

Department of Physics,
University of Central Florida,
4000 Central Florida Blvd.
Orlando, FL 32816-2385
Phone: 407-823-5145
e-mail: Viatcheslav.Kokoouline@ucf.edu
<http://www.physics.ucf.edu/~slavako/>



Viatcheslav Kokoouline

Education and Experience

- *May 2015 – present time:* Department of Physics, University of Central Florida, Orlando, FL;
Professor
- *Aug. 2009 – May 2015:* Department of Physics, University of Central Florida, Orlando, FL;
Associate Professor
- *Aug. 2003 – Aug. 2009:* Department of Physics, University of Central Florida, Orlando, FL;
Assistant Professor
- *Sept. 2000 – Aug. 2003:* JILA, Department of Physics, University of Colorado, Boulder, CO.
*Research associate; Atomic, molecular and optical theory group of **C. H. Greene***
- *Dec. 1999 – Sept. 2000:* Fritz Haber Research Center for Molecular Dynamics, Hebrew University, Jerusalem, Israel;
*Postdoctoral position in the chemical physics group of **R. Kosloff**.*
- *Oct. 1996 – Dec. 1999:* Université de Paris-Sud XI, Laboratoire Aimé Cotton, France and St.-Petersburg State University, Institute of Physics, Russia. Supervisor - **F. Masnou-Seeuws**, (co-supervisor: **V. Ostrovsky**).
Ph.D. degree - a thesis en cotutelle (two Ph.D. degrees, one at Université de Paris-Sud XI, the second one at St.-Petersburg State University), thesis defended with the très honorable mention.
- *1989-1996:* – St.-Petersburg State University, Faculty of Physics, Department of Quantum Mechanics. Supervisor: **P. Braun**. Subject of the master thesis – *Chaotic behavior of a Rydberg atom in crossed magnetic and electric fields*. St.-Petersburg, Russia. *Master degree in physics.*

Languages spoken: English, French, Russian.

Professional recognition

- **Fellow of the American Physical Society (APS)** since November 2013. Only 0.5% of APS members have been elected as APS Fellows.
- Member of the Coordinated Research Project of the International Atomic Energy Agency (IAEA, Vienna). Providing expertise on AMO processes at low energies relevant to the ongoing construction of the ITER thermonuclear reactor (tokamak). The US is one of the seven international partners of the ITER project (see www.iter.org).
- Member of the expertise team for the development of database on electron-molecule processes to support the [KSTAR](#) tokamak in South Korea.
- I'm also collaborating and providing an expertise for the project **eMOL**, which is also supported by IAEA. **eMOL** is a project to develop methodology for analyzing, validating, and recommending electron-molecule data sets for plasma models in planetary science, interstellar medium, and for technologies, such as in plasma etching or nuclear fusion devices.
- Peer reviewer for a number of professional journals and funding agencies (see below).

Sponsored Research/Awards

- *“Formation and destruction of molecular ions in collisions with electrons in the interstellar medium”* PI: V. Kokoouline, National Science Foundation; Grant #PHY-15-06391; Date Begun: September, 2015; Expires: August, 2018.
- *“Formation of polyatomic molecules at low energies: three-body recombination, radiative association, and photoassociation”* PI: V. Kokoouline, National Science Foundation; Grant # PHY-1068785; Date Begun: September, 2011; Expires: August, 2015 .
- *“Potential energy surfaces and cross sections for processes of neutralization of the H^+ , HeH^+ , He_2^+ , and H_3^+ ions in collisions with electrons, H^- , and bulk beryllium”* PI: V. Kokoouline, The International Atomic Energy Agency (IAEA); Date Begun: May 5, 2011; Duration: 3 years. It is a part of the IAEA Coordinated Research Project “Atomic and Molecular Data for State-Resolved Modeling of Hydrogen and Helium and their Isotopes in Fusion Plasma”.
- *“Three-body recombination at thermal energies”* PI: Viatcheslav Kokoouline, National Science Foundation; Grant # PHY-0855622; Date Begun: September 1, 2009; Expired: January 31, 2012.
- *“ITR: Collaborative Research: [ASE]-[SIM]: Dissociative Recombination of Astrophysically Important Polyatomic Molecules”* PI: V. Kokoouline; National Science Foundation; Grant # PHY-0427460; Date Begun: September 1, 2004. Expired: August 31, 2009.

- “Three-Body Processes in Degenerate Quantum Gases: Role and Lifetimes of Three-Body Resonances”: The ACS Petroleum Research Fund, American Chemical Society; Grant # PRF42313-G6; Date Begun: August 1 2005; Expired: July 31, 2008.
- “Collaborative grant: Theory of quantum control with cold molecules” PIs: Olivier Dulieu (CNRS, Centre National de Recherche Scientifique) and V. Kokoouline; Agency: Thematic Networks for Advanced Research (RTRA), French Government <http://www.nanomicro.recherche.gouv.fr/us/rtra.html>; Date Begun: June 2008; Expired in December January 2013.

Graduate students/Postdoctoral associates

Present advises

Chi Hong Yuen (graduate) and Marjan Khamesian (graduate)

Ph.D. theses defended

1. Samantha Santos, “*Theoretical and Computational Studies of Dissociative Recombination of H_3^+ with Low Kinetic Energy Electrons: Time-Independent and Time-Dependent Approach*” defended the Ph.D. thesis on March 13, 2009; Currently at the University of California, Davis, CA
2. Juan Bandon, “*Theoretical study of few-body processes in ultra-cold gases*” defended the Ph.D. thesis on March 25, 2009; Currently at the Angelo State University, TX
3. Nicolas Douguet, “*Symmetry in the dissociative recombination of polyatomic ions and in ultra-cold few body collisions*”; defended on November 15, 2010; Currently at the University of California, Davis, CA

Past Advisees

Undergraduate: Michael Parish, Alex Greutman, Steven Davis, Will Richardson, and others

M.S.: Nicolas Douguet (UCF and Université de Paris XI), Summer 2006

M.S. Jeremy Sadoudi (Université de Paris XI), Summer 2007

M.S. Elie Assemat (Université de Paris XI), Summer 2009

M.S.: Juan Bandon (UCF), 2004-2006, Fatholah Salehi (graduate)

Ph.D.: Samantha Santos (UCF), 2004-2009.

Ph.D.: Juan Bandon (UCF), 2006-2009

Ph.D.: Nicolas Douguet (UCF), 2007-2010

Postdoctoral: Ivan Mikhailov (UCF), February 2005- August 2006

Master thesis defended

Juan Bandon, “*Theoretical study of few-body processes in ultra-cold gases*” – the master thesis defended in July 2006. Juan has been awarded with the McKnight Doctoral Fellowship by the Florida Education Fund on August 11, 2006. The fellowship is for four years.

High-school student:

Kristen Zych (Lake Brantley High School in Seminole County). She has prepared a research project for the Florida State Science Fair and was awarded with the second prize for the project.

Other Ph.D thesis committees served

Charles Schambeau (advisor: Y. Fernandez– UCF Physics)

Emily Kramer (advisor: Y. Fernandez– UCF Physics)

Chang-Ching Tsai (advisor: B.Ya. Zel'dovich– UCF School of Optics, CREOL)

Hakob Sarkissian (advisor: B.Ya. Zel'dovich – UCF School of Optics, CREOL)

Sergio Tafur (advisor: A. Masunov – UCF NanoScience Technology Center)

Emily Kramer (advisor: J. Colwell – UCF Physics)
Sergiy Mokhov (advisor: B.Ya. Zel'dovich– UCF School of Optics, CREOL)

Collaboration

Long-term visits:

May-August 2005: *Poste rouge du CNRS* at the Laboratoire Aimé Cotton, University of Paris XI, Orsay, France.

June 2008-August 2008; May2009- August 2010; May 2011- August 2011; May- July 2012 – *Chair Junior d'Excellence* (Visiting Professor) of RTRA network (RTRA - Thematic Networks for Advanced Research), University of Paris XI, Orsay, France.

May 2014- July 2014 – Invited professor at the University of Reims, Champagne-Ardenne, France. Supported by the regional government of the Champagne-Ardenne region.

Teaching and service

Regular classes

Wave Mechanics I (PHY-4604)	Fall 10, 11, 12
Wave Mechanics II (PHY-4605)	Spring 11, 12, 13
Graduate Quantum Mechanics I (PHY-5606)	Fall 03, 04, 05
Graduate Quantum Mechanics II (PHY-6624)	Spring 04, 05, 06
Physics for scientists and engineers (PHY-2049H)	Fall 06, 07
Physics for scientists and engineers (PHY-2048H)	Fall 15
Lasers (PHY 4445)	Spring 15
Mathematical methods for scientists: (PHY-3113)	Spring 07, 08, 09
Modern Physics (PHY-3101)	Fall 13, Spring 14
Optics (PHY-4424)	Spring 14,16
Atomic Physics (PHZ-6234)	Fall 08
The graduate course of theoretical molecular physics at low temperatures at “Ecole de Physique” at Les Houches, France	Fall 09 (one week in October 09)
Graduate course (in French) “Cold and ultra-cold chemistry in the laboratory and astrophysical environment”, University of Paris XI, Orsay, France	Spring 10

Recitations

College Physics I (PHY2053) mini-studio	Fall 10, 11, Spring 13
College Physics II (PHY2054) mini-studio	Fall 12, Spring 12
Physics for scientists and engineers(PHY2048)	Spring 11

Thesis, directed research, etc.

Independent study (PHY3905)	Summer 13
Independent study (PHY6908)	Fall 07, 08,12, Spring 05,07, 08, Summer 08

Independent study (PHY4906)	Summer 12
Research (PHY4912)	Fall 11,13, Spring 12, Summer 13
Honors Directed Reading I (PHY4903H)	Fall 12, Spring 13
Honors undergraduate thesis (PHY4970H)	Spring 13
Directed research (PHY6918)	Fall 05,13, Spring 07,12,13,14, Summer 14
Dissertation (PHY7980)	Summer 08,09,10, Fall 07,08,10, Spring 05,07,08,09,10,
Thesis (PHY6971)	Fall 07,05, Spring 06
Part of the graduate research seminar (PHY-6964)	Summer 04, 05, 06, 07

Service

UCF:

Chair of the graduate recruitment committee 2011-present.

Graduate recruitment committee 2008-present.

Graduate affair committee 2011-present.

Chair of the colloquium committee 2004-2008.

Colloquium committee since 2003-2008

Candidacy Exam committee during 2003-2007.

Outside:

Referring articles for

Physics Review Letters, Physical Review A, Journal of Molecular Spectroscopy, Europhysics Letters, Chemical Physics Letters, Journal of Physics B: Atomic, Molecular and Optical Physics.

Proposal reviewing:

US Department of Energy, National Science Foundation, CRDF, Premier's Discovery Awards (Canada), NASA, CNRS (France)

Other (providing expertise):

Member of the Coordinated Research Project of the International Atomic Energy Agency (UN, Vienna) Providing expertise on AMO processes at low energies (<10 eV) relevant to the ongoing construction of the ITER tokamak. The US is one of the seven international partners of the ITER project (see www.iter.org).

Professional membership

American Physical Society

Royal Chemical Society

Conference organization

I was one of organizers of two workshops *Opportunities and challenges for theoretical molecular physics in fundamental and applied science* held in December 2009 and 2010 in Orsay, France and an ITAMP workshop [Theory of Electron-Molecule Collisions for Astrophysics, Biophysics and Low Temperature Plasmas](#) in December 2012 at the Institute for Theoretical Atomic, Molecular, and Optical Physics (ITAMP) at the Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA.

Publications

Referred journals

According to webofknowledge.com the **citation index** is 1340 and **h-index** is 18, according to google.scholar.com, these numbers are **1940** and **21** respectively.

- 63) J.P. Wiens, J. C. Sawyer, T. M. Miller, N. S. Shuman, A. A. Viggiano, M. Khamesian, V. Kokoouline, and I.I. Fabrikant
Electron attachment to the interhalogen compounds ClF, ICl, and IBr.
Phys. Rev. A 93, 032706 (2016) [DOI:http://dx.doi.org/10.1103/PhysRevA.93.032706](https://doi.org/10.1103/PhysRevA.93.032706)
- 65) H.-K. Chung, B. J. Braams, K. Bartschat, A. G. Csaszar, G. W. F. Drake, T. Kirchner, V. Kokoouline, and J. Tennyson
Uncertainty Estimates for Theoretical Atomic and Molecular Data (Review)
Accepted for publication in J. Phys. D [27pp]. <http://arxiv.org/abs/1603.05923>
- 62) N. Douguet, E. Assemat, and V. Kokoouline
Complete symmetry characterization in collisions involving four identical atoms.
Submitted to Europ.J.Phys.D
- 61) M. Khamesian, N. Douguet, S. Fonseca dos Santos, O. Dulieu, M. Raoult, and V. Kokoouline
Study of the radiative electron attachment and photodetachment process of C₂H/C₂H⁻ and C₂H/C₂H⁻ molecules
Submitted to Europ.J.Phys.D
- 60) M. Khamesian, N. Douguet, S. Fonseca dos Santos, O. Dulieu, M. Raoult, W. J. Brigg, and V. Kokoouline
Formation of CN, C₃N⁻, and C₅N⁻ molecules by radiative electron attachment and their destruction by photodetachment
Submitted to Phys. Rev. Lett.
- 59) D. Lapierre, V. Kokoouline, A. Alijah, and V. Tyuterev
Lifetimes of ozone metastable states above the dissociation threshold: impact on the dynamics.
Submitted
- 58) A. Alijah and V. Kokoouline
Vibrational states of the triplet electronic state of H₃⁺. The role of non-adiabatic coupling and geometrical phase.
Chem. Phys. **460**, 43 (2015) [doi:10.1016/j.chemphys.2015.04.020](https://doi.org/10.1016/j.chemphys.2015.04.020)
- 57) N. Douguet, S. Fonseca dos Santos, M. Raoult, O. Dulieu, A.E. Orel, and V. Kokoouline
Theoretical study of radiative electron attachment to CN, C₂H, and C₄H molecules
J. Chem. Phys. 142, 234309 (2015) <http://dx.doi.org/10.1063/1.4922691>

- 56) N. Douguet, S. Fonseca dos Santos, V. Kokoouline, and A.E. Orel
Simplified model to describe the dissociative recombination of linear polyatomic ions of astrophysical interest
[EPJ Web of Conferences 84, 07003 \(2015\)](#), <http://dx.doi.org/10.1051/epjconf/20158407003>
- 55) N. Douguet, V. Kokoouline, and A.E. Orel
Photodetachment cross sections of the $C_{2n}H^{\cdot-}$ ($n = 1-3$) hydrocarbon chain anions
[Phys. Rev. A 90, 063410 \(2014\)](#) <http://dx.doi.org/10.1103/PhysRevA.90.063410>
- 54) M.-Y. Song, J. S. Yoon, H. Cho, Y. Itikawa, G. Karwasz, V. Kokoouline, Y. Nakamura, J. Tennyson
Cross sections for electron collisions with methane
J. Phys. Chem. Ref. Data **44**, 023101 (2015); [doi: 10.1063/1.4918630](https://doi.org/10.1063/1.4918630)
- 53) S. Fonseca dos Santos, N. Douguet, V. Kokoouline, and A.E. Orel
Scattering matrix approach to the dissociative recombination of N_2H^+ and HCO^+
[J. Chem. Phys. 140, 164308 \(2014\)](#)
- 52) N. Douguet, S. Fonseca dos Santos, M. Raoult, O. Dulieu, A.E. Orel, and V. Kokoouline
Theory of radiative electron attachment to molecules: Benchmark study of CN^-
[Phys. Rev. A 88, 052710 \(2013\)](#). This article was selected by the Editorial Board of the Physical Review as an **Editors' Suggestion**.
- 51) V. Kokoouline, A. Wearne, R. Lefebvre, and O. Atabek
Laser-controlled rotational cooling of Na_2 based on exceptional points
[Phys. Rev. A 88, 033408 \(2013\)](#), [doi:10.1103/PhysRevA.88.033408](https://doi.org/10.1103/PhysRevA.88.033408)
- 50) N. Douguet, A.E. Orel, and V. Kokoouline
Breaking a tetrahedral molecular ion with electrons: Study of NH_4^+
J. Phys. B: At. Mol. Opt. Phys. **45**, 051001 [6pp] (2012) [doi:10.1088/0953-4075/45/5/051001](https://doi.org/10.1088/0953-4075/45/5/051001) **iopselect**
and this article is selected by the Editorial Board of J. Phys. B as a **Highlight of the year**
- 49) M. Ayouz, I. Mikhailov, D. Babikov, M. Raoult, S. Galtier, O. Dulieu, V. Kokoouline
Potential energy and dipole moment surfaces of HCO^+ for the search of H^+ in the interstellar medium
[J. Chem. Phys. 136, 224310 \[9pp\] \(2012\)](#); [doi: 10.1063/1.4724096](https://doi.org/10.1063/1.4724096)
- 48) N. Douguet, A.E. Orel, C.H. Greene, and V. Kokoouline
Theory of dissociative recombination of highly-symmetric polyatomic ions
[Phys. Rev. Lett. 108, 023202 \[5pp\], 2012](#) [doi:10.1103/PhysRevLett.108.023202](https://doi.org/10.1103/PhysRevLett.108.023202)
- 47) V. Kokoouline, N. Douguet, and C.H. Greene
Breaking bonds with electrons: Dissociative recombination of molecular ions
[Chem. Phys. Lett. 507, 1 \[10pp\] \(2011\)](#)

- 46) A. Petrigani, S. Altevogt, M. H. Berg, D. Bing, M. Grieser, J. Hoffmann, B. Jordon-Thaden, C. Krantz, M. B. Mendes, O. Novotny, S. Novotny, D. A. Orlov, R. Repnow, T. Sorg, J. Stützel, A. Wolf, H. Buhr, H. Kreckel, V. Kokoouline, C. H. Greene
Resonant structure of low-energy H_3^+ dissociative recombination
[Phys. Rev. A **83**, 032711 \[10pp\] \(2011\)](#)
- 45) N. Douguet, I. Mikhailov, A. Orel, I. Schneider, C.H. Greene, V. Kokoouline
The role of the Jahn-Teller coupling in dissociative recombination of H_3O^+ and H_3^+ ions
[J. Phys.: Conf. Series **300**, 012015 \[13pp\] \(2011\)](#)
- 44) M. Lepers, O. Dulieu, V. Kokoouline
Photoassociation of a cold atom-molecule pair II: long-range dispersion interaction
[Phys Rev. A **83**, 042707 \[10pp\] \(2011\)](#)
- 43) O. Atabek, R. Lefebvre, M. Lepers, A. Jaouadi, O. Dulieu, and V. Kokoouline
Proposal for a laser control of vibrational cooling in Na_2 using resonance coalescence
[Phys. Rev. Lett. **106**, 173002 \[4pp\] \(2011\)](#)
- 42) M. Ayouz, R. Lopez, M. Raoult, J. Robert, O. Dulieu, V. Kokoouline
Formation of the simplest stable negative molecular ion H_3^- in interstellar medium
[Phys. Rev. A. **83**, 052712 \[8pp\] \(2011\)](#)
- 41) M. Lepers, O. Dulieu, V. Kokoouline
Photoassociation of a cold atom-molecule pair: long-range quadrupole-quadrupole interactions
[Phys. Rev. A **82**, 042711 \[8pp\] \(2010\)](#)
- 40) T.J. Glosík, R. Plašil, T.Kotrík, P. Dohnal, J. Varju, M. Hejduk, I. Korolov, Š. Roučka, V. Kokoouline
Binary and ternary recombination of H_3^+ and D_3^+ ions with electrons in low temperature plasma
[Molec. Phys. **108**, 2253 \[12pp\] \(2010\)](#) **Invited article**
- 39) T. Kotrik, P. Dohnal, I. Korolov, R. Plasil, Š. Roučka, J. Glosik, C.H. Greene, V. Kokoouline
Temperature dependence of binary and ternary recombination of D_3^+ ions with electrons
[J. Chem. Phys. **133**, 034305 \[8pp\] \(2010\)](#)
- 38) M. Ayouz, O. Dulieu, R. Guerout, J. Robert, V. Kokoouline
Potential energy and dipole moment surfaces of H_3^- molecule
[J. Chem. Phys. **132**, 194309 \[11pp\] \(2010\)](#)
- 37) V. Kokoouline, A. Faure, J. Tennyson, and C.H Greene
Calculation of rate constants for vibrational and rotational excitation of the H_3^+ ion by electron impact
[Mon. Not. R. Astron. Soc. **405**, 1195 \[8pp\] \(2010\)](#)
- 36) N. Douguet, V. Kokoouline, and C.H. Greene
Theory of dissociative recombination of a linear triatomic ion with permanent electric dipole

- moment: Study of HCO⁺**
[Phys. Rev. A **80**, 062712 \[6pp\] \(2009\)](#)
- 35) J. Glosik, I. Korolov, R. Plasil, T. Kotrik, P. Dohnal, O. Novotny, J. Varju, C.H. Greene, V. Kokoouline
Binary and ternary recombination of D₃⁺ ions with electrons in He-D₂ plasma
[Phys. Rev. A **80**, 042706 \[7pp\] \(2009\)](#)
- 34) V. Kokoouline, R. Čurík, and C. H. Greene
Non-adiabatic effects in dissociative recombination of molecular ions.
[J. Phys. Conf. Ser. **192**, 012017 \[13pp\], \(2009\)](#)
- 33) A. Faure, J. Tennyson, V. Kokoouline and C.H Greene
Rotational excitation of interstellar molecular ions by electrons.
[J. Phys. Conf. Ser. **192**, 012016 \[6pp\], \(2009\)](#)
- 32) J. Glosik, R. Plasil, I. Korolov, T. Kotrik, P. Dohnal, O. Novotny, P. Hlavenka, J. Varju, V. Kokoouline, C.H. Greene
Temperature dependence of binary and ternary recombination of H₃⁺ ions with electron
[Phys. Rev. A **79**, 052707 \[12pp\] \(2009\)](#)
- 31) J. Blandon and V. Kokoouline
Geometrical phase driven predissociation: Lifetimes of 2²A' levels of H₃
[Phys. Rev. Lett. **102**, 143002 \[4pp\] \(2009\)](#)
- 30) L. Pagani, C. Vastel, E. Hugo, V. Kokoouline, C. H. Greene, E. Bayet, A. Bacmann, S. Schlemmer, C. Ceccarelli
Chemical modeling of L183 (=L134N): an estimate of the ortho/para H₂ ratio
[Astronomy & Astrophysics **494**, 623 \[22pp\] \(2009\)](#)
- 29) N. Douguet, V. Kokoouline, and C.H. Greene
Theoretical rate of dissociative recombination of HCO⁺ and DCO⁺ ions.
[Phys. Rev. A **77**, 064703 \(2008\)](#)
- 28) N. Douguet, J. Blandon, and V. Kokoouline
Correlation diagrams in collisions of three identical particles.
[J. Phys. B: At. Mol. Opt. Phys. **41**, 045202 \(2008\)](#)
- 27) J. Glosik, I. Korolov, R. Plasil, O. Novotny, T. Kotrik, P. Hlavenka, J. Varju, I.A.Mikhailov, V. Kokoouline, and C. H. Greene
Recombination of H₃⁺ ions in the Afterglow of a He-Ar-H₂ Plasma.
[J. Phys. B: At. Mol. Opt. Phys. **41**, 191001 \(2008\)](#)
- 26) S. Fonseca dos Santos, C.H. Greene, and V. Kokoouline
Dissociative recombination of H₃⁺ in the ground and excited vibrational states.
[J. Chem. Phys. **127**, 124309 \[8pp\] \(2007\)](#)

- 25) J. Blandon, V. Kokoouline, and F. Masnou-Seeuws
Method for finding of three-body resonances using hyperspherical coordinates and slow variable representation.
[Phys. Rev. A **75**, 042508 \(2007\)](#)
- 24) **Near threshold rotational excitation of molecular ions by electron-impact.**
A. Faure, V. Kokoouline, C. H. Greene and J. Tennyson
[J. Phys. B: At. Mol. Opt. Phys. **39**, 4261 \(2006\)](#)
- 23) I.A. Mikhailov, V. Kokoouline, A. Larson, S. Tonzani, C.H. Greene
Renner-Teller effects in HCO⁺ dissociative recombination.
[Phys Rev. A **74** 032707 \(2006\)](#)
- 22) C.H. Greene and V. Kokoouline
Theoretical progress and challenges in H₃⁺ dissociative recombination.
[Phil. Trans. R. Soc. A **364**, 2965 \(16pp\) \(2006\)](#)
- 21) V. Kokoouline and F. Masnou-Seeuws
Calculation of loosely bound levels for three-body quantum systems using hyperspherical coordinates with a mapping procedure.
[Phys. Rev. A **73**, 012702 \(2006\)](#)
- 20) V. Kokoouline and C. H. Greene
Theoretical study of dissociative recombination of C_{2v} triatomic ions: application to H₂D⁺ and D₂H⁺.
[Phys. Rev. A **72**, 022712 \(2005\)](#)
- 19) V. Kokoouline and C. H. Greene
Theoretical study of the H₃⁺ ion dissociative recombination process.
[J. Phys. Conf. Ser. **4**,74 \(2005\)](#)
- 18) V. Kokoouline and C. H. Greene
Triatomic dissociative recombination theory: Jahn-Teller coupling among infinitely many Born-Oppenheimer surfaces.
[Faraday Discussion **127**, 413 \(2004\)](#)
- 17) V. Kokoouline and C.H. Greene
Dissociative recombination of polyatomic molecules: a new mechanism.
[Physica Scripta **T110**, 178 \(2004\)](#)
- 16) V. Kokoouline and C.H. Greene
Photofragmentation of the H₃ molecule, including Jahn-Teller coupling effects.
[Phys. Rev. A **69**, 032711 \(2004\)](#)

- 15) B. Borca, J. W. Dunn, V. Kokoouline, and C. H. Greene
An atom-molecule laser fed by stimulated three-body recombination.
[Phys. Rev. Lett. 91, 070404 \(2003\)](#)
- 14) P. Cacciani, V. Kokoouline, N. Bouloufa, F. Masnou-Seeuws, and R. Vetter
Predissociation in the B $^1\Pi_u$ state of $^6\text{Li}^7\text{Li}$: Accidental perturbations beyond the ungerade-gerade symmetry breaking.
[Phys. Rev. A 68, 042506 \(2003\)](#)
- 13) V. Kokoouline and C.H. Greene
Unified theoretical treatment of dissociative recombination of D_{3h} triatomic ions: application to H_3 and D_3 .
[Phys. Rev. A 68, 012703 \(2003\)](#)
- 12) V. Kokoouline, R. Santra, and C.H. Greene
Multichannel study of cold collisions between metastable Sr atoms.
[Phys. Rev. Lett. 90, 253201 \(2003\)](#)
- 11) V. Kokoouline and C.H. Greene
Theory of dissociative recombination of D_{3h} triatomic ions, applied to H_3^+ .
[Phys. Rev. Lett. 90, 133201 \(2003\)](#)
- 10) V. Kokoouline, C. Drag, P. Pillet, and F. Masnou-Seeuws
Lu-Fano plots for interpretation of photoassociation experiments.
[Phys Rev. A 65 062710 \(2002\)](#)
- 9) V. Kokoouline, C.H. Greene, and B.D. Esry
Mechanism for the destruction of H_3^+ ions by electron collision.
[Nature 412, 891 \(2001\)](#)
- 8) N. Bouloufa, P. Cacciani, V. Kokoouline, F. Masnou-Seeuws, R. Vetter, and Li Li
Predissociation induced by ungerade-gerade symmetry breaking in the B $^1\Pi_u$ state of the $^6\text{Li}^7\text{Li}$ molecule.
[Phys. Rev. A 63, 042507 \(2001\)](#)
- 7) V. Kokoouline, J. Vala, and R. Kosloff
Tuning the scattering length on the ground triplet state of Cs_2 .
[J. Chem. Phys. 114, 3046 \(2001\)](#)
- 6) V. Ostrovsky, V. Kokoouline, E. Luc-Koenig, and F. Masnou-Seeuws
Lu-Fano plots for potentials with power-law tail.
[J. Phys. B: At. Mol. Opt. Phys. 34, L27 \(2001\)](#)

- 5) P. Cacciani and V. Kokoouline
Predissociation induced by ungerade-gerade symmetry breaking in ${}^6\text{Li}^7\text{Li}$ molecule.
[Phys. Rev. Lett. **84**, 5296 \(2000\)](#)
- 4) V. Kokoouline, O. Dulieu, R. Kosloff, and F. Masnou-Seeuws
Theoretical treatment of channel mixing in excited Rb_2 and Cs_2 ultracold molecules. Determination of predissociation lifetimes with coordinate mapping.
[Phys. Rev. **A 62**, 032716 \(2000\)](#)
- 3) V. Kokoouline, O. Dulieu, and F. Masnou-Seeuws
Theoretical treatment of channel mixing in excited Rb_2 and Cs_2 ultracold molecules. Perturbations in (0_u^+) photoassociation and fluorescence spectra.
[Phys. Rev. **A 62**, 022504 \(2000\)](#)
- 2) M. Vatasescu, O. Dulieu, C. Amiot, D. Comparat, C. Drag, V. Kokoouline, F. Masnou-Seeuws, and P. Pillet
Multichannel tunneling in the Cs_2 0_g^- photoassociation spectrum.
[Phys. Rev. **A 61**, 044701 \(2000\)](#)
- 1) V. Kokoouline, O. Dulieu, R. Kosloff, and F. Masnou-Seeuws
Mapped Fourier methods for long-range molecules: Application to perturbations in the Rb_2 (0_u^+) photoassociation spectrum.
[J. Chem. Phys. **110**, 9865 \(1999\)](#)

Book chapters

- 2) V. Kokoouline, K. Willner, O. Dulieu, and F. Masnou-Seeuws
Mapped Fourier Grid Methods For Ultracold Molecules.
 in *Interactions of Cold Atoms and Molecules*” edited by P. Soldan, M.T. Cvitas, J. Hutson, and C.S. Adams, Warrington, UK, 2002 (ISBN 0-9522736-9-1) Preprint at
http://physics.ucf.edu/~slavako/publ/ccp6_let.ps
- 1) C.H. Greene, V. Kokoouline, and B.D. Esry
Importance of Jahn-Teller coupling in the dissociative recombination of H_3^+ by low energy electrons.
 in *"Dissociative Recombination of Molecular Ions with Electrons"*, edited S. L. Guberman (Kluwer Academic/Plenum Publishers, New York), 2003. ISBN 0-306-47765-3 URL:
<http://www.wkap.nl/prod/b/0-306-47765-3> .

Non-Referred

- 2) O. Dulieu, M. Ayouz, M. Raoult, J. Robert, and V. Kokoouline
Could the H_3^- ion exist in interstellar medium?
[AIP Conference Proceedings **1642**, 366 \(2015\); doi: 10.1063/1.4906695](#)

- 1) A. Faure, J. Tennyson, H.N. Varambhia, V. Kokoouline, C.H. Greene and T. Stoecklin
Electron-Impact Excitation of Interstellar Molecules
SFA2A 2007 conference proceedings (non-referred) reprint at
http://www.physics.ucf.edu/~slavako/publ/Faure_SF2A_2007.pdf

Ph. D. Thesis

- T) **THEORETICAL APPROACH TO COLD MOLECULES: DEVELOPMENT OF NUMERICAL METHODS.
TRAITEMENT THÉORIQUE DES MOLECULES FROIDES: MISE AU POINT DE MÉTHODES
NUMERIQUES.**
Université Paris XI, Orsay, France (1999). Available at
<http://www.physics.ucf.edu/~slavako/publ/these.pdf>