

Board Meeting
January 18, 2018

APPOINT FELLOWS TO THE CENTER FOR ADVANCED STUDY, URBANA

Action: Appoint Fellows to the Center for Advanced Study

Funding: Private Gift Funds from the Beckman Endowment and State Appropriated Funds

Each year the Center for Advanced Study awards appointments as Fellows in the Center, providing one semester of release time for creative work. Fellows are selected in an annual competition from the untenured faculty of all departments and colleges to carry out self-initiated programs of scholarly research or professional activity.

The Chancellor, University of Illinois at Urbana-Champaign, and Vice President, University of Illinois recommends the following list of Fellows selected for the 2018-2019 academic year, and offers brief descriptions of their projects:

Jeffrey Filippini, Assistant Professor, Physics, *Observing the Dawn of Time from Above the Clouds: new telescopes for the second flight of SPIDER*

The primary goal of this project is to build and deploy a set of new cameras for SPIDER, a balloon-borne instrument seeking evidence of primordial gravitational waves imprinted on the cosmic microwave background. The Filippini group will build optics for SPIDER's new telescopes, optimize the instrument's detector and readout performance, and deploy SPIDER to Antarctica in the 2018-2019 austral summer to observe the early universe from a stratospheric balloon.

Pinshane Huang, Assistant Professor, Materials Science and Engineering, *Imaging Molecular Surfaces via Atomic Scale Electron Microscopy and Spectroscopy

Professor Huang will develop methods to understand and predict the molecular interactions that govern the growth, reactivity, and stability of nanoparticles used across the fields of energy generation, catalysis, and medicine. These studies will utilize a new, state-of-the-art scanning transmission electron microscope to focus electrons down to sub-angstrom beams in order to image the structure and chemistry of small molecules at the nanoscale.

Hong Jin, Assistant Professor, Biochemistry, *Transcript-specific Translation: Mechanisms, Structures and Principles*

The long-term goal of this project is to achieve a comprehensive and quantitative understanding of transcript-specific translation mechanisms. This research plan aims to determine the mechanisms of remodeling and activation of the 5'-untranslated region (5'UTR) in cellular mRNAs using a combination of biochemistry, genetics, and structural biology.

Jamie Jones, Assistant Professor, English, *Rendered Obsolete: The Afterlife of the U.S. Whaling Industry in the Petroleum Age*

Professor Jones's book project chronicles the decline of the United States whaling industry, which was disrupted in the mid-19th century when its main commodity—whale oil—was supplanted by petroleum from the newly developed oilfields of Pennsylvania and Ohio. The U.S. whaling industry shifted from the realm of oil extraction to the realms of culture, tourism, and politics, a transformation that helps us understand obsolescence as a process not of disappearance, but of persistence.

Avital Livny, Assistant Professor, Political Science, *Persistent Effects of Diversity for Politics and Economics: The Case of Ottoman Turkey*

What is the longer-term impact of diversity on economic and political processes, even after that diversity has been eliminated? Leveraging the sudden end of religious diversity in the Ottoman Empire and variation in the extent of contact between Muslims, Christians and Jews during Ottoman rule, this research project will examine patterns of economic growth, public goods provisions and tolerance in contemporary Turkey.

Mauro Nobili, Assistant Professor, History, *Making Authority by Rewriting the Past in Islamic West Africa: The Seventeenth-century Tārīkh Ibn al-Mukhtār and the Nineteenth-century Tārīkh al-fattāsh

This project will advance our knowledge of West African history in two crucial phases: after the fall of the great empires in the late sixteenth century and at the time of the nineteenth-century Islamic theocracies. By exploring and translating two linked chronicles - the seventeenth-century Tārīkh Ibn al-Mukhtār and the nineteenth-century Tārīkh al-fattāsh – the proposed project will examine how authority was legitimized through the writing of history in Islamic West Africa.

Yue Shen, Assistant Professor, Astronomy, *Supermassive Black Hole Physics and Evolution with Time-Domain Exploration*

Professor Shen proposes to measure the mass of supermassive black holes in distant active galactic nuclei to understand the physics and growth of these black holes, as well as their interaction with host galaxies. He has been leading a large project to collect time-domain monitoring data to carry out the proposed research.

Vesna Stojanoska, Assistant Professor, Mathematics, *Homotopical Arithmetic Duality

The goal of this project is to develop a homotopical duality theory for arithmetic objects such as Galois modules over local and global fields. The duality will then be used to design a new obstruction to solving multivariable polynomial equations.

Lav Varshney, Assistant Professor, Electrical and Computer Engineering, *A Mathematical Theory of Creativity

Neuroscientific reduction to understand human creativity and down-to-earth engineering to make computational creativity systems work become fundamentally intertwined with the difficult philosophical question of what is possible and what is impossible in creativity. This project will develop a mathematical theory to formally address such problems via theorems that establish tradeoffs between novelty and quality, revealing fundamental limits of creative systems, whether human, machine, or hybrid.

The Board action recommended in this item complies in all material respects with applicable State and federal laws, University of Illinois *Statutes, The General Rules Concerning University Organization and Procedure*, and Board of Trustees policies and directives.

The Executive Vice President and Vice President for Academic Affairs

concur.

The President of the University recommends approval.

* These faculty members have been recommended for appointment as Beckman Fellows in the Center for Advanced Study named for the donor of a gift that permits additional recognition for outstanding younger Fellow candidates who have already made distinctive scholarly contributions to their respective fields.