Daniel Tamor Liu Citron

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Education

Cornell University — Ithaca, NY

Ph.D. Theoretical Physics; Experimental Physics Minor — *2011 – Present*

M.S. Physics — *2014*

Committee: Christopher R. Myers, Chair; Paul Ginsparg; Paul McEuen

University of Chicago — Chicago, IL

B.A. Physics with Honors — *2005 – 2009*

Senior Honors Thesis: "Simulating Jamming in Granular Materials"

Research Interests

– Infectious disease dynamics modeling
– Nonlinear dynamics
– Social network analysis
– Stochastic processes
– Statistical physics
– Data science

Technical Skills

Proficient in: Python, Mathematica, SQL, Fortran, IDL, LaTeX, Unix

Working knowledge of: Git, Julia, Matlab, Octave, Adobe Lucene

Data Science Projects

Network Assembly in Scientific Collaboration Networks — Ithaca, NY

Graduate Research Assistant, Cornell University — *Winter 2013– Present*
 – Created Python tools for studying development and growth of collaboration networks
 – Used topic modeling to detect subfields of articles in a large scientific corpus
 – Collaborated with interdisciplinary group to analyze dynamics of social networks

Measuring Patterns in Text Reuse in Scholarly Corpus — Ithaca, NY

Graduate Research Assistant, Cornell University — *Summer – Fall 2012*
 – Measured rate and distribution of text reuse in online database of scientific articles (arXiv)
 – Converted raw data into social network dataset for easy visualization and exploration
 – Created Python tools for measuring properties of social network dataset

Modeling Projects

Infectious Disease Dynamics — Ithaca, NY

Graduate Research Assistant, Cornell University — *Summer 2013 – Present*
 – Developed tools in Python for stochastic modeling of endemic disease on a contact network
 – Used computer simulations to explore endemic state of stochastic model of disease
 – Performed mathematical analysis of stochastic model using moment closure techniques

Two-Dimensional Jamming Transition — Chicago, IL

Undergraduate Research Assistant, University of Chicago — *Fall 2008 – Fall 2009*

- Developed computer simulation in Fortran to explore jamming transition in soft discs
- Collaborated with an experimentalist to compare simulation results to real-world phenomena
- Studied behavior of system's displacement field above and below jamming

Software and Hardware Development

Synchrotron X-Ray Tomography Experiment — Argonne National Lab, Chicago IL
Research Support Staff, GSECARS — *Spring 2010 – Summer 2011*
- Improved synchrotron X-ray tomography experiment at Advanced Photon Source
- Rewrote IDL software to allow for faster tomographic data collection
- Redesigned user interface for controlling tomography experiment
- Designed and built optical mount for new tomography experiment apparatus

Software Testing of Implantable Medical Device — Yehud, Israel
Biomedical Engineering Intern, Biocontrol Medical — *Fall 2009 – Spring 2010*
- Designed firmware test protocol for electronic wand used to communicate with the device
- Performed tests on software for programming the device

Teaching Experience

Instructor — Cornell University
Physics GRE Preparation Short Course — *Spring 2013, 2014, 2015, 2016*
- Designed syllabus and lecture slides for 6-week course
- Gave lectures and led discussions to review undergraduate physics material for exam

Teaching Assistant — Cornell University
Electricity and Magnetism (honors sequence) — *Spring 2016*
Mechanics and Special Relativity (honors sequence) — *Fall 2015*
Physics II: Electricity and Magnetism — *Spring 2012*
Physics I: Mechanics and Heat — *Fall 2011*
- Led biweekly discussion sections to teach students problem solving techniques
- Wrote weekly quizzes; graded homework and exams

Laboratory Teaching Assistant — Cornell University
Physics II: Electricity and Magnetism (honors sequence) — *Fall 2014; Spring 2016*
Physics II: Electricity and Magnetism — *Spring 2012*
Physics I: Mechanics and Heat — *Fall 2011*
- Supervised 10–15 students' laboratory work
- Demonstrated experimental techniques necessary to complete laboratory procedure

Publications

- Daniel T. Citron, Paul Ginsparg. "Patterns of Text Reuse in a Scientific Corpus." PNAS 2014; published ahead of print December 8, 2014, DOI:10.1073/pnas.1415135111

- Mark L. Rivers, Daniel T. Citron, Yanbin Wang. "Recent Developments in Computed Tomography at GSECARS," Proc. SPIE 7804, 780409 (2010), DOI:10.1117/12.861393

- X. Cheng, G. Varas, D. Citron, H. Jaeger, and S. Nagel. "Collective Behavior in a Granular Jet: Emergence of a Liquid with Zero Surface Tension," Physical Review Letters, Vol. 99, Nov. 2007

Presentations

Network Assembly in Scientific Collaboration Networks Northwestern U.
International Conference on Computational Social Science June, 2016

Network Analysis of ArXiv Santa Fe Institute
SFI Complex Systems Summer School 2015 June, 2015

Moment Closure Analysis of SIRS Disease Model on Heterogeneous Networks
APS March Meeting 2015 March, 2015

Accounting for Fluctuations in Stochastic SIRS Model on Networks U. of Pittsburgh
International Workshop on Advances in Discrete Networks *December, 2014*

Text Overlap Patterns in Scientific Literature Cornell University
STEM Graduate Student Colloquium *June, 2014*

Service

Graduate & Professional Students Assembly Cornell University
Chair, Faculty Awards Committee *Fall 2014 – Fall 2015*
Physics Field Representative *Fall 2013 – Spring 2016*
- Attended biweekly meetings to discuss issues and initiatives relevant to graduate students
- Communicated with peers in physics department about events and other GPSA activities
- Planned faculty awards ceremony with small group of graduate student peers

Physics Graduate Society Cornell University
Treasurer, Event Coordinator *Summer 2012 – Spring 2013*
- Organized STEM graduate student summer colloquium series
- Worked with other officers to plan social events for graduate students throughout school year
- Conducted science outreach activities with community elementary school students and parents

Cornell Center for Materials Research Outreach Cornell University
Volunteer *Summer 2014 – Present*
- Conducted science outreach with 10-30 elementary school students
- Performed physics and chemistry demonstrations and explained basic scientific concepts
- Supervised small groups of 2-3 students to help them conduct simple experiments

University of Chicago Scavenger Hunt University of Chicago
Judge (event organizer) *2009 – 2014*
- Collaborated closely with group of 15-20 individuals to plan four day University-wide event
- Organized successful Guinness World Record as World's Largest Scavenger Hunt in 2011

Awards & Fellowships

- NSF Graduate Research Fellowship (Cornell University) *2012 – Present*
- Phi Beta Kappa (University of Chicago) *2009*