

TRAVIS AARON HOPPE

Curriculum Vitæ
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PhD Physics
(775) 287-4033

education

2014-current

Postdoctoral

Theoretical Biophysics with Robert Best at the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), part of the National Institutes of Health (NIH).

2011-2014

Postdoctoral

Physical Biochemistry with Allen Minton at the NIH, NIDDK.

2011

Doctor of Philosophy

Physics, Drexel University with Jian-Min Yuan. *Thesis*, *On the Role of Entropy in the Protein Folding Process*.

2008

Master of Science

Physics, Drexel University

2005

Bachelor of Science

Physics, University of Nevada

2005

Bachelor of Science

Mathematics, University of Nevada

experience

2011-current

Research Associate (NIH, NIDDK)

Developed multi-scale theoretical and computational models to study protein folding, structure, and protein-protein interaction. Worked in collaboration with experimentalists to test and validate models. Designed large-scale parallel projects (1000+ cores) to investigate results.

2005-2011

Teaching Assistant (Drexel)

Organized, taught, and ran over 22 undergraduate courses. Developed lesson plans and curricula. Restructured the entire computational component for physics majors by transitioning from FORTRAN to Python.

publications

Protein-Protein Interaction

2015

Dependence of Internal Friction on Folding Mechanism, Wenwei Zheng, David De Sancho, Travis Hoppe & Robert B. Best, *Journal of the American Chemical Society*.

2015

An Equilibrium Model for the Combined Effect of Macromolecular Crowding and Surface Adsorption on the Formation of Linear Protein Fibrils, Travis Hoppe, Allen Minton, *Biophysical Journal*.

2013

A Simplified Representation of Anisotropic Charge Distributions in Proteins, Travis Hoppe, *Journal of Chemical Physics*.

2013

Singular Value Decomposition of the Radial Distribution Function for Hard Sphere and Square Well Potentials, Travis Hoppe, *PLoS ONE*.

2010

Protein Folding with Implicit Crowders: A Study of Conformational States Using the Wang-Landau Method, Travis Hoppe, Jian-Min Yuan, *Journal of Physical Chemistry B*.

Protein Topology & Graph theory

- 2014 **Integer Sequence Discovery from Small Graphs**, Travis Hoppe, Anna Petrone, [arXiv](#).
- 2009 **Entropic Flows, Crowding Effects, and Stability of Asymmetric Proteins**, Travis Hoppe, Jian-Min Yuan, [Physical Review E](#).

Experimental Modeling

- 2014 **Programmable Nanoscaffolds that Control Ligand Display to a G-Protein Coupled-Receptor in Membranes allow Dissection of Multivalent Effects**, Andrew Dix, Daniel Appella, Travis Hoppe, et al., [Journal of the American Chemical Society](#).
- 2014 **Quantification of Plasma HIV RNA Using Chemically Engineered Peptide Nucleic Acids**, Chao Zhao, Daniel Appella, Travis Hoppe, et al., [Nature Communications](#).
- 2008 **The Importance of EBIT Data for Z-Pinch Plasma Diagnostics**, A S Safronova, Travis Hoppe, et al., [Canadian Journal of Physics](#).
- 2006 **Spectroscopic and Imaging Study of Combined W and Mo-Pinches at 1 MA-Pinch Generators**, Alla Safronova, Travis Hoppe, et al., [IEEE Transactions on Plasma Science](#).

research in progress

- Effect of Charge Anisotropy and the Theoretical Prediction of Phase Separation of Ionic Solutions**, Travis Hoppe, Allen Minton.
- Rise of the Coauthor: Editorial on the Systematic Trends of Coauthorship**, Travis Hoppe, Daniel Appella.
- Entropic Microscopes of PNA on Membranes**, Travis Hoppe, Daniel Appella.
- Dual-Graph Representation of RNA Structure**, Travis Hoppe, Tamar Schlick.
- Evolutionary Protein Charge Anisotropy**, Travis Hoppe, Jenny Hinshaw.

conferences

- 2015 **Biophysical Society: Baltimore**
Seminar: Mean-field lattice-model IDPs, Binding Affinity & Specificity
- 2014 **Advances in Enhanced Sampling Algorithms: Telluride**
Seminar: Topological considerations in the Wang-Landau algorithm
- 2013 **Biophysical Society: Philadelphia**
Seminar: Coarse-grained Electrostatic Models for Protein Solutions
- 2010 **Biophysical Society: San Francisco**
Poster: Wang-Landau Density of States in Crowded Protein Environments
- 2009 **Drexel University Libraries' Communication Symposium: The Hidden Costs of Scholarly Communication**
Invited Panel Member
- 2009 **Biophysical Society: Boston**
Poster: Exhaustive Properties of Simple Lattice Peptides

teaching

- 2011 **PHYS 305**, Computational Physics II*
- 2010 **PHYS 304**, Computational Physics I*
- PHYS 160**, Introduction to Scientific Computing*
- PHYS 305**, Computational Physics II*
- 2009 **PHYS 304**, Computational Physics I*
- PHYS 160**, Introduction to Scientific Computing*
- DSP 099**, Dragon Summer Program: Remedial Mathematics
- PHYS 100**, Preparation for Engineering Studies
- PHYS 305**, Computational Physics II*
- 2008 **PHYS 304**, Computational Physics I*
- PHYS 102**, Fundamentals of Physics II*
- PHYS 115**, Contemporary Physics III*
- PHYS 114**, Contemporary Physics II*
- 2007 **PHYS 113**, Contemporary Physics I*
- PHYS 102**, Fundamentals of Physics II, Lab
- PHYS 115**, Contemporary Physics III*
- PHYS 114**, Contemporary Physics II*
- 2006 **PHYS 113**, Contemporary Physics I*
- TDEC 101**, Fundamentals of Physics I, Lab
- TDEC 103**, Fundamentals of Physics III*
- TDEC 102**, Fundamentals of Physics II*
- 2005 **TDEC 101**, Fundamentals of Physics I*
- *Developed new curricula and modernized the Computational Physics, Contemporary Physics and Introduction to Scientific Computing courses at Drexel.

awards

- 2014 **Best Presentation Award**
Institution-wide recognition during the NIDDK Annual Conference.
- 2010 **Research Assistant Grant**
Competitive grant from Drexel Physics Department on the basis of outstanding research and teaching.
- 2010 **Student Research Achievement Award (SRAA)**
Top poster (out of 3000) at the Biophysical Society 2010 meeting.
- 2009 **Department Research Award (Senior Division)**
Given by the Drexel Physics Department, this award recognized a high proficiency in both original research and synthesis of results into publications.
- 2008 **Department Research Award (Junior Division)**
Restricted to the first two years of study, the junior division award was awarded for early achievements in research.
- 2007 **Teaching Assistant of the Year**
Recognition by Drexel University as the top Teaching Assistant in the College of Arts and Sciences.