

Jason N. Byrd

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Education

University of Connecticut Storrs Campus

Ph.D. in progress, Department of Physics,
post Qualification Exams
Research focus on quantum chemical potential surfaces of multi-body systems at ultra cold regimes, in addition to bound-free reaction scattering theory.

Storrs CT
2007-present

Metropolitan State College of Denver

Bachelor of Science, Physics, Cum Laude
Emphasis on numerical modeling and quantum optics. Senior Thesis: Markovian dynamics of ultra-high Q quantum cavities.

Denver, CO
December 2006

Honors

President's Honor Roll (2003). Provost's Honor Roll (2004-2005). Eagle Scout Award and silver palm recipient (2002).

Research Experience

University of Connecticut Storrs Campus

Adviser: Robin Côté, H. Harvey Michels
Calculation of two and three body quantum chemical potential surfaces at ultra cold temperatures. Elastic and inelastic scattering of three body ultracold systems, with extensions to use with the photo-association of dimers and trimers.

Storrs, CT
2008 - Present

Metropolitan State College of Denver

Adviser: Richard Krantz
Calculated energy bands in maximally even quasi-periodic superlattices using a Finite Element-Discrete Variable Representation with Bloch boundary values.

Denver, CO
2006 - 2007

University of Washington

Adviser: Hadley Lawler
Calculation of Rabi oscillations in IR-active phonon-cavity resonant electromagnetic modes.

Seattle, WA
2006-2007

University of Washington

Adviser: John Rehr
Implemented the MMD program GROMACS and TDSE modified Siesta 2.0 for the calculation of ion hydration sphere formation and the calculation of soft UV response spectra in cluster gas water and large organic molecular systems.

Seattle, WA
Summer 2006

University of Colorado at Denver

Adviser: Mark Baertschy
Developed and optimized the implementation of Finite Element-Discrete Variable Representation method of numerical analysis for use in impact ionization theory. Applications of which involved $e^- - H$ non-angular momentum dependent impact ionization collisions.

Denver, CO
2003 - 2004

Teaching Experience

University of Connecticut Storrs Campus

Teachers Assistant

Lab instructor for second semester physics for biology; tutored in the Physics Learning Resource Center.

Storrs, CT

2007-2008

Metropolitan State College of Denver

Part Time Faculty

Lab instructor for first and second semester freshman physics.

Denver, CO

2006-2007

Metropolitan State College of Denver

Teachers Assistant-4331 Electricity and Magnetism

Assisted with writing homework and test keys, graded homework and tests and interacting with students to answer questions.

Denver, CO

Fall 2006

Metropolitan State College of Denver

Teachers Assistant-First Semester Physics

Assisted with minor duties, graded and proctored exams.

Denver, CO

2004-2006

Jefferson County Schools-Middle School

Retraining

Lab Coordinator & Teachers Assistant

Two and a half week position as lab coordinator and teachers assistant for Jefferson County Schools "Forces and Motion" work shop for middle school teachers. Here I organized the laboratory, set up and supported lecture demonstrations, and assisted in group studies.

Jefferson County, CO

2005

Publications

Richard Krantz, **Jason Byrd**, "Energy Band Calculations for Maximally Even Superlattices," Poster for the *March 07 Meeting of APS*, March 5-9, 2007, Denver CO.

Jason Byrd, Richard Krantz, "Periodic Numerical Grid Method for the Maximally Even Kronig-Penny Model," Poster for the *March 07 Meeting of APS*, March 5-9, 2007, Denver CO.

H.M. Lawler, **Jason Byrd**, G.K. Brennen, "Theory of Rabi interaction between infrared-active phonon and cavity-resonant modes," arXiv:cond-mat/0612687v2, 2006.

J. Byrd, F. Vila, J. Rehr, "Molecular Dynamics Simulation of Ca Hydration and the Optical Response of Clustered Water", *NSF REU report*, University of Washington Physics Dept.

J. Byrd, "Markovian dynamics of ultra-high Q quantum cavities," *Denver Metropolitan Journal of Mathematics and Computer Science* **13**, 2006.

J. N. Byrd, "Numerical Analysis of the Parametrically Driven Pendulum," *Denver Metropolitan Journal of Mathematics and Computer Science* **13**, 2006.

Presentations

G.K. Brennen, H.M. Lawler, **Jason Byrd**, Sanjiv Shresta, "Rabi Coupling Between IR-active Phonon and Cavity-resonant Electromagnetic Modes," Presentation for the *March 07 Meeting of APS*, March 5-9, 2007, Denver CO.

J. Byrd, M. Baertschy, "Numerical and Theoretical Treatment of Electron-Impact Ionization," Presentation for the *APS Four-Corners Section Meeting*, October 15, 2004, Albuquerque, NM.

M. Baertschy, **J. Byrd**, "A More Extensible Approach to Electron-Impact Ionization," Presentation for the

Professional Activities

Attended the 2003, 2008 *Division of Atomic and Molecular Optical Physics* Conference.

Attended the 2007 *Spring APS* Conference.

Attended the 2004 and 2005 *APS Four-Corners Section Meeting*.

Attended the 2004 *April APS* Conference.

Attended the 2002,2003 and 2004 *CO/WY American Association of Physics Teachers* section meetings.

Member of $\Sigma\Pi\Sigma$ physics honor society, 2008.

Member of the *American Physical Society*, 2004 - present

Member of the *Society of Physics Students*, 2002 - 2007.

Life member of the *National Society of Eagle Scouts*, 2002 - present.

Member of the Student Advisory Committee to the Dean and Interim Dean of Arts and Letters at The Metropolitan State College of Denver.