

Naduvalath Balakrishnan

List of Publications by Year in descending order

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115
papers

4,200
citations

101543

36
h-index

128289

60
g-index

118
all docs

118
docs citations

118
times ranked

2202
citing authors

#	ARTICLE	IF	CITATIONS
1	On the use of stereodynamical effects to control cold chemical reactions: The H + D ₂ → D + HD case study. <i>Journal of Chemical Physics</i> , 2022, 156, 044305.	3.0	3
2	Role of Low Energy Resonances in the Stereodynamics of Cold He + D ₂ Collisions. <i>Journal of Physical Chemistry Letters</i> , 2022, 13, 4064-4072.	4.6	9
3	Stereodynamic control of cold rotationally inelastic CO + HD collisions. <i>Physical Chemistry Chemical Physics</i> , 2021, 23, 19364-19374.	2.8	8
4	Rainbow scattering in rotationally inelastic collisions of HCl and H ₂ . <i>Journal of Chemical Physics</i> , 2021, 154, 104304.	3.0	2
5	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.	4.4	4
6	Non-adiabatic quantum interference in the ultracold Li + LiNa → Li ₂ + Na reaction. <i>Physical Chemistry Chemical Physics</i> , 2021, 23, 5096-5112.	2.8	25
7	Full-Dimensional Potential Energy Surface for Rotationally Inelastic Scattering between H ₂ Molecules. <i>Journal of Chemical Theory and Computation</i> , 2021, 17, 6747-6756.	5.3	11
8	Stereodynamics of rotationally inelastic scattering in cold He + HD collisions. <i>Journal of Chemical Physics</i> , 2020, 153, 091101.	3.0	16
9	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.	4.6	9
10	Stereodynamics of ultracold rotationally inelastic collisions. <i>Journal of Chemical Physics</i> , 2020, 153, 184307.	3.0	8
11	Stereodynamic control of overlapping resonances in cold molecular collisions. <i>Physical Review Research</i> , 2020, 2, .	3.6	14
12	Machine learning corrected quantum dynamics calculations. <i>Physical Review Research</i> , 2020, 2, .	3.6	11
13	Stereodynamical Control of a Quantum Scattering Resonance in Cold Molecular Collisions. <i>Physical Review Letters</i> , 2019, 123, 043401.	7.8	32
14	Controlling rotational quenching rates in cold molecular collisions. <i>Journal of Chemical Physics</i> , 2019, 150, 164302.	3.0	19
15	Globally Accurate Full-Dimensional Potential Energy Surface for H ₂ + HCl Inelastic Scattering. <i>Journal of Physical Chemistry A</i> , 2019, 123, 6578-6586.	2.5	10
16	Geometric Phase Effects in Ultracold Chemical Reactions. <i>Atoms</i> , 2019, 7, 65.	1.6	3
17	Photon catalysis of deuterium iodide photodissociation. <i>Physical Chemistry Chemical Physics</i> , 2019, 21, 14195-14204.	2.8	9
18	Rotational quenching of HD induced by collisions with H ₂ molecules. <i>Monthly Notices of the Royal Astronomical Society</i> , 2019, 488, 381-386.	4.4	9

#	ARTICLE	IF	CITATIONS
19	Full-Dimensional Quantum Dynamics of SiO in Collision with H ₂ . Journal of Physical Chemistry A, 2018, 122, 1511-1520.	2.5	25
20	Fine-structure resolved rotational transitions and database for CN+H ₂ collisions. Molecular Astrophysics, 2018, 11, 23-32.	1.6	7
21	Inelastic vibrational dynamics of CS in collision with H ₂ using a full-dimensional potential energy surface. Physical Chemistry Chemical Physics, 2018, 20, 28425-28434.	2.8	9
22	Rotational Quenching of HD in Collisions with H ₂ : Resolving Discrepancies for Low-lying Rotational Transitions. Astrophysical Journal, 2018, 866, 95.	4.5	10
23	Collisional Quenching of Highly Excited H ₂ due to H ₂ Collisions. Astrophysical Journal, 2018, 862, 132.	4.5	17
24	Unraveling the Stereodynamics of Cold Controlled $HD \hat{\alpha}^2$ Collisions. Physical Review Letters, 2018, 121, 113401.	1.8	39
25	Geometric Phase and Interference Effects in Ultracold Chemical Reactions. Progress in Theoretical Chemistry and Physics, 2018, , 265-277.	0.2	0
26	Inelastic cross sections and rate coefficients for collisions between CO and H ₂ . Molecular Astrophysics, 2017, 6, 47-58.	1.6	6
27	Symmetry and the geometric phase in ultracold hydrogen-exchange reactions. Journal of Chemical Physics, 2017, 147, 074302.	3.0	13
28	Universality and chaoticity in ultracold K+KRb chemical reactions. Nature Communications, 2017, 8, 15897.	12.8	56
29	Long-lived complexes and signatures of chaos in ultracold K_2 + Rb collisions. Physical Review A, 2017, 96, .	2.5	28
30	Geometric phase effects in the ultracold $D + HD \rightarrow D + HD$ and $D + HD \rightarrow H + D_2$ reactions. New Journal of Physics, 2016, 18, 123020.	2.9	15
31	Full-dimensional quantum dynamics of CO in collision with H ₂ . Journal of Chemical Physics, 2016, 145, 034308.	3.0	32
32	Perspective: Ultracold molecules and the dawn of cold controlled chemistry. Journal of Chemical Physics, 2016, 145, 150901.	3.0	204
33	Geometric phase effects in ultracold hydrogen exchange reaction. Journal of Physics B: Atomic, Molecular and Optical Physics, 2016, 49, 194004.	1.5	19
34	Full-dimensional quantum dynamics of rovibrationally inelastic scattering between CN and H ₂ . Journal of Chemical Physics, 2016, 145, 224307.	3.0	26
35	Geometric phase effects in the ultracold H + H ₂ reaction. Journal of Chemical Physics, 2016, 145, 164303.	3.0	23
36	Geometric Phase Appears in the Ultracold Hydrogen Exchange Reaction. Physical Review Letters, 2015, 115, 153201.	7.8	52

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37	QUANTUM CALCULATION OF INELASTIC CO COLLISIONS WITH H. III. RATE COEFFICIENTS FOR RO-VIBRATIONAL TRANSITIONS. <i>Astrophysical Journal</i> , 2015, 813, 96.	4.5	12
38	Collisions and Reactions in Ultracold Gases. , 2015, , 241-260.		0
39	The geometric phase controls ultracold chemistry. <i>Nature Communications</i> , 2015, 6, 7918.	12.8	70
40	Mutual vibrational quenching in CO + H2 collisions. <i>Chemical Physics</i> , 2015, 462, 71-78.	1.9	11
41	Quantum dynamics of tunneling dominated reactions at low temperatures. <i>New Journal of Physics</i> , 2015, 17, 055027.	2.9	11
42	Ultracold chemistry with alkali-metal-rare-earth molecules. <i>Physical Review A</i> , 2015, 91, .	2.5	29
43	Quantum dynamics of CO-H2 in full dimensionality. <i>Nature Communications</i> , 2015, 6, 6629.	12.8	61
44	QUANTUM CALCULATION OF INELASTIC CO COLLISIONS WITH H. II. PURE ROTATIONAL QUENCHING OF HIGH ROTATIONAL LEVELS. <i>Astrophysical Journal</i> , 2015, 811, 27.	4.5	18
45	Quantum scattering calculations for ro-vibrational de-excitation of CO by hydrogen atoms. <i>Journal of Chemical Physics</i> , 2015, 142, 204303.	3.0	11
46	Importance of Geometric Phase Effects in Ultracold Chemistry. <i>Journal of Physical Chemistry A</i> , 2015, 119, 12291-12303.	2.5	18
47	Quantum dynamics of O(¹ D)+D ₂ reaction: isotope and vibrational excitation effects. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2014, 47, 135202.	1.5	6
48	Quantum defect theory for cold chemistry with product-quantum-state resolution. <i>Physical Review A</i> , 2014, 90, .	2.5	13
49	Multichannel quantum defect theory for rovibrational transitions in ultracold molecule-molecule collisions. <i>Physical Review A</i> , 2014, 90, .	2.5	8
50	A full-dimensional quantum dynamical study of H2+H2 collisions: Coupled-states versus close-coupling formulation. <i>Journal of Chemical Physics</i> , 2014, 140, 064308.	3.0	12
51	QUANTUM CALCULATION OF INELASTIC CO COLLISIONS WITH H. I. ROTATIONAL QUENCHING OF LOW-LYING ROTATIONAL LEVELS. <i>Astrophysical Journal</i> , 2013, 771, 49.	4.5	34
52	Vibration-vibration and vibration-translation energy transfer in H2-H2 collisions: A critical test of experiment with full-dimensional quantum dynamics. <i>Journal of Chemical Physics</i> , 2013, 138, 104302.	3.0	40
53	Ultracold collisions of O(1D) and H2: The effects of H2 vibrational excitation on the production of vibrationally and rotationally excited OH. <i>Journal of Chemical Physics</i> , 2013, 138, 164310.	3.0	12
54	Chemical reaction versus vibrational quenching in low energy collisions of vibrationally excited OH with O. <i>Journal of Chemical Physics</i> , 2013, 139, 194305.	3.0	16

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55	ROVIBRATIONAL QUENCHING RATE COEFFICIENTS OF HD IN COLLISIONS WITH He. <i>Astrophysical Journal</i> , 2012, 744, 62.	4.5	19
56	Zero-Energy Resonances of Hydrogen Diatom Isotopologs: Tuning Quasiresonant Transitions in Vibration Space. <i>Physical Review Letters</i> , 2012, 109, 233201.	7.8	3
57	Quantum dynamics of the Cl+H ₂ reaction at ultracold temperatures #. <i>Journal of Chemical Sciences</i> , 2012, 124, 311-316.	1.5	6
58	Ultracold collisions and reactions of vibrationally excited OH radicals with oxygen atoms. <i>Physical Chemistry Chemical Physics</i> , 2011, 13, 19067.	2.8	21
59	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.	3.0	51
60	Full-dimensional quantum dynamics calculations of H ₂ ↔H ₂ collisions. <i>Journal of Chemical Physics</i> , 2011, 134, 014301.	3.0	40
61	ROTATIONAL QUENCHING OF CO DUE TO H ₂ COLLISIONS. <i>Astrophysical Journal</i> , 2010, 718, 1062-1069.	4.5	299
62	Complex scattering lengths for ultracold He collisions with rotationally excited linear and nonlinear molecules. <i>Physical Review A</i> , 2010, 82, .	2.5	5
63	Isotope effects in complex scattering lengths for He collisions with molecular hydrogen. <i>Physical Review A</i> , 2010, 81, .	2.5	11
64	Geometric and electronic structures of hydrogenated transition metal (Sc, Ti, Zr) clusters. <i>Physical Review B</i> , 2009, 79, .	3.2	24
65	Quantum calculations of H ₂ ↔H ₂ collisions: From ultracold to thermal energies. <i>Journal of Chemical Physics</i> , 2009, 130, 114303.	3.0	54
66	Hydrogen multicenter bonds and reversible hydrogen storage. <i>Journal of Chemical Physics</i> , 2009, 130, 114301.	3.0	23
67	Formation of molecular oxygen in ultracold $O + O \rightarrow O_2$ collisions. <i>Physical Review A</i> , 2009, 79, .	2.5	30
68	Inelastic Collisions and Chemical Reactions of Molecules at Ultracold Temperatures. , 2009, , .		0
69	COLLISIONS AND REACTIONS IN ULTRACOLD GASES. , 2009, , .		0
70	Quantum dynamics of the O+OH→H+O ₂ reaction at low temperatures. <i>Journal of Chemical Physics</i> , 2008, 129, 224309.	3.0	36
71	Nature of Hydrogen Interaction and Saturation on Small Titanium Clusters. <i>Journal of Physical Chemistry A</i> , 2008, 112, 2846-2854.	2.5	28
72	Cold and ultracold chemical reactions of F+HCl and F+DCl. <i>Journal of Chemical Physics</i> , 2008, 128, 224304.	3.0	36

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73	Vibrational energy transfer in ultracold molecule-molecule collisions. <i>Physical Review A</i> , 2008, 77, .	2.5	51
74	Structural, energetic, and electronic properties of hydrogenated titanium clusters. <i>Journal of Chemical Physics</i> , 2008, 128, 194714.	3.0	22
75	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.	4.5	28
76	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.	3.1	59
77	Low energy $H+CO$ scattering revisited. <i>Astronomy and Astrophysics</i> , 2007, 475, L15-L18.	5.1	30
78	First principles study of small palladium cluster growth and isomerization. <i>International Journal of Quantum Chemistry</i> , 2007, 107, 1632-1641.	2.0	45
79	Computational study of hydrogen storage in organometallic compounds. <i>Journal of Chemical Physics</i> , 2007, 126, 094703.	3.0	89
80	Quenching of rotationally excited CO by collisions with H_2 . <i>Journal of Chemical Physics</i> , 2006, 124, 104304.	3.0	16
81	Importance of long-range interactions in chemical reactions at cold and ultracold temperatures. <i>International Reviews in Physical Chemistry</i> , 2006, 25, 283-311.	2.3	89
82	State-to-state rotational transitions in H_2+H_2 collisions at low temperatures. <i>Journal of Chemical Physics</i> , 2006, 125, 114302.	3.0	47
83	Dynamics of the $O(P_3)+H_2$ reaction at low temperatures: Comparison of quasiclassical trajectory with quantum scattering calculations. <i>Journal of Chemical Physics</i> , 2006, 124, 074308.	3.0	24
84	Dynamics of chemical reactions at cold and ultracold temperatures. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2006, 39, S1215-S1227.	1.5	8
85	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.	4.5	27
86	Control of polarized iodine atom branching ratio in N_2 photodissociation. <i>Physical Review A</i> , 2005, 71, .	2.5	18
87	Quantum dynamics of the $Li+HF \rightarrow LiF+H$ reaction at ultralow temperatures. <i>Journal of Chemical Physics</i> , 2005, 122, 154309.	3.0	38
88	Reactivity enhancement of ultracold $O(P_3)+H_2$ collisions by van der Waals interactions. <i>Journal of Chemical Physics</i> , 2005, 123, 144308.	3.0	15
89	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.	3.0	17
90	Heavy atom tunneling in chemical reactions: Study of $H+LiF$ collisions. <i>Journal of Chemical Physics</i> , 2005, 122, 234310.	3.0	24

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91	A close-coupling study of vibrational-rotational quenching of CO by collision with hydrogen atoms. Journal of Chemical Physics, 2005, 123, 094308.	3.0	9
92	Chemical reactions in the limit of zero kinetic energy: virtual states and Ramsauer minima in F + H ₂ → HF + H. Journal of Physics B: Atomic, Molecular and Optical Physics, 2004, 37, 3641-3648.	1.5	75
93	Isotope branching and tunneling in O(³ P)+HD → OH+D; OD+H reactions. Journal of Chemical Physics, 2004, 121, 11038.	3.0	21
94	On the role of van der Waals interaction in chemical reactions at low temperatures. Journal of Chemical Physics, 2004, 121, 5563-5566.	3.0	48
95	Quantum calculations of the O(3P)+H ₂ → OH+H reaction. Journal of Chemical Physics, 2004, 121, 6346-6352.	3.0	38
96	Chemical reactivity of ultracold polar molecules: investigation of {m H} + {m HCl} and {m H} + {m DCl} collisions. European Physical Journal D, 2004, 31, 417-421.	1.3	20
97	Quantum Scattering Calculations of the H + O ₂ → O + OH Reaction. Journal of Physical Chemistry A, 2004, 108, 8759-8764.	2.5	26
98	On the role of vibrationally excited H ₂ as a source of OH in the mesosphere. Geophysical Research Letters, 2004, 31, .	4.0	16
99	Nitric oxide production in collisions of hot O(3P) atoms with N ₂ . Journal of Geophysical Research, 2003, 108, .	3.3	9
100	On the Isotope Effect in F + HD Reaction at Ultracold Temperatures. Journal of Physical Chemistry A, 2003, 107, 7101-7105.	2.5	37
101	Spin-flipping transitions in Σ molecules induced by collisions with structureless atoms. Physical Review A, 2003, 67, .	2.5	65
102	Quantum mechanical investigation of the O+H ₂ → OH+H reaction. Journal of Chemical Physics, 2003, 119, 195-199.	3.0	39
103	The He ← CaH(² Σ ⁺) interaction. II. Collisions at cold and ultracold temperatures. Journal of Chemical Physics, 2003, 118, 7386.	3.0	75
104	Chemistry of Hydrogen Fluoride in the Interstellar Medium. Astrophysical Journal, 2002, 577, 795-797.	4.5	33
105	Quantum Mechanical Study of Rotational and Vibrational Transitions in CO Induced by H Atoms. Astrophysical Journal, 2002, 568, 443-447.	4.5	50
106	On the Quenching of Rovibrationally Excited Molecular Oxygen at Ultracold Temperatures. Journal of Physical Chemistry A, 2001, 105, 2348-2351.	2.5	38
107	Ab initio quantum mechanical investigation of the photodissociation of HI and DI. Chemical Physics Letters, 2001, 341, 594-600.	2.6	26
108	Chemistry at ultracold temperatures. Chemical Physics Letters, 2001, 341, 652-656.	2.6	229

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109	Vibrational relaxation of CO by collisions with 4He at ultracold temperatures. Journal of Chemical Physics, 2000, 113, 621-627.	3.0	101
110	Vibrational relaxation of trapped molecules. Physical Review A, 1999, 59, 2146-2152.	2.5	53
111	Quasiresonant Energy Transfer in Ultracold Atom-Diatom Collisions. Physical Review Letters, 1999, 82, 2657-2660.	7.8	83
112	Quenching of H ₂ Vibrations in Ultracold ³ He and ⁴ He Collisions. Physical Review Letters, 1998, 80, 3224-3227.	7.8	157
113	Time-dependent quantum mechanical approach to reactive scattering and related processes. Physics Reports, 1997, 280, 79-144.	25.6	236
114	Threshold phenomena in ultracold atom-molecule collisions. Chemical Physics Letters, 1997, 280, 1-4.	2.6	79
115	Complex scattering lengths in multi-channel atom-molecule collisions. Chemical Physics Letters, 1997, 280, 5-9.	2.6	123