

## Owen Myers

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### Education

*Ph.D Materials Science*

University of Vermont. Graduated May 2015.

*BA, Physics* University of Vermont.

### Research Experience

*Post Graduate Research*

- 01/2015-Current: The square lattice quantum dimer pentamer model at the RokhsarKivelson point. By relaxing the hard core constraint of one dimer touching each vertex the  $U(1)$  local gauge symmetry is reduced to a local  $Z_3$  gauge symmetry. Monte Carlo simulations are being used to study the properties of the system.
- 02/2016-06/2017: Postdoc University of North Carolina, Bioinformatics. Analysis of liquid chromatography mass spectrometry (LC/MS) data. Primarily worked on improving chromatogram building and peak picking to optimize and improve the identification of compounds in biological samples.

*Graduate Research*

- 01/2014-05/2015: The statistical mechanics of a Hamiltonian which describes the dynamics of pendulums when the bobs interactions are long-range. The model is very similar to the Hamiltonian Mean Field  $XY$  spin model but has an additional phase that depends on the particle (bob/spin) indices.
- 01/2013-01/2014: Numerical studies of the nonlinear dynamics of multiple particles in simple spatiotemporally periodic potential, as well as work in developing the theory to describe the many-body case (supported by NASA EPSCoR grant).
- 08/2011-08/2012: Numerical investigation of the nonlinear dynamics of particles in an “electric curtain” device (supported by Vermont Space Grant Consortium under NASA grant number NNX108AK67H).
- 08/2010-08/2011: An Experimentally investigation on the velocity distributions of particles in an “electric curtain” device (supported by Vermont Space Grant Consortium under NASA grant number NNX08AZ0ZA).

*Undergraduate Research Assistant*

08/2008-12/2009

Worked on organic semiconductor solar cells and organic semiconductor crystallization. This work comprised three parallel projects: (1) Improving TiO<sub>2</sub> films and their annealing to ITO coated glass substrate (2) purifying phthalocyanines (3) achieving long-range order in phthalocyanine crystals.

### Teaching Experience

*Courses*

- Champlain College Introduction to Physics (Sci-250): Algebra based investigation of classical Newtonian mechanics
- University of Vermont Physics 12: Algebra based survey of electricity, magnetism, optics and modern physics

### Graduate Teaching Assistant

- Mechanics lab class (kinematics, oscillations, waves, etc.)
- Astronomy lab class
- Electricity, magnetism, optics and modern physics lab class

### Mentoring

- Mentored high school and college student teaching them Python and guiding them to develop a program which can extract features from mass spectrometry data. 2013
- Mentored an undergraduate student working on a senior research project. 2016

### Publications

- Owen Myers, Chris Herdman, *Z<sub>3</sub> topological order in the quantum dimer-pentamer model*, Physical Review B, (2017).  
<https://doi.org/10.1103/PhysRevB.96.1744340>
- Owen Myers, Susan Sumner, Shuzhao Li, Stephen Barnes, Xiuxia Du, *One Step Forward for Reducing False Positive and False Negative Compound Identifications from Mass Spectrometry Metabolomics Data: New Algorithms for Constructing Extracted Ion Chromatograms and Detecting Chromatographic Peaks*, Analytical Chemistry, (2017).  
<https://doi.org/10.1021/acs.analchem.7b00947>
- Owen Myers, Susan Sumner, Shuzhao Li, Stephen Barnes, Xiuxia Du, *Detailed Investigation and Comparison of the XCMS and MZmine 2 Chromatogram Construction and Chromatographic Peak Detection Methods for Preprocessing Mass Spectrometry Metabolomics Data*, Analytical Chemistry, (2017).  
<https://doi.org/10.1021/acs.analchem.7b01069>
- Owen Myers, Adrian Del Maestro, Junru Wu, Jeffrey S. Marshall, *Long-Range Interacting Pendula: A Simple Model for Understanding Complex Dynamics of Charged Particles in An Electric Curtain Device*, Journal of Applied Physics, (2017).  
<http://dx.doi.org/10.1063/1.4980095>
- Owen Myers, Junru Wu, Jeffrey S. Marshall, Christopher M. Danforth, *Computational studies of multiple-particle nonlinear dynamics in a spatio-temporally periodic potential*, Journal of Applied Physics, **115**, 244908, (2014).  
<http://dx.doi.org/10.1063/1.4885895>
- Owen D. Myers, Junru Wu, Jeffery S. Marshall, *Nonlinear Dynamics of Particles Excited by and Electric Curtain*, Journal of Applied Physics, **114**, 154907, (2013).  
<http://dx.doi.org/10.1063/1.4826267>
- **(Conference Paper)** Owen Myers, Junru Wu, Jeffery Marshall, *Chaos in the Electric Curtain*, Proceedings of the 2012 Electrostatics Joint Conference.  
<http://electrostatics.org/esa2012proceedings.html>

### Industry Experience

- 06/2017–Current: Data Engineer. The work comprised analysis of large data (over 50 million users) sets, engineering projects based on the organization and maintenance of these data sets, and some system administration.

## Awards and Prizes

*Ronald Suiter Prize* 2015  
“...to support attendance at conferences, seminars, workshops, etc., by undergraduate and graduate students in the College of Arts and Sciences at UVM. Prizes will be awarded based upon merit and the decisions will be made by a faculty committee.”

*Ronald Suiter Prize* 2014

*Student Paper Award* 2012  
1<sup>st</sup> Place Student Paper Award at the Joint Electrostatics Conference, Electrostatics Society of America, International Electrostatic Assembly.

*Albert D. Crowell Award* 2009  
“This award is given to a senior physics major who, in the judgment of the appropriate faculty members, has demonstrated promise in experimental physics through a research or laboratory project.” University of Vermont Physics Department.

## Talks

*A numerical study of the energy gap of the quantum dimer-pentamer model*, APS March Meeting (American Physical Society). 2016

*Dimer liquid state in the quantum dimer-pentamer model on the square lattice*, APS March Meeting (American Physical Society). 2015

*Multiple Particles' Dynamics in a Spatiotemporally Periodic Potential*, UVM, Physics Colloquium. 2014

*Computational and Experimental Studies of Charged Particles in a Scalable 1D Spatial and Temporal Periodic Potential Created With Twin Periodic Electrode Curtains*, APS March Meeting (American Physical Society). 2014

*Nonlinear Behavior of Particles Excited by Electric Curtains*, UVM, Condensed Matter and Materials Science Seminar. 2013

*Chaos in the Electric Curtain*, Electrostatics Joint Conference. 2012

## References

- **Junru Wu**  
Email: [jwu@uvm.edu](mailto:jwu@uvm.edu)  
Website: <http://www.uvm.edu/~jwu/Wu.html>  
Affiliation: Department of Physics & Materials Science Program, University of Vermont.
- **Adrian Del Maestro**  
Email: [Adrian.DelMaestro@uvm.edu](mailto:Adrian.DelMaestro@uvm.edu)  
Website: <http://www.delmaestro.org/adrian/>  
Affiliation: Department of Physics & Materials Science Program, University of Vermont.
- **Chris Herdman**  
Email: [cherdman@middlebury.edu](mailto:cherdman@middlebury.edu)  
Website: <http://www.middlebury.edu/academics/physics/faculty/node/550222>  
Affiliation: Assistant Professor, Middlebury College.
- **Jeff Roach** (Industry reference)  
Email: [Jeff@sharpaction.com](mailto:Jeff@sharpaction.com)  
Website: <https://www.linkedin.com/in/jeffrevaroach/>  
Phone: (561)–662–4420 Affiliation: CEO of Sharp Action.

<b>Graduate Student Service</b>	<i>Graduate Student Senate Treasurer</i>	2013–2014
	Balanced annual budget of around \$20,000	
	<i>Graduate Student Senate Communications Director</i>	2012–2013
	<i>Graduate Student Senate Senator</i>	2011–2012
<b>University of Vermont Committees</b>	<i>Incentive Based Budgeting Steering Committee</i>	2013–2014
	<i>Board of Trustees Subcommittee: Budget Finance and Investment Committee</i>	2013–2014