Thursday, May 2: Reading Day/IT No Change Period in Effect

Thursday, May 2: Thesis Defense: "Experimental and Theoretical Investigations of the Relationship between Fitness and Mutation Rate Evolution in E. coli"

Thursday, May 2: Simulations of Structural Transformations in Ceramide Phases from fitting structures to CEMOVIS image data

Friday, May 3: Final Exams Begin

Friday, May 3: CPLC Seminar: Yijun Ruan (Jackson Laboratory)

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Friday, May 3: Scientific Exhibit: Phys498-ART Culminating Event: Science for the Senses

Saturday, May 4: UIUC Astronomy at Science at the Market

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**Thesis Defense**

**Title:** Experimental and Theoretical Investigations of the Relationship between Fitness and Mutation rate Evolution in E.coli

**Speaker:** Nicholas Sherer (University of Illinois at Urbana-Champaign)

**Date:** Thursday, May 2, 2019

**Time:** 10:00 am

**Location:** 222 Loomis
CALENDAR OF EVENTS http://physics.illinois.edu/bluesheet.asp

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Visitors:

Theoretical and Computational Biophysics Group Seminar

Title: Simulations of Structural Transformations in Ceramide Phases from Fitting Structures to CEMOVIS Image Data

Speaker: Professor Erik Lindahl

Date: Thursday, May 2, 2019  Time/Location: 3:00-4:00 pm / 3269 Beckham

Abstract: The stratum corneum is the outermost layer of human skin and primary barrier towards the environment. The main component is stacked layers of saturated long-chain ceramides, free fatty acids and cholesterol, but we do not yet know the molecular structure or formation details. Here, I will present our work on new methods to fit models to low-resolution cryo-EM microscopy vitreous section (CEMOVIS) data, in particular by generating molecular models and using cryo-EM simulation to generate electron diffraction micrographs that can be compared directly to experimental data, and iteratively use these to improve the models. This has enabled us to create a number of alternative models, compare how they fit existing experimental data, and also use coarse-grained simulations to understand the formation process where cubic phases turn into bilayers depending on the lipid composition. These types of models can be highly useful tools for understanding the barrier properties, and we are currently combining it with free energy calculations to explore rapid prediction of permeation properties from CEMOVIS-derived models, which could have important applications in developing new generations of skin-permeating drugs.
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CPLC Seminar

Speaker: Yijun Ruan (Jackson Laboratory)

Date: Friday, May 3, 2019

Time/Location: 10:50 am/ 144 Loomis
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Title: Computer Technology Industry: Adventures, Opportunities and Outlook from a Physicist’s Perspective

Speaker: Dr. Olabode Sule, Research Software Engineer (Scotty Labs)

Date: Friday, May 3, 2019

Time/Location: 11:00 am/ 204 Loomis Lab

Abstract: I will go over some aspects of the computer technology industry that are relevant to getting a job in it as a physicist. I will relate things as much as possible to my experience in the industry. In particular I will discuss some pre-requisites and strategies for acing software engineering and data science/machine learning interviews. Along the way I will touch on some of the exciting opportunities in cutting edge industries like self driving cars/robotics, blockchain and quantum computing.

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**Thesis Defense**

**Title:** Observing and Quantifying Transposable Element Activity Inside Living Cells

**Speaker:** Jia Gloria Lee (University of Illinois at Urbana-Champaign)

**Date:** Friday, May 3, 2019

**Time:** 4:00 am

**Location:** 222 Loomis
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**Scientific Exhibit**

**Title:** Phys498-ART Culminating Event: Science for the Senses

**Speaker:** Students of Phys498-ART Where the Arts meets Physics

**Date:** Friday, May 3, 2019  **Time:** 5:00 am

"Science for the Senses", is the culminating public event for the project-based course Phys498-ART, Where the Arts Meets Physics, conducted by Prof. Smita Vishveshwara and teaching assistants Jackson Fliss and Danielle Markovich, and is part of the May Urbana's First Friday. Drop by anytime 5-7pm. All ages welcome. Experience the universe and physics at play through song, illustration, poetry, and even cooking.

-Exhibits created by students include:
  - Black holes and gravitational waves swirling in Japanese print;
  - An electron's adventures with lasers in animation;
  - The universe cooked in six delicious courses;
  - Pen-paper-coffee based renditions of solar system models;
  - A lunar lander living space;
  - Mass and time units grooving to live music;
  - 13 billion years in 13 melodic minutes.

And more! Students will be available to discuss, discourse, and delight throughout the event.

**Facebook Event with Info:** [https://www.facebook.com/events/2325391507750113/]
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**Associate/Full Professor Position In Computational Condensed Matter Physics**

**School**: The University of Tennessee

The Department of Physics and Astronomy in collaboration with the Department of Electrical Engineering and Computer Science at the University of Tennessee (UT) invites applications to fill a tenured faculty position in the College of Arts and Sciences at the associate/full Professor level. The successful candidate will hold a joint appointment in the Department of Physics and Astronomy (primary) and the Department of Electrical Engineering and Computer Science. The emphasis of this search is to strengthen our efforts in the development of new algorithms for computational condensed matter physics research within both departments. A further expansion in the area of quantum materials and quantum information is anticipated, which will be supported by junior-level hires following the successful completion of this search.

Candidates should have a PhD in Physics or related field, a strong research record in computational condensed matter physics, experience in the development of simulation algorithms for quantum materials, and background in computer science with an emphasis on novel approaches such as machine learning and other promising techniques. The candidate is also expected to actively participate in a cluster hire on quantum materials in progress at UT, provide leadership in developing a synergistic interdisciplinary quantum materials program, establish an externally funded research program, provide interdisciplinary training for graduate students and postdoctoral researchers, and to contribute to the teaching mission of the departments at both the undergraduate and graduate levels. While the preferred expertise should be in the broad area of algorithmic development for quantum many body physics, a strong interest in bridging the efforts of the above-mentioned departments is highly desirable.