

CHRIS H. GREENE

CONTACT INFORMATION

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PROFESSIONAL APPOINTMENTS

1989–present **University of Colorado at Boulder**

Professor of Physics, Fellow of JILA

1981–1988 **Louisiana State University**

Assistant Professor, then Associate Professor, then Professor of Physics

EDUCATION

1980-1981 **Stanford University Postdoctoral Research Associate**

- Postdoctoral advisor: Richard Zare

1976.1980 **University of Chicago**

- M.Sc. and Ph.D., Physics; Graduate Research Advisor: Ugo Fano
- Recipient of an IBM Graduate Fellowship

1972–1976 **University of Nebraska-Lincoln**

- B.S., Physics and Mathematics
- Graduated *with high distinction*.
- National Merit Scholarship

HONORS AND AWARDS

University of California at Berkeley, Visiting Miller Professorship for 2007

Alexander von Humboldt Research Award for Senior U.S. Scientists, 2007

Elected and served as Chair of JILA during 2005 and 2006

Recipient of the first I. I. Rabi Prize of the American Physical Society, 1991

Fellow of the American Physical Society, since 1990

Presidential Young Investigator Award, 1985

Alfred P. Sloan Foundation Fellowship, 1984

PROFESSIONAL EXPERIENCE

Co-organizer, 2009 KITP Workshop titled: Frontiers of science with intense, ultrafast, and coherent x-ray sources

Chair, Division of Atomic, Molecular, and Optical Physics (DAMOP) of the American Physical Society (APS), June 2002 - May 2003

Various Program and Executive Committees for organizations, including DAMOP, the Few-Body Topical Group of the APS, and the ICPEAC

Director, Center for Theoretical Atomic, Molecular, and Optical Physics at JILA and the University of Colorado, 1991-1999

Chaired the Atomic Physics Gordon Conference, 1994; Vice-Chair in 1992

SELECTED RESEARCH HIGHLIGHTS

2006-2009 Developed a nonperturbative theory of 4-body interactions in an ultracold gas that includes 4-body recombination and other inelastic processes, and connects these phenomena with the universality regime and Efimov physics. (with J. P. D'Incao, J. von Stecher, S. T. Rittenhouse, and N. P. Mehta) Some of the predictions from this theoretical study were subsequently confirmed in 2009 by the group of R. Grimm in Innsbruck.

2001-2004, Solved the longstanding problem of the theoretical description of H_3^+ dissociative recombination, identifying both the qualitative Jahn-Teller mechanism in a 2001 Nature Letter, and then developing the first quantitative treatment of this process. (with V. Kokoouline and B. Esry)

2000, Predicted the existence of two novel classes of molecular Rydberg states, with oscillatory Born-Oppenheimer potential curves, work that was featured subsequently in Nature, Scientific American, Science News, and the London Daily Telegraph. (with H. Sadeghpour and A. Dickinson) Some of these predictions were subsequently verified in experiments carried out in the Stuttgart group of T. Pfau.

1999-2003, Predicted that 3-body recombination of three ultracold bosonic atoms should exhibit a connection to Efimov states, including quantum interference and resonance effects when the 2-body scattering length is large. (with B. Esry and J. P. Burke) Those predictions were subsequently verified experimentally by R. Grimm's group in Innsbruck, and published in Nature in March of 2006.

1997-2002, Developed a simple description of ultracold two-body collisions, based on multichannel quantum defect theory, which permitted an efficient and accurate determination of scattering lengths for a number of systems; in the case of ultracold potassium-potassium collisions, these gave the first accurate characterization of the atom-atom interactions including the resonances. (mainly with J. L. Bohn and J. P. Burke, Jr.).

1997, Gave the first quantitative description of two-component Bose-Einstein condensates of a dilute alkali-metal atom gas, with full 3D calculations of the ground state geometry. (with B. Esry, J. P. Burke, and J. Bohn)

1994, Predicted that the $H^{(2-)}$ ion has no resonance states, in conflict with existing theoretical and experimental evidence at that time; our prediction was subsequently verified experimentally by two independent groups. (with F. Robicheaux and R. Wood)

1985-1991, Developed a combination of R-matrix and multichannel quantum defect theory that produced the first quantitative capability of theory to predict the photoionization spectra of the heavy alkaline-earth atoms and alkali negative ions on the basis of nearly *ab initio* calculations. (with P. O'Mahony, L. Kim, M. Aymar, R. Wood, and others)

1982-1983, Formulated a widely-cited theoretical description of photofragment alignment and orientation, and a treatment of alignment and orientation effects in laser-induced fluorescence. (with R. N. Zare)

2008, Citation h-index = 45, with over 7600 total citations

PROFESSIONAL SERVICE AND PANEL REVIEWS

Served on the Editorial Board for Physical Review A, from 2001 through 2004.

Served on the DOE Basic Energy Sciences Advisory Committee's subcommittee on Theory and Computation, chaired by Bruce Harmon, Kate Kirby, and William McCurdy, which produced a report "Opportunities for Discovery: Theory and Computation" in January 2005.

Chair of Panel D on Theory of Structure and Dynamics, as part of the DOE Chantilly Workshop on AMO Physics, which produced a 63-page booklet detailing promising research directions and opportunities for the future.

Reviewed the DOE Atomic Physics Program at Oak Ridge National Laboratory (twice)

Reviewed the J. R. Macdonald Laboratory of Atomic Collisions for DOE, at Kansas State University

Reviewed the Atomic Physics Group in the Chemistry Division at Lawrence Berkeley National Laboratory, in 2001

Chaired the Working Group on "AMO Physics" at the Workshop titled "Scientific Directions at the Advanced Light Source", at Lawrence Berkeley National Laboratory, 1999.

Reviewed the Advanced Light Source in February 2000, at LBNL, as a subpanel for the Department of Energy's Basic Energy Sciences Advisory Committee. This subpanel was chaired by Yves Petroff, and the other subpanel members were Massimo Altarelli, Janos Kirz, Richard Smalley, John Carruthers, and Ted Madey, in addition to myself.

Reviewed the Atomic Physics Program at Argonne National Laboratory, around 1995.

FUNDING AND PUBLICATION RECORD AND AREAS OF EXPERTISE

Research Subfields: Theoretical *Atomic, Molecular, and Optical Physics, Chemical Physics*

Publications in refereed journals: over 220, as of March, 2009

Publication list: see <http://fermion.colorado.edu/~chg/NewPages/publications.html>

STUDENT SUPERVISION AND THEIR ACCOMPLISHMENTS

I have been the primary advisor for 19 graduated PhD students, and I have additionally co-sponsored the PhD theses of two graduate students, and the Masters thesis of one student.

Three of those PhD students have been finalists for the annual DAMOP Thesis Award, and one (Brett Esry) was co-recipient of that award.

Five of my former PhD students and postdocs were offered prestigious postdoctoral appointments at ITAMP, at the Harvard-Smithsonian Center for Astrophysics, and three were offered NRC postdoctoral positions at NIST-Gaithersburg.

I have been the postdoctoral advisor for 17 research associates.

My research group as of March 2009 includes 3 PhD students and 1 postdoctoral research associate. Two of those students are expected to complete their doctorates and graduate in May, 2009.

I have been the primary advisor for 11 undergraduates who have performed research in my group, 7 of whom completed an honors thesis based on their projects.

PUBLICATIONS SINCE 2000

227. **"Signatures of universal four-body phenomena and their relation to the Efimov effect"**, J. von Stecher, J. P. D'Incao, and C. H. Greene, *Nature Physics* (2009, in press); and online at arXiv:0810.3876.

226. **"Use of partial-wave decomposition to identify resonant interference effects in the photoionization-excitation of argon"**, T. J. Gay, C. H. Greene, J. R. Machacek, K. W. McLaughlin, H. W. van der Hart, O. Yenen, and D. H. Jaecks, *J. Phys. B* 42, 044008-1 to -17 (2009).

225. **"The short-range three-body phase and other issues impacting the observation of Efimov physics in ultracold quantum gases"**, J. P. D'Incao, C. H. Greene, and B. D. Esry, *J. Phys. B* 42, 044016-1 to -8 (2009).

224. **"Ab initio frame-transformation calculations of direct and indirect dissociative recombination rates of HeH⁺ + e⁻"**, D. J. Haxton and C. H. Greene, *Phys. Rev. A* 79, 022701-1 to -7 (2009).

223. **"Indirect dissociative recombination of $\text{LiH}_2^+ + e^-$ "**, D. J. Haxton and C. H. Greene, Phys. Rev. A 78, 052704-1 to -10 (2008).
222. **"Chemical modeling of L183 (=L134N): an estimate of the ortho/para H_2 ratio"**, L. Pagani, C. Vastel, E. Hugo, V. Kokoouline, C. H. Greene, A. Bacmann, E. Bayet, C. Ceccarelli, R. Peng, and S. Schlemmer, Astron. Astrophys. 494, 623-636 (2009); and online at arXiv:0810.1861.
221. **"Efimov states embedded in the three-body continuum"**, N. P. Mehta, S. T. Rittenhouse, J. P. D'Incao, and C. H. Greene, Phys. Rev. A 78, 020701(R)-1 to -4 (2008).
215. **"The degenerate Fermi gas with density-dependent interactions in the large-N limit under the K-harmonic approximation"**, S. T. Rittenhouse and C. H. Greene, J. Phys. B 41, 205302-1 to -10 (2008).
220. **"Ultracold atom-molecule collisions with fermionic atoms"**, J. P. D'Incao, B.D. Esry, and C. H. Greene, Phys. Rev. A 77, 052709-1 to -6 (2008).
219. **"Limits of the plane wave approximation in the measurement of molecular properties"**, Z.B. Walters, S. Tonzani, and C. H. Greene, J. Phys. Chem. A 112, 9439-9447 (2008).
218. **"Ultracold atom-molecule collisions with fermionic atoms"**, J. P. D'Incao, B.D. Esry, and C. H. Greene, Phys. Rev. A 77, 052709-1 to -6 (2008).
217. **"Theoretical rate of dissociative recombination of HCO^+ and DCO^+ ions"**, N. Douguet, V. Kokoouline, and C. H. Greene, Phys. Rev. A 77, 064703-1 to -4 (2008).
216. **"Energetics and structural properties of trapped two-component Fermi gases"**, J. von Stecher, C. H. Greene, and D. Blume, Phys. Rev. A 77, 043619-1 to -20 (2008).
215. **"Stability of inhomogeneous multicomponent Fermi gases"**, D. Blume, S. T. Rittenhouse, J. von Stecher, and C. H. Greene, Phys. Rev. A 77, 033627-1 to -13 (2008).
214. **"Femtosecond-induced transparency and absorption in the extreme ultraviolet by coherent coupling of the $\text{He } 2s2p \ ^1P^o$ and $2p^2 \ ^1S^o$ double excitation states with 800 nm light"**, Z-H Loh, C. H. Greene, and S. R. Leone, Chem. Phys. 350, 7-13 (2008); also arXiv:0711.1367.
213. **"Recombination of ions in the afterglow of a He-Ar- H_2 plasma"**, J. Glosik, I. Korolov, R. Plasil, O. Novotny, T. Kotrik, P. Hlavenka, J. Varju, I. A. Mikhailov, V. Kokoouline, and C. H. Greene, J. Phys. B 41, 191001-1 to -6 (2008); also arXiv:0710.2339v1.
212. **"Diffraction in low-energy electron scattering from DNA: Bridging gas-phase and solid-state theory"**, L. Caron, L. Sanche, S. Tonzani, and C. H. Greene, Phys. Rev. A 78, 042710-1 to -13 (2008).
211. **"Rates for dissociative recombination of LiH^+ ions"**, R. Curik and C. H. Greene, J. Phys.: Conf. Ser. 115, 012016 (2008).
210. **"High harmonic generation in SF_6 : Raman-excited vibrational quantum beats"**, Z. B. Walters, S. Tonzani, and C. H. Greene, J. Phys. B 40, F277-F283 (2007).

209. **"Coherent quantum engineering of free-space laser cooling"**, J. W. Dunn, J. W. Thomsen, C. H. Greene, and F. C. Cruz, Phys. Rev. A 76, 011401(R)-1 to -4 (2007).
208. **"Three-body recombination in one dimension"**, N. P. Mehta, B. D. Esry, and C. H. Greene, Phys. Rev. A 76, 022711-1 to -15 (2007).
207. **"Universal properties of a trapped two-component Fermi gas at unitarity"**, D. Blume, J. von Stecher and C. H. Greene, Phys. Rev. Lett. 99, 233201-1 to -4 (2007).
206. **"Spectrum and dynamics of the BCS-BEC crossover from a few-body perspective"**, J. von Stecher and C. H. Greene, Phys. Rev. Lett. 99, 090402-1 to -4 (2007).
205. **"BEC-BCS crossover of a trapped two-component Fermi gas with unequal masses"**, J. von Stecher, C. H. Greene, and D. Blume, Phys. Rev. A 76, 053613-1 to -10 (2007).
204. **"Dissociative recombination of H_3^+ in the ground and excited vibrational states"**, S. Fonseca dos Santos, V. Kokoouline, and C. H. Greene, J. Chem. Phys. 127, 124309-1 to -8 (2007).
203. **"Vibrational excitation and dissociative recombination of the LiH^+ ion"**, R. Curik and C. H. Greene, Molec. Phys. 105, 1565-1574 (2007).
202. **"Indirect dissociative recombination of LiH^+ molecules fueled by complex resonance manifolds"**, R. Curik and C. H. Greene, Phys. Rev. Lett. 98, 173201-1 to -4 (2007).
201. **"Renormalized mean-field theory for a two-component Fermi gas with s-wave interactions"**, J. von Stecher and C. H. Greene, Phys. Rev. A 75, 022716-1 to -10 (2007).
200. **"Experimental verification of minima in excited long-range Rydberg states of Rb_2^+ "**, C. H. Greene, E. L. Hamilton, H. Crowell, C. Vadla, and K. Niemax, Phys. Rev. Lett. 97, 233002-1 to -4 (2006).
199. **"Hyperspherical description of the degenerate Fermi gas: s-wave interactions"**, S. T. Rittenhouse, M. J. Cavagnero, J. von Stecher, and C. H. Greene, Phys. Rev. A 74, 053624-1 to -14 (2006).
198. **"Interaction of intense VUV radiation with large xenon clusters"**, Z. B. Walters, R. Santra, and C. H. Greene, Phys. Rev. A 74, 043204-1 to -14 (2006).
197. **"Near-threshold rotational excitation of molecular ions by electron impact"**, A. Faure, V. Kokoouline, C. H. Greene, and J. Tennyson, J. Phys. B 39, 4261-4273 (2006).
196. **"Theoretical progress and challenges in H_3^+ dissociative recombination"**, C. H. Greene and V. Kokoouline, Phil. Trans. Roy. Soc. A 364, 2965-2980 (2006).
195. **"Renner-Teller effects in HCO^+ dissociative recombination"**, I. A. Mikhailov, V. Kokoouline, A. Larson, S. Tonzani, and C. H. Greene, Phys. Rev. A 74, 032707-1 to -9 (2006).
194. **"A menage a trois laid bare"**, B. D. Esry and C. H. Greene, Nature 440, 289-290 (2006).
193. **"Radiation damage to DNA: Electron scattering from the backbone subunits"**, S. Tonzani and C. H. Greene, J. Chem. Phys. 125, 094504-1 to -7 (2006).
192. **"Predictions of laser-cooling temperatures for multilevel atoms in three-dimensional**

- polarization-gradient fields**", J. W. Dunn and C. H. Greene, Phys. Rev. A 73, 163603-1 to -9 (2006).
191. **"A hyperspherical variational approach to the N-fermion problem"**, S. Rittenhouse, M. J. Cavagnero, J. von Stecher, and C. H. Greene, Few-Body Systems 38, 85-90 (2006).
190. **"Low-energy electron scattering from DNA and RNA bases: Shape resonances and radiation damage"**, S. Tonzani and C. H. Greene, J. Chem. Phys. 124, 054312-1 to -11 (2006).
189. **"Theoretical study of dissociative recombination of C_{2v} triatomic ions: Application to H₂D⁺ and D₂H⁺"**, V. Kokoouline and C. H. Greene, Phys. Rev. A 72, 022712-1 to -12 (2005).
188. **"Comment on 'Fano line shapes reconsidered: Symmetric photoionization peaks from pure continuum excitation'"**, J. W. Cooper, C. H. Greene, P. W. Langhoff, A. F. Starace, C. Winstead, Phys. Rev. Lett. 94, 229301 -1 (2005).
187. **"High-accuracy optical clock via three-level coherence in neutral bosonic ⁸⁸Sr"**, R. Santra, E. Arimondo, T. Ido, C. H. Greene, and J. Ye, Phys. Rev. Lett. 94, 173002 -1 to -4 (2005).
186. **"Siegert pseudostates: Completeness and time evolution"**, R. Santra, J. M. Shainline, and C. H. Greene, Phys. Rev. A 71, 032703 -1 to -12 (2005).
185. **"Electron-molecule scattering calculations in a 3D finite element R-matrix approach"**, S. Tonzani and C. H. Greene, J. Chem. Phys. 122, 014111 -1 to -8 (2005).
184. **"Feshbach resonance cooling of trapped atom pairs"**, J. W. Dunn, D. Blume, B. Borca, B. E. Granger, and C. H. Greene, Phys. Rev. A 71, 033402 -1 to -4 (2005).
183. **"Dissociative recombination of HCO⁺"**, A. Larson, S. Tonzani, R. Santra, and C. H. Greene, J. Phys: Conf. Ser. 4, 74-82 (2005).
182. **"Theoretical study of the H₃⁺ dissociative recombination process"**, V. Kokoouline and C. H. Greene, J. Phys: Conf. Ser. 4, 148-154 (2005).
181. **"Dissociative recombination of polyatomic molecules: A new mechanism"**, C. H. Greene and V. Kokoouline, Phys. Scr. T110, 178-182 (2004).
180. **"Multiphoton ionization of xenon in the vuv regime"**, R. Santra and C. H. Greene, Phys. Rev. A 70, 053401 -1 to -8 (2004).
179. **"Triatomic dissociative recombination theory: Jahn-Teller coupling among infinitely many Born-Oppenheimer surfaces"**, V. Kokoouline and C. H. Greene, Faraday Discussions A 127, 413-423 (2004).
178. **"A revised formula for 3-body recombination that cannot exceed the unitarity limit"**, C. H. Greene, B. D. Esry, and H. Suno, Nucl. Phys. A 737, 119-124 (2004).
177. **"Properties of metastable alkaline-earth-metal atoms calculated using an accurate effective core potential"**, R. Santra, K. V. Christ, and C. H. Greene, Phys. Rev. A 69, 042510 -1 to -10 (2004).
176. **"Photofragmentation of the H₃ molecule, including Jahn-Teller coupling effects"**, V. Kokoouline and C. H. Greene, Phys. Rev. A 69, 032711 -1 to -16 (2004).

175. **"Comment on 'Nonclassical paths in the recurrence spectrum of diatomic atoms' - Reply"**, B. E. Granger and C. H. Greene, Phys. Rev. Lett. 91, 269302 -1 (2003).
174. **"Xenon clusters in intense VUV laser fields"**, R. Santra and C. H. Greene, Phys. Rev. Lett. 91, 233401 -1 to -4 (2003).
173. **"A two-atom picture of coherent atom-molecule quantum beats"**, B. Borca, D. Blume, and C. H. Greene, New J. Phys. 5, 111 -1 to -14 (2003).
172. **"Atom-molecule laser fed by stimulated three-body recombination"**, B. Borca, J. W. Dunn, V. Kokoouline, and C. H. Greene, Phys. Rev. Lett. 91, 070404 -1 to -4 (2003).
171. **"Single-stage sub-Doppler cooling of alkaline earth atoms"**, X. Xu, T. H. Loftus, J. W. Dunn, C. H. Greene, J. L. Hall, A. Gallagher, and J. Ye, Phys. Rev. Lett. 90, 193002 -1 to -4 (2003).
170. **"Theory of dissociative recombination of D_{3h} triatomic ions applied to H₃⁺"**, V. Kokoouline and C. H. Greene, Phys. Rev. Lett. 90, 133201 -1 to -4 (2003).
169. **"Unified theoretical treatment of dissociative recombination of D_{3h} triatomic ions: Application to H₃⁺ and D₃⁺"**, V. Kokoouline and C. H. Greene, Phys. Rev. A 68, 012703 -1 to -23 (2003).
168. **"Multichannel cold collisions between metastable Sr atoms"**, V. Kokoouline, R. Santra, and C. H. Greene, Phys. Rev. Lett. 90, 253201 -1 to -4 (2003).
167. **"Tensorial analysis of the long-range interaction between metastable alkaline-earth atoms"**, R. Santra and C. H. Greene, Phys. Rev. A 67, 062713 -1 to 15 (2003).
166. **"Three-body recombination of cold fermionic atoms"**, H. Suno, B. D. Esry, and C. H. Greene, New J. Phys. 5, 53-1 to -18 (2003).
165. **"Recombination of three ultracold fermionic atoms"**, H. Suno, B. D. Esry, and C. H. Greene, Phys. Rev. Lett. 90, 053201 -1 to -4 (2003).
164. **"Nonclassical paths in the recurrence spectrum of diamagnetic atoms"**, B. E. Granger and C. H. Greene, Phys. Rev. Lett. 90, 043002 -1 to -4 (2003).
163. **"Competition among molecular fragmentation channels described with Siegert channel pseudostates"**, E. L. Hamilton and C. H. Greene, Phys. Rev. Lett. 89, 26303 -1 to -4 (2002).
162. **"Formation of atomic tritium clusters and Bose-Einstein condensates"**, D. Blume, B. D. Esry, C. H. Greene, N. N. Klausen, and G. J. Hanna, Phys. Rev. Lett. 89, 163402 -1 to -4 (2002).
161. **"Regularities and irregularities in partial photoionization cross sections of He"**, H. W. van der Hart and C. H. Greene, Phys. Rev. A 66, 022710-1 to -8 (2002).
160. **"Three particles in an external trap: Nature of the complete J=0 spectrum"**, D. Blume and C. H. Greene, Phys. Rev. A 65, 013601-1 to -8 (2002).
159. **"Excitation of the 3p(4)(4s,3d,4p) Ar⁺ states during Ar photoionization: Intensity, alignment, and orientation"**, H. W. van der Hart and C. H. Greene, Phys. Rev. A 65, 062509-1 to -13 (2002).
158. **"Shape-resonance-induced long-range molecular Rydberg states"**, E. L. Hamilton, C. H. Greene, and H. Sadeghpour, J. Phys. B 35, L199-L206 (2002).

157. **"Three-body recombination of cold helium atoms"**, H. Suno, B. D. Esry, and C. H. Greene, Phys. Rev. A 65, 010705(R)-1 to -4 (2002).
156. **"Fermi pseudopotential approximation: Two particles under external confinement"**, D. Blume and C. H. Greene, Phys. Rev. A 65, 042725-1 to -7 (2002).
155. **"Lowest breathing mode of bosonic helium clusters"**, D. Blume and C. H. Greene, Eur. Phys. J D 18, 83-86 (2002).
154. **"Threshold laws for three-body recombination"**, B. D. Esry, C. H. Greene, and H. Suno, Phys. Rev. A 65, 010705(R)-1 to -4 (2002).
153. **"Phase modulation of ultrashort light pulses using molecular rotational wavepackets"**, R. A. Bartels, T. C. Weinacht, N. Wagner, M. Baertschy, C. H. Greene, M. M. Murnane, and H. C. Kapteyn, Phys. Rev. Lett. 88, 013903-1 to -4 (2002).
152. **"Nature of spinor Bose-Einstein condensates in rubidium"**, N. N. Klausen, J. L. Bohn, and C. H. Greene, Phys. Rev. A 64, 053602-1 to -5 (2001).
151. **"Quantum and semiclassical analysis of long-range Rydberg molecules"**, B. E. Granger, E. L. Hamilton, and C. H. Greene, Phys. Rev. A 64, 042508-1 to -9 (2001).
150. **"Mechanism for the destruction of H_3^+ ions by electron impact"**, V. Kokoouline, C. H. Greene, and B. D. Esry, Nature 412, 891-894 (2001).
149. **"Quantum corrections to the ground-state energy of a trapped Bose-Einstein condensate: A diffusion Monte Carlo calculation"**, D. Blume and C. H. Greene, Phys. Rev. A 63, 062601-1 to -6 (2001).
148. **"Comment on 'Efimov states for He_4 trimers?'"**, B. D. Esry, C. D. Lin, C. H. Greene, and D. Blume, Phys. Rev. Lett. 86, 4189-4189 (2001).
147. **"Calculation of a preconvolved HD photoionization spectrum using the rovibrational frame transformation"**, E. L. Hamilton, C. H. Greene, and J. A. Stephens, Phys. Essays 13, 265-271 (2000).
146. **"Ground-state scattering lengths for potassium isotopes determined by double-resonance photoassociative spectroscopy of ultracold ^{39}K "**, H. Wang, A. N. Nikolov, J. R. Ensher, P. L. Gould, E. E. Eyler, W. C. Stwalley, J. P. Burke, Jr., J. L. Bohn, and C. H. Greene, E. Tiesinga, C. J. Williams, and P. S. Julienne, Phys. Rev. A 62, 052704-1 to -4 (2000).
145. **"Resonant ion-pair formation in electron collisions with HD^+ and OH^+ "**, A. Larson, N. Djuric, W. Zong, C. H. Greene, A. E. Orel, A. Al-Khalili, A. M. Derkach, A. Le Padellec, A. Neau, S. Rosen, W. Shi, L. Viktor, H. Danared, M. af Ugglas, M. Larsson, and G. H. Dunn, Phys. Rev. A 62, 042707-1 to -8 (2000).
144. **"Vibrationally excited states and fragmentation geometries of Ne_N and Ar_N clusters, $N=3-6$, using hyperspherical coordinates"**, D. Blume and C. H. Greene, J. Chem. Phys. 113, 4242-4249 (2000).
143. **"Comparative study of He_3 , Ne_3 , and Ar_3 using hyperspherical coordinates"**, D. Blume, C. H. Greene, and B. D. Esry, J. Chem. Phys. 113, 2145-2158 (2000).
142. **"Creation of polar and nonpolar ultra-long-range Rydberg molecules"**, C. H. Greene, A. S. Dickinson, and H. R. Sadeghpour, Phys. Rev. Lett. 85, 2458-2461 (2000).
141. **"Collision cross sections for argon atoms with argon atoms for energies from 0.01**

eV to 10 keV", J. Phys. B: At. Mol. Opt. Phys. 33, 2965-2981 (2000).

140. **"Extending closed-orbit theory using quantum defect ideas: Basic concepts and derivations"**, B. E. Granger and C. H. Greene, Phys. Rev. A 62, 012511-1 to -17 (2000).

139. **"Monte Carlo hyperspherical description of helium cluster excited states"**, D. Blume and C. H. Greene, J. Chem. Phys. 112, 8053-8067 (2000).