

Jason N. Byrd

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Education

University of Connecticut Storrs Campus
Ph.D. Candidate, Department of Physics

Storrs CT
2009-present

University of Connecticut Storrs Campus
Masters Degree in Physics

Storrs CT
May 2009

Metropolitan State College of Denver
Bachelor of Science in Physics, Cum Laude

Denver, CO
December 2006

Fellowships and Awards

IBM - Zener Award for Graduate Students
Katzenstein Physics Prize
Nagavarapu Graduate Award in Physics
Research Fellowship

2012 Sanibel Symposium (\$1000)
University of Connecticut Storrs Campus (2008)
University of Connecticut Storrs Campus (2008)
(\$4 799.15)

Research Experience

University of Connecticut Storrs Campus
Ph.D. Research
Research on van der Waals interactions of molecules and applications to ultra-cold molecular chemistry.
Advisers: Robin Côté, John Montgomery Jr. and H. Harvey Michels

Storrs, CT
2008 - Present

Metropolitan State College of Denver
Undergraduate Research.
Research on the properties of maximally even quasi-crystals.
Adviser: Richard Krantz

Denver, CO
2006 - 2007

REU: University of Washington
REU project.
Research on the water solvation of ions.
Adviser: John Rehr

Seattle, WA
Summer 2006

Undergraduate Research: University of Colorado at Denver
Undergraduate Research
Research on three body scattering.
Adviser: Mark Baertschy

Denver, CO
2003 - 2004

Publications

12. **Jason N. Byrd**, John A. Montgomery Jr. and Robin Côté, "Long range forces between polar alkali diatoms aligned by external electric fields," *Physical Review A*, submitted for publication (2012). (arXiv: 1207.3546)
11. **Jason N. Byrd**, John A. Montgomery Jr. and Robin Côté, "Controllable binding of polar molecules and meta-stable of 1-D dipolar gases with attractive dipole forces," *Physical Review Letters*, accepted for publication (2012). (arXiv: 1207.2797)
10. Sandipan Banerjee, John A. Montgomery, Jr, **Jason N. Byrd**, H. Harvey Michels and Robin Robin Côté, "Ab initio potential curves for the $X^2\Sigma_u^+$, $A^2\Pi_u$ and $B^2\Sigma_g^+$ states of Ca_2^+ ," *Chemical Physics Letters*, **542**, 138 (2012). (doi: 10.1016/j.cplett.2012.06.011)
9. **Jason N. Byrd**, H. Harvey Michels, John A. Montgomery, Jr. and Robin Côté, "Long-range three-body atom-diatom potential for doublet Li_3 ," *Chemical Physics Letters*, **529**, 23 (2012). (doi: 10.1016/j.cplett.2012.01.052)
8. **Jason N. Byrd**, H. Harvey Michels, Robin Côté and John A. Montgomery Jr. and William Stwalley, "Structure, Energetics and Reactions of Alkali Tetramers," *Journal of Chemical Physics*, **136**, 014306 (2012). (doi: 10.1063/1.3672646)
7. **Jason N. Byrd**, Robin Côté and John A. Montgomery Jr. "Long range interactions between like homonuclear alkali metal diatoms," *Journal of Chemical Physics*, **135**, 244307 (2011). (doi: 10.1063/1.3671371)
6. Sandipan Banerjee, **Jason N. Byrd**, Robin Robin Côté, H. Harvey Michels, John A. Montgomery, Jr, "Ab initio potential curves for the $X^2\Sigma_u^+$ and $B^2\Sigma_g^+$ states of Be_2^+ : Existence of a double minimum," *Chemical Physics Letters*, **496**, 208 (2010). (doi: 10.1016/j.cplett.2010.07.039)
5. **Jason N. Byrd**, John A. Montgomery Jr. and Robin Côté, "Structure and thermochemistry of K_2Rb , KRb_2 and K_2Rb_2 ," *Physical Review A*, **82**, 010502(R) (2010). (doi: 10.1103/PhysRevA.82.010502)
4. Warren T. Zemke, **Jason N. Byrd**, H. Harvey Michels, John A. Montgomery Jr. and William C. Stwalley, "Long Range Intermolecular Interactions Between the Alkali Diatomics Na_2 , K_2 and NaK ," *Journal of Chemical Physics*, **132**, 244305 (2010). (doi: 10.1063/1.3454656)
3. **Jason N. Byrd**, John A. Montgomery Jr., H. Harvey Michels and Robin Côté, "Electronic Structure of the $\text{Li}_2 [X^1\Sigma_g^+] + \text{Li}^* [^2P]$ Excited $^2A'$ Surface," *International Journal of Quantum Chemistry*, **109**, 3626 (2009). (doi: 10.1002/qua.22414)
2. **Jason N. Byrd**, John A. Montgomery Jr., H. Harvey Michels and Robin Côté, "Potential energy surface of the $1^2A'$ $\text{Li}^2 + \text{Li}$ doublet ground state," *International Journal of Quantum Chemistry*, **109**, 3112 (2009). (doi: 10.1002/qua.22063)
1. **J. Byrd**, "Markovian dynamics of ultra-high Q quantum cavities," *Denver Metropolitan Journal of Mathematics and Computer Science* **13**, 2006.

Non-Refereed Publications

2. H.M. Lawler, **Jason Byrd**, G.K. Brennen, "Theory of Rabi interaction between infrared-active phonon and cavity-resonant modes," cond-mat/0612687, 2006.
1. **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.

First Author Posters and Presentations

10. **Jason N. Byrd**, John A. Montgomery Jr. and Robin Côté, "Photoassociation of alkali tetramers into high vibrational states," talk for the *43rd Annual Meeting of DAMOP*, June 4-8, 2012, Anaheim, CA.
9. **Jason N. Byrd**, John A. Montgomery Jr. and Robin Côté, "Anisotropic van der Waals dispersion interactions using TD-DFT," *IBM-Zener award poster* for the *52th Sanibel Symposium*, February 19-24, 2012, St. Simons Island, GA. (Abstract PDF)
8. **Jason N. Byrd**, John A. Montgomery Jr. and Robin Côté, "Interactions of polar alkali dimers," poster for the *42nd Annual Meeting of DAMOP*, June 14-17, 2011, Atlanta, GA.

7. **Jason N. Byrd**, John A. Montgomery Jr. and Robin Côté, "Long range interactions between like homonuclear alkali metal diatoms," talk for the *42nd Annual Meeting of DAMOP*, June 14-17, 2011, Atlanta, GA.
6. **Jason N. Byrd**, John A. Montgomery Jr. and Robin Côté, "Alkali metal core-correlation effects: comparison between all electron correlation and pseudopotential with core polarization potential calculations," poster for the *2010 Molecular Quantum Mechanics* conference, May 23-29, 2010, Berkeley, CA.
5. **Jason N. Byrd**, John A. Montgomery Jr., H. Harvey Michels and Robin Côté, "Atom-diatom intermolecular forces and three body dispersion coefficients for doublet Li_3 ," Poster for the *40th Annual Meeting of DAMOP*, May 19-23, 2009, Charlottesville, VA.
4. **Jason N. Byrd**, John A. Montgomery Jr., H. Harvey Michels and Robin Côté, "Potential energy $1^2A'$ surface of the Li_2+Li doublet ground state," Poster for the *49th Sanibel Symposium*, February 26 - March 3, 2009, St. Simons Island, GA.
3. **Jason N. Byrd**, John A. Montgomery Jr., H. Harvey Michels and Robin Côté, "Singly excited doublet $^7\text{Li}_2 + ^7\text{Li}$ potential energy surface for the formation of ultracold trimers," Poster for the *XXI International Conference on Atomic Physics*, July 27 - August 1, 2008, Storrs, Connecticut.
2. **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.
1. **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.

Professional Experience

Assistant System Administrator

University of Connecticut Storrs Campus (2008-2011)

System Administrator

University of Colorado at Denver (2006)

Teaching Experience

Lab Instructor

University of Connecticut Storrs Campus (2007-2008)

Lab Instructor

Metropolitan State College of Denver (2006-2007)

Teachers Assistant

Metropolitan State College of Denver (2004-2006)

Lab Coordinator & Teachers Assistant

Jefferson County Schools-Middle School Retraining

Service

Graduate Student Senator

University of Connecticut, Storrs Campus (2010-2011)

CLAS Dean undergraduate advisory committee

Metropolitan State College of Denver (2004-2005)

Professional Membership

Sigma Pi Sigma ($\Sigma\Pi\Sigma$)

University of Connecticut Storrs Campus (2008)

American Physical Society

2004 - present

National Society of Eagle Scouts

2002-Life

Academic and Personal Honors

Provost's Honor roll

Metropolitan State College of Denver (2004-2005)

Presidents Honor roll

Metropolitan State College of Denver (2002)

Eagle Scout Award with silver palm

Denver Area Council (2002)