

# CURRICULUM VITAE

**Dr. James Gregory Childers**  
Associate Professor  
Dept. of Physics  
California State University, Fullerton  
Fullerton, CA 92834  
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## Education

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|------|--|
| 1995 | Union College<br>Barbourville, Kentucky<br>B.A., summa cum laude, Physics and Mathematics  |
| 2001 | University of Kentucky<br>Lexington, Kentucky<br>M.S., Physics   |
| 2001 | University of Kentucky<br>Lexington, Kentucky<br>Ph.D., Atomic Physics<br>Advisor: Dr. Nicholas L. S. Martin<br>Dissertation: A study of autoionizing resonances in noble<br>gases using (e,2e) spectroscopy |

## Professional experience

- Teaching Assistant, University of Kentucky, 1995–1997, 1998–1999  
Research Assistant, University of Kentucky, 1997–2001  
Part-time Faculty, California State University, Fullerton, 2002–2003  
Postdoctoral Research Fellow, California State University, Fullerton, 2002–  
2003  
Assistant Professor, California State University, Fullerton, 2003–2009  
Associate Professor, California State University, Fullerton, 2009–present

## Courses taught

- University of Kentucky:  
Introductory algebra-based classical mechanics and electromagnetism  
recitation and laboratories  
Physics for pre-service elementary school teachers

California State University Fullerton:

Introductory algebra-based and calculus-based electromagnetism, optics,  
and modern physics lectures

Introductory mechanics, electromagnetism, optics, and modern physics  
laboratories

Advanced electronics laboratory

Advanced physics laboratory

Physics for pre-service elementary school teachers

Computational physics

Atomic physics

Energy and Sustainability

### **Scholastic and professional honors**

U.S. Dept. of Education Areas of National Need Fellowship, 1995–1998

American Association of Physics Teachers Outstanding Teaching Assistant,  
1999

Kentucky Opportunity Fellowship, 2000–2001

CSUF Outstanding Teacher/Scholar, 2005

CSUF College of Natural Sciences and Mathematics Outstanding Untenured  
Faculty Member, 2009

### **Professional affiliations**

American Physical Society, 1996-present

American Association of Physics Teachers, 1999-2000

### **Grants**

California State University Fullerton Untenured Faculty Development Grant,  
*Construction and optimization of a high resolution electron spectrometer*,  
\$980, funded 2003-2004

California State University Fullerton State Special Fund for Research, Schol-  
arship, and Creative Activity, *Construction and optimization of a high-*  
*resolution electron spectrometer*, \$5,000, funded 2003-2004

National Science Foundation (co-PI with Dr. Murtadha Khakoo), *Electron*  
*impact excitation and ionization of fundamental targets—helium and the*  
*noble gases*, \$268,061, funded 2004-2007

Research Corporation, *Accurate measurement of the differential cross sections*  
*for the low energy electron impact excitation and ionization of molecular*  
*hydrogen*, \$40,071, submitted 2005, not funded

Research Corporation, *Accurate measurement of the differential cross sections*  
*for the low energy electron impact excitation and ionization of molecular*  
*hydrogen*, \$41,220, submitted 2006, not funded

- California State University Fullerton State Special Fund for Research, Scholarship, and Creative Activity, *Theoretical study, construction, and optimization of a Magnetic Angle Changer for use in a low-energy high-resolution electron spectrometer*, \$5,000, funded 2006-2007
- California State University Fullerton Untenured Faculty Development Program Grant, *Design and installation of a Magnetic Angle Changer*, \$1000 plus three units release time, funded 2006-2007
- National Science Foundation Teragrid Project, *Analysis of publicly available code for large integer factorization*, 30,000 CPU-hours, funded 2008-2009
- American Chemical Society Petroleum Research Fund, *Investigation of hydrogen at low electron energies*, \$65,000, submitted 2008, not funded
- National Science Foundation Teragrid Project, *Analysis of the linear algebra step in the factorization of large integers by the Number Field Sieve algorithm*, 50,000 CPU-hours, funded 2010-2011
- National Science Foundation Teragrid Project, *Analysis of the Linear Algebra in the Number Field Sieve Algorithm*, 240,000 CPU-hours, funded 2010-2011
- California State University Fullerton Faculty Research Award, *Cluster Enhancements to Facilitate the Analysis of the Linear Algebra in the Number Field Sieve Algorithm*, \$5,000, funded 2011-2012

### Refereed publications (undergraduate coauthors in italics)

- J. G. Childers, D. B. Thompson, and N. L. S. Martin, “ $(e, 2e)$  experiments on the autoionizing levels of Xe between the  $^2P_{3/2}$  and  $^2P_{1/2}$  ionic limits,” *Phys. Rev. A* **64**, 062703 (2001).
- J. G. Childers and N. L. S. Martin, “Investigation of complex ionization amplitudes in xenon by  $(e, 2e)$  spectroscopy,” *Phys. Rev. A* **66**, 012709 (2002).
- M. Hughes, K. E. James, Jr.*, J. G. Childers, and M. A. Khakoo, “Accurate determination of background scattered electrons in crossed electron- and gas-beam experiments using a movable gas beam source,” *Meas. Sci. Technol.* **14**, 841 (2003).
- J. G. Childers, *K. E. James, Jr.*, *M. Hughes*, Igor Bray, M. Baertschy, and M. A. Khakoo, “Electron-impact ionization of atomic hydrogen at incident electron energies of 15.6, 17.6, 25, and 40 eV,” *Phys. Rev. A* **68**, 030702(R) (2003).
- M. A. Khakoo, *P. Vandeventer*, J. G. Childers, I. Kanik, C. J. Fontes, K. Bartschat, V. Zeman, D. H. Madison, S. Saxena, R. Srivastava, and A. D. Stauffer, “Electron impact excitation of the argon  $3p^54s$  configuration: differential cross-sections and cross-section ratios,” *J. Phys. B* **37**, 247 (2004).

- J. G. Childers, *K. E. James, Jr.*, Igor Bray, M. Baertschy, and M. A. Khakoo, “Low energy electron scattering from atomic hydrogen. I. Ionization,” *Phys. Rev. A* **69**, 022709 (2004).
- K. E. James, Jr.*, J. G. Childers, and M. A. Khakoo, “Low energy electron scattering from atomic hydrogen. II. Elastic and inelastic scattering,” *Phys. Rev. A* **69**, 022710 (2004).
- J. G. Childers, B. A. deHarak, and N. L. S. Martin, “Ejected electron spectrum of Xe between the  $^2P_{3/2}$  and  $^2P_{1/2}$  ionic limits,” *Phys. Rev. A* **69**, 042713 (2004).
- M. A. Khakoo and J. G. Childers, “Measurements of differential and doubly-differential cross-sections for electron impact elastic scattering, excitation, and ionization of atomic hydrogen,” *Physica Scripta* **T110**, 222 (2004).
- B. A. deHarak, J. G. Childers, and N. L. S. Martin, “Non dipole effects in ( $e, 2e$ ) and photoelectron experiments: a comparison,” *J. Elect. Spect. Rel. Phenom.* **141**, 75 (2004).
- J. G. Childers and M. A. Khakoo, “Measurements of low energy electron scattering from atomic hydrogen,” *AIP Conf. Proc.* **811**, 24 (2005).
- E. Schow, K. Hazlett, J. G. Childers, C. Medina, G. Vitug, I. Bray, D. V. Fursa, and M. A. Khakoo, “Low-energy electron-impact ionization of helium,” *Phys. Rev. A* **72**, 062717 (2005).
- J. Colgan, M. S. Pindzola, J. G. Childers, and M. A. Khakoo, “Low-energy electron-impact single ionization of helium,” *Phys. Rev. A* **73**, 042710 (2006).
- B. A. deHarak, J. G. Childers, and N. L. S. Martin, “Ejected electron spectrum of He below the  $N = 2$  threshold,” *Phys. Rev. A* **74**, 032714 (2006).

### Invited presentations

- J. G. Childers and Murtadha A. Khakoo, “Low energy electron scattering from atomic hydrogen,” *XXIII ISPCEAC Conference Programme*, Talk 8 (2005).
- J. G. Childers, “Low energy electron impact ionization of helium,” *Bull. Am. Phys. Soc.* **50** (7), 33 (2005).
- J. G. Childers, “Low-energy electron scattering from fundamental atoms and molecules,” presented July 13, 2006, to the T-4 Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM.
- J. G. Childers, “The Physics of Cancer,” presented Thursday, November 15, 2007, at the CSUF College of Natural Sciences and Mathematics Colleagues Colloquium, Fullerton, CA.
- J. G. Childers, “Green Technologies,” presented Tuesday, November 2, 2010, at the CSUF Osher Lifelong Learning Institute, Fullerton, CA.

- D. Bowman and J. G. Childers, “M=9.0 Honshu Japan Earthquake, What happened? Could it happen here?,” presented Wednesday, March 16, 2011, at CSUF, Fullerton, CA.
- D. Bowman, B. Tiwari, and J. G. Childers, “The 9.0 Japan Earthquake: Could it happen here?,” presented Wednesday, March 30, 2011, at the Fullerton Public Library, Fullerton, CA.
- J. G. Childers, “Nuclear Power and Earthquakes,” presented Saturday, April 30, 2011, at Ladera Vista Jr. High School, Fullerton, CA.

**Contributed conference presentations (undergrad. coauthors in italics)**

- J. G. Childers, W. F. Henshaw, Junqing Zhang, L. E. De Long, and R. C. Budhani, “Dynamical scaling and peak effect in the superconducting critical current of pure and ion-damaged NbSe<sub>2</sub>,” *Bull. Am. Phys. Soc.* **39** (8), 1813 (1994).
- J. G. Childers, W. F. Henshaw, Junqing Zhang, L. E. De Long, and R. C. Budhani, “Nonlinear vortex dissipation and peak effect in NbSe<sub>2</sub>,” *Bull. Am. Phys. Soc.* **40** (1), 387 (1995).
- J. G. Childers and N. L. S. Martin, “An ( $e, 2e$ ) Spectrometer for helium autoionization studies,” *Bull. Am. Phys. Soc.* **43** (3), 1338 (1998).
- J. G. Childers and N. L. S. Martin, “( $e, 2e$ ) Studies of helium autoionizing levels,” *Bull. Am. Phys. Soc.* **44** (1), 348 (1999).
- J. G. Childers and N. L. S. Martin, “( $e, 2e$ ) Investigation of He  $2\ell 2\ell'$  autoionizing levels,” *XXI ICPEAC Abstracts of Contributed Papers* **2**, 790 (1999).
- J. G. Childers, N. L. S. Martin, and D. B. Thompson, “An ( $e, 2e$ ) measurement of the Xe photoelectron  $\beta$  Parameter in the autoionizing region,” *Bull. Am. Phys. Soc.* **45** (3), 70 (2000).
- J. G. Childers and N. L. S. Martin, “( $e, 2e$ ) Studies of xenon autoionizing levels,” *Bull. Am. Phys. Soc.* **46** (3), 65 (2001).
- J. G. Childers, D. B. Thompson, and N. L. S. Martin, “( $e, 2e$ ) investigation of xenon autoionizing levels,” *XXII ICPEAC Abstracts of Contributed Papers* **1**, 197 (2001).
- J. G. Childers and N. L. S. Martin, “Interference effects in ( $e, 2e$ ) experiments on xenon autoionizing levels,” *Bull. Am. Phys. Soc.* **47** (3), 39 (2002).
- J. H. Challis*, J. G. Childers, and N. L. S. Martin, “Electron impact ejected electron spectra of Xe autoionizing levels,” *Bull. Am. Phys. Soc.* **47** (3), 39 (2002).
- Kenneth James*, J. G. Childers, and Murtadha A. Khakoo, “Electron impact ionization of atomic hydrogen at low incident energies,” *Bull. Am. Phys. Soc.* **47** (3), 81 (2002).

- Kenneth James*, J. G. Childers, Murtadha A. Khakoo, Mark Baertschy, and Igor Bray “Absolute doubly-differential cross sections for the ionization of atomic hydrogen by electron impact at low incident energies,” *Bull. Am. Phys. Soc.* **48** (3), 46 (2003).
- Kenneth James*, *Linda Leonard*, *Stephanie Proctor*, J. G. Childers, and Murtadha A. Khakoo, “Absolute differential cross sections for the elastic scattering of electrons from atomic hydrogen at low incident energies,” *Bull. Am. Phys. Soc.* **48** (3), 90 (2003).
- J. G. Childers, *K. James*, M. Baertschy, I. Bray, and M. A. Khakoo, “Ionization of atomic hydrogen by electron impact at low incident energies,” *XXIII ICPEAC Conf. Program with Abstracts* (2003).
- L. Leonard*, *K. James*, J. G. Childers, and M. A. Khakoo, “Low energy electron impact ionization of helium—absolute doubly-differential cross-sections,” *XXIII ICPEAC Conf. Program with Abstracts* (2003).
- K. James*, J. G. Childers, and M. A. Khakoo, “Elastic scattering and inelastic excitation of atomic hydrogen by electron impact at low incident energies,” *XXIII ICPEAC Conf. Program with Abstracts* (2003).
- P. Vandeventer*, J. G. Childers, and M. A. Khakoo, “Electron impact excitation of the  $3p^54s$  configuration of argon—differential cross-sections and differential cross-section ratios,” *XXIII ICPEAC Conf. Program with Abstracts* (2003).
- Eric Schow*, *Cristina Medina*, J. G. Childers, and Murtadha A. Khakoo, “Low energy electron impact ionization of He—experimental doubly differential cross-sections,” *Bull. Am. Phys. Soc.* **48** (6), 40 (2003).
- P. Vandeventer*, J. G. Childers, M. A. Khakoo, C. J. Fontes, K. Bartschat, D. H. Madison, S. Saxena, R. Srivastava, and A. D. Stauffer, “Differential electron impact excitation of argon,” *Bull. Am. Phys. Soc.* **48** (6), 68 (2003).
- Cristina Medina*, *Eric Schow*, J. G. Childers, and Murtadha A. Khakoo, “Improved DCS ratios  $r$  for the differential electron impact excitation of argon,” *Bull. Am. Phys. Soc.* **48** (6), 68 (2003).
- Eric Schow*, *Ken Hazlett*, *Cristina Medina*, *Gil Vitug*, J. G. Childers, and Murtadha A. Khakoo, “Electron impact ionization of helium” *Bull. Am. Phys. Soc.* **49** (3), 119 (2004).
- Stephanie Proctor*, J. G. Childers, and Murtadha A. Khakoo, “Accurate  $r$ -ratios for the electron impact excitation of argon,” *Bull. Am. Phys. Soc.* **49** (3), 119 (2004).
- Stephanie Proctor*, J. G. Childers, and Murtadha A. Khakoo, “Accurate  $r$ -ratios for the electron impact excitation of argon,” *Bull. Am. Phys. Soc.* **49** (5), 25 (2004).

- I. Ozkay, J. G. Childers, Murtadha A. Khakoo, P. Johnson, and I. Kanik “Low energy electron scattering from N<sub>2</sub>,” *Bull. Am. Phys. Soc.* **49** (5), 58 (2004).
- Eric Schow, Ken Hazlett, Cristina Medina, Gil Vitug, J. G. Childers, and Murtadha A. Khakoo, “Electron impact ionization of helium” Bull. Am. Phys. Soc.* **49** (5), 59 (2004).
- Eric Schow, Ken Hazlett, Cristina Medina, Gil Vitug, J. G. Childers, and Murtadha A. Khakoo, “Electron impact ionization of helium” Bull. Am. Phys. Soc.* **50** (3), 84 (2005).
- J. G. Childers, *Eric Schow, Ken Hazlett,* and Murtadha A. Khakoo, “Electron impact ionization of H<sub>2</sub> ” *Bull. Am. Phys. Soc.* **50** (3), 86 (2005).
- Eric Schow, Ken Hazlett, Cristina Medina, Gil Vitug, J. G. Childers, and Murtadha A. Khakoo, “Low energy electron impact ionization of helium and molecular hydrogen” XXIV ICPEAC Abstracts of Contributed Papers* **1**, 229 (2005).
- Eric Schow, Ken Hazlett, Cristina Medina, Gil Vitug, J. G. Childers, Murtadha A. Khakoo, I. Bray, D. V. Fursa, and J. Colgan, “Electron impact ionization of Helium ” Bull. Am. Phys. Soc.* **51** (3), 91 (2006).
- Kelly Kuper, Eric Schow, Ken Hazlett, J. G. Childers, and Murtadha A. Khakoo, “Electron impact ionization of H<sub>2</sub> ” Bull. Am. Phys. Soc.* **51** (3), 92 (2006).

### Professional conferences attended

- Southeastern Section of the American Physical Society  
1994 Newport News, VA
- California Section of the American Physics Society  
2006 Long Beach, CA
- March Meeting of the American Physical Society  
1995 San Jose, CA
- Stevens Institute of Technology Workshop on Electron-Driven Processes  
2000 Hoboken, NJ
- American Physical Society Division of Atomic, Molecular, and Optical Physics  
1997 Washington, DC  
1998 Santa Fe, NM  
1999 Atlanta, GA  
2000 Storrs, CT  
2001 London, Ontario, Canada  
2002 Williamsburg, VA  
2003 Boulder, CO  
2004 Tuscon, AZ  
2005 Lincoln, NE

2006 Knoxville, TN  
2007 Calgary, Alberta, Canada  
2010 Houston, TX

Gaseous Electronics Conference

2003 San Francisco, CA  
2005 San Jose, CA

International Conference on Photonic, Electronic, and Atomic Collisions

1999 Sendai, Japan  
2001 Santa Fe, NM  
2003 Stockholm, Sweden  
2005 Rosario, Argentina  
2007 Freiburg, Germany

International Symposium on Polarization and Correlation in Electronic and Atomic Collisions

2003 Frankfurt, Germany  
2005 Buenos Aires, Argentina  
2007 Frankfurt, Germany  
2009 Lexington, KY

**Research interests**

Experimental atomic physics, especially low-energy electron scattering from atoms and simple molecules

Development of publicly-available software for large integer factorization

**Service activities**

Reviewer for Physical Review Letters, Physical Review A, Measurement Science and Technology, and Physics Letters A

Session leader, U. Kentucky Dept. of Physics and Astronomy Teaching Assistant Orientation, 1999-2001

Group leader, U. Kentucky Teaching Assistant Orientation Workshop, 2000

Organizer, U. Kentucky Dept. of Physics and Astronomy Graduate Student/Post-Doc seminar series, 2001

Student representative, U. Kentucky Dept. of Physics and Astronomy Chair Search Committee, 2001

Dean's Faculty Awards Selection Committee, College of Natural Sciences and Mathematics, CSUF, 2004-2005, 2010

Participant in the CSUF Faculty Day Poster Sessions, 2003-2004

Curriculum & Resource Committee, Physics Dept., CSUF, 2003-2006

Curriculum Committee, Physics Dept., CSUF, 2006-present



Computer Services Committee, Physics Dept., CSUF, 2006-present  
Student Services Committee, Physics Dept., CSUF, 2007-present  
College Curriculum Committee, College of Natural Sciences and Mathematics,  
CSUF, 2005-2008  
College Intramural Grant Review Committee, College of Natural Sciences and  
Mathematics, CSUF, 2007  
Tenure-track Faculty Search Committee, Physics Dept., CSUF, 2007-2009  
Instructional Support Technician Search Committee, Physics Dept., CSUF,  
2007  
Academic Technology Center Advisory Board member, CSUF, 2011  
University Gables Homeowners Advisory Council, 2004-2010  
Co-author and Linux release maintainer of the PrimeForm/GW software pack-  
age, 2001-2008  
Maintainer of a database of factors of  $10^n \pm 1$ , 2001-2010  
Maintainer of server facilities for the XYYXF project, 2002-2010  
Maintainer of server facilities for the EulerNet project, 2001-2010  
Developer and contributor to the NFSNet Factorization Group, 2001-2009  
Administrator of NFS@Home BOINC project, 2009-present