	2.1	40
37	Computational study of hydrogen storage in organometallic compounds. <i>Journal of Chemical Physics</i> , 2007 , 126, 094703	3.9	85
36	Dynamics of the O(3P) + H ₂ reaction at low temperatures: comparison of quasiclassical trajectory with quantum scattering calculations. <i>Journal of Chemical Physics</i> , 2006 , 124, 74308	3.9	19
35	Dynamics of chemical reactions at cold and ultracold temperatures. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2006 , 39, S1215-S1227	1.3	8
34	Quenching of rotationally excited CO by collisions with H ₂ . <i>Journal of Chemical Physics</i> , 2006 , 124, 104304	3.9	14
33	Importance of long-range interactions in chemical reactions at cold and ultracold temperatures. <i>International Reviews in Physical Chemistry</i> , 2006 , 25, 283-311	7	83
32	State-to-state rotational transitions in H ₂ +H ₂ collisions at low temperatures. <i>Journal of Chemical Physics</i> , 2006 , 125, 114302	3.9	38
31	A close-coupling study of vibrational-rotational quenching of CO by collision with hydrogen atoms. <i>Journal of Chemical Physics</i> , 2005 , 123, 94308	3.9	8
30	Oxygen Chemistry in the Interstellar Medium: The Effect of Vibrational Excitation of H ₂ in the O(3P)+H ₂ Reaction. <i>Astrophysical Journal</i> , 2005 , 629, 305-310	4.7	25
29	Control of polarized iodine atom branching ratio in NaI photodissociation. <i>Physical Review A</i> , 2005 , 71,	2.6	17
28	Quantum dynamics of the Li + HF → H + LiF reaction at ultralow temperatures. <i>Journal of Chemical Physics</i> , 2005 , 122, 154309	3.9	35
27	Reactivity enhancement of ultracold O(3P)+H ₂ collisions by van der Waals interactions. <i>Journal of Chemical Physics</i> , 2005 , 123, 144308	3.9	14
26	Quantum mechanical investigation of rovibrational relaxation of H ₂ and D ₂ by collisions with Ar atoms. <i>Journal of Chemical Physics</i> , 2005 , 122, 024304	3.9	15
25	Heavy atom tunneling in chemical reactions: study of H + LiF collisions. <i>Journal of Chemical Physics</i> , 2005 , 122, 234310	3.9	22

24	Chemical reactions in the limit of zero kinetic energy: virtual states and Ramsauer minima in $F + H_2 \rightarrow HF + H$. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2004 , 37, 3641-3648	1.3	71
23	Isotope branching and tunneling in $O(3P) + HD \rightarrow OH + D$; $OD + H$ reactions. <i>Journal of Chemical Physics</i> , 2004 , 121, 11038-44	3.9	21
22	On the role of van der Waals interaction in chemical reactions at low temperatures. <i>Journal of Chemical Physics</i> , 2004 , 121, 5563-6	3.9	44
21	Quantum calculations of the $O(3P) + H_2 \rightarrow OH + H$ reaction. <i>Journal of Chemical Physics</i> , 2004 , 121, 6346-52	3.9	36
20	Chemical reactivity of ultracold polar molecules: investigation of $(\text{H}) + (\text{HCl})$ and $(\text{H}) + (\text{DCl})$ collisions. <i>European Physical Journal D</i> , 2004 , 31, 417-421	1.3	18
19	Quantum Scattering Calculations of the $H + O_2 \rightarrow O + OH$ Reaction. <i>Journal of Physical Chemistry A</i> , 2004 , 108, 8759-8764	2.8	25
18	On the role of vibrationally excited H_2 as a source of OH in the mesosphere. <i>Geophysical Research Letters</i> , 2004 , 31,	4.9	16
17	Nitric oxide production in collisions of hot $O(3P)$ atoms with N_2 . <i>Journal of Geophysical Research</i> , 2003 , 108,		7
16	On the Isotope Effect in $F + HD$ Reaction at Ultracold Temperatures. <i>Journal of Physical Chemistry A</i> , 2003 , 107, 7101-7105	2.8	35
15	Spin-flipping transitions in 2π molecules induced by collisions with structureless atoms. <i>Physical Review A</i> , 2003 , 67,	2.6	59
14	Quantum mechanical investigation of the $O + H_2 \rightarrow OH + H$ reaction. <i>Journal of Chemical Physics</i> , 2003 , 119, 195-199	3.9	32
13	The $He \cdots H(2\pi)$ interaction. II. Collisions at cold and ultracold temperatures. <i>Journal of Chemical Physics</i> , 2003 , 118, 7386	3.9	70
12	Chemistry of Hydrogen Fluoride in the Interstellar Medium. <i>Astrophysical Journal</i> , 2002 , 577, 795-797	4.7	29
11	Quantum-Mechanical Study of Rotational and Vibrational Transitions in CO Induced by H Atoms. <i>Astrophysical Journal</i> , 2002 , 568, 443-447	4.7	47
10	Ab initio quantum mechanical investigation of the photodissociation of HI and DI. <i>Chemical Physics Letters</i> , 2001 , 341, 594-600	2.5	25
9	Chemistry at ultracold temperatures. <i>Chemical Physics Letters</i> , 2001 , 341, 652-656	2.5	214
8	On the Quenching of Rovibrationally Excited Molecular Oxygen at Ultracold Temperatures. <i>Journal of Physical Chemistry A</i> , 2001 , 105, 2348-2351	2.8	35
7	Vibrational relaxation of CO by collisions with $4He$ at ultracold temperatures. <i>Journal of Chemical Physics</i> , 2000 , 113, 621-627	3.9	95

- 6 Vibrational relaxation of trapped molecules. *Physical Review A*, **1999**, 59, 2146-2152 2.6 46
- 5 Quasiresonant Energy Transfer in Ultracold Atom-Diatom Collisions. *Physical Review Letters*, **1999**, 82, 2657-2660 7.4 80
- 4 Quenching of H₂ Vibrations in Ultracold ³He and ⁴He Collisions. *Physical Review Letters*, **1998**, 80, 3224-3227 151
- 3 Time-dependent quantum mechanical approach to reactive scattering and related processes. *Physics Reports*, **1997**, 280, 79-144 27.7 220
- 2 Threshold phenomena in ultracold atom-molecule collisions. *Chemical Physics Letters*, **1997**, 280, 1-4 2.5 74
- 1 Complex scattering lengths in multi-channel atom-molecule collisions. *Chemical Physics Letters*, **1997**, 280, 5-9 2.5 108