

MATTHEW J. BOVYN

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EDUCATION

University of California, Irvine (UCI)

Fall 2014 - Present

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| PHD PHYSICS | Advisors: Jun Allard and Steve Gross |
| MS PHYSICS | Mathematical, Computational, and Systems Biology Gateway Program |
| | Concentration in Chemical and Materials Physics |

Northern Arizona University (NAU)

Fall 2007 - Winter 2012

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| BS PHYSICS | Minor in Mathematics |
| BSE MECH ENG | Minor in Physical Science |
| | Liberal Studies Honors |

Workshops and other training

MATHEMATICS OF THE CELL: MECHANICAL AND CHEMICAL SIGNALING ACROSS SCALES. Banff International Research Station for Mathematical Innovation and Discovery, August 2018.

QUANTITATIVE CELL BIOLOGY NETWORK WORKSHOP ON CELLS AS DYNAMICAL SYSTEMS. University of California, San Francisco, May 2017.

UNIVERSITY OF TSUKUBA SUMMER RESEARCH PROGRAM IN BIOMEDICAL SCIENCES. Tsukuba, Japan, July 2016.

QUANTITATIVE CELL BIOLOGY NETWORK WORKSHOP ON CYTOSKELETAL MECHANICS. Chicago, October 2015.

PUBLICATIONS

J.P. Bergman[†], M.J. Bovyn[†], F.F. Doval, A. Sharma, M.V. Gudheti, S.P. Gross, J.F. Allard[‡], M.D. Vershinin[‡], **Cargo Navigation Across 3D Microtubule Intersections.** *Proceedings of the National Academy of Sciences of the United States of America*, 115(3), 537-542. ^{†,‡} These authors contributed equally.

W.M. Grundy, S.J. Morrison, M.J. Bovyn, S.C. Tegler, and D.M. Cornelison. 2011. **Remote Sensing D/H Ratios in Methane Ice: Temperature-Dependent Absorption Coefficients of CH₃D in Methane Ice and in Nitrogen Ice.** *Icarus* Volume 212, Issue 2, 941-949

S.C. Tegler, D.M. Cornelison, W.M. Grundy, W. Romanishin, M.R. Abernathy, M.J. Bovyn, J.A. Burt, D.E. Evans, C.K. Maleszewski, and Z. Thompson. 2010. **Methane and Nitrogen Abundances on Pluto and Eris.** *The Astrophysical Journal* **725**, 1296-1305

SELECTED CONFERENCE AND WORKSHOP PRESENTATIONS

Invited Talk: 3D stochastic simulations of cargo transport reveal the influence of cargo and environment

SIAM CONFERENCE ON THE LIFE SCIENCES, Minneapolis, August 2018.

Talk: Brownian dynamics simulation reveals how properties of the cargo and its environment can influence multiple motor transport

AMERICAN PHYSICAL SOCIETY MARCH MEETING, Los Angeles, March 2018.

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| Poster: Geometry Matters for Cargos Navigating 3D Microtubule Intersections | BIOPHYSICAL SOCIETY ANNUAL MEETING, San Francisco, February 2018. AMERICAN SOCIETY FOR CELL BIOLOGY ANNUAL MEETING, Philadelphia, December 2017. |
| Poster: Brownian dynamics simulation reveals freedom of motors in the cargo membrane can influence cargo dynamics | BIOPHYSICAL SOCIETY THEMATIC MEETING, Taipei, June 2017. BIOPHYSICAL SOCIETY ANNUAL MEETING, Los Angeles, February 2016. AMERICAN SOCIETY FOR CELL BIOLOGY ANNUAL MEETING, San Diego, December 2015. |
| Talk: Driving Sodium-Potassium Pumps With An Oscillating Electric Field: Effects On Muscle Recovery | AMERICAN PHYSICAL SOCIETY MARCH MEETING, Baltimore, March 2013. Won “Outstanding Undergraduate Presenter” Award |

FUNDING AND AWARDS

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| Current | NSF Integrative Graduate Education and Research Traineeship (IGERT) DGE-1144901 to Vasan Venugopalan, UCI Beckman Laser Center NIH R01 GM123068 to Jun Allard and Steve Gross |
| Years 2 & 3 | NIH T32 Training Grant EB009418-07 to Arthur Lander and Qing Nie, UCI Center for Complex Biological Systems |
| Year 1 | Mathematical, Computational and Systems Biology Fellowship NSF GRFP Honorable Mention |
| Undergraduate | The Outstanding Senior of the NAU College of Engineering, Forestry and Natural Sciences NAU Gold Axe Award NAU Department of Physics and Astronomy Bedwell Scholarship NAU Department of Physics and Astronomy Adel Scholarship Raytheon Missile Systems Scholarship NAU Department of Physics and Astronomy Chair’s Scholarship Arizona Board of Regent’s High Honors Tuition Scholarship Dean’s List - 7 Semesters |

PROFESSIONAL ACTIVITY

FOUNDER AND ORGANIZER: Biophysics and Systems Biology Seminar Series

- Founded a series of research in progress talks for students in the Mathematical, Computational, and Systems Biology gateway program with co-founder Kerrigan Blake, 2016
- Expanded the seminar series to host invited speakers, 2017
- Scheduled and hosted speakers

FOUNDER: UCI Center for Complex Biological Systems Outreach Program

- Founded an outreach program for the UCI Center for Complex Biological Systems with co-founder Sean Horan
- Won ASCB COMPASS outreach grant

PRESIDENT: NAU Society of Physics Students

- Organized and led outreach events to local schools
- Organized “Zone Meeting” for chapters throughout Arizona

MEMBER: Tau Beta Pi, The Engineering Honor Society

MEMBER: Sigma Pi Sigma, National Physics Honor Society

TEACHING

SUPPLEMENTAL INSTRUCTOR, NAU:

- Physics 111: General Physics I (mechanics, non-calculus based)
- Physics 262: University Physics II (electricity and magnetism, calculus based)

EXPERIENCE BEFORE PHD

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| WINTER 2014 | Rotation Student LABORATORY FOR FLUORESCENCE DYNAMICS Irvine, California <i>Fluorescence Lifetime Imaging of Turbid Samples</i> Advisors: Enrico Gratton and Ylenia Santoro |
| SUMMER 2014 | Graduate Student Researcher BECKMAN LASER INSTITUTE Irvine, California <i>Deep Tissue Biophotonics for Breast Cancer Diagnostics</i> Advisors: Bruce Tromberg and Albert Cerussi |
| JAN 2014 TO JUN 2014 | Tutor TUTOR DOCTOR & VARSITY TUTORS Irvine, California <i>High School Physics and Calculus</i> |
| FEB 2013 TO JUN 2013 | Research Assistant UNIVERSITY OF PUERTO RICO, RIO PIEDRAS San Juan, Puerto Rico <i>Herbarium Server Development</i> |
| FALL 2012 | Research Assistant NORTHERN ARIZONA UNIVERSITY <i>Planetary Astrophysics of Icy Outer Solar System Objects</i> Advisors: Will Grundy and Stephen Tegler |
| SUMMER 2012 | NSF Research Experience for Undergraduates Intern UNIVERSITY OF SOUTH FLORIDA <i>Biophysics of Sodium-Postassium Pumps</i> Advisor: Wei Chen |
| FALL 2011 TO SPRING 2012 | Research Assistant NORTHERN ARIZONA UNIVERSITY <i>Planetary Astrophysics of Icy Outer Solar System Objects</i> Advisors: Will Grundy and Stephen Tegler |
| SUMMER 2011 | NSF Research Experience for Undergraduates Intern UNIVERSITY OF IDAHO <i>Solid State Physics of Nanosprings</i> Advisor: Dave McIlroy |
| FALL 2010 TO SPRING 2011 | NASA Space Grant Intern NORTHERN ARIZONA UNIVERSITY <i>Near Infrared Spectroscopy of Carbon Dioxide Ice</i> Advisors: Will Grundy and Stephen Tegler |
| SUMMER 2010 | Research Assistant LOWELL OBSERVATORY, Flagstaff Arizona <i>Planetary Astrophysics of Icy Outer Solar System Objects</i> Advisors: Will Grundy and Dave Cornelison |