

Board Meeting
January 19, 2017

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 2017-2018 academic year, and offers brief descriptions of their projects:

Marc Doussard, Assistant Professor, Urban and Regional Planning, *Justice at Work: Movements for Economic and Social Equality in American Cities*

Justice at Work is a book in progress that asks how anti-inequality movements made U.S. cities potent sites for economic and social reform. It shows that reformers won support for their causes by establishing social and economic equity as catalysts for economic growth.

*** Grace Gao, Assistant Professor, Aerospace Engineering, *Monitoring and Improving Positioning Integrity for Unmanned Aerial Vehicles (UAVs)***

To ensure safe and reliable positioning of Unmanned Aerial Vehicles (UAVs), it is critical to address not only positioning accuracy, but also the confidence in

accuracy, defined as integrity. This project aims to assess, monitor and improve positioning integrity for UAVs.

Jeremy Guest, Assistant Professor, Civil and Environmental Engineering, *A General Framework for Analyzing the Sustainability of Resource Recovery from Bodily Waste

This project will explore a new way of looking at human bodily waste (urine and feces). Rather than viewing it as a hazard or burden on developing communities, Professor Guest will explore its potential role as a renewable resource for energy and fertilizer production to align sustainable development goals for sanitation, health, energy, and agriculture in low-income communities.

Kami Hull, Assistant Professor, Chemistry, *Development of Anti-Markovnikov Selective Pd-Catalyzed Olefin Functionalization Reactions

Carbon-nitrogen bonds are common functionalities found throughout organic molecules, including pharmaceuticals, agrochemicals, and organic materials. The proposed research will develop the anti-Markovnikov selective oxidative amination of terminal alkenes for the synthesis of carbon-nitrogen bonds. Further, it will seek to expand the methodology to other oxidative functionalization and difunctionalization reactions.

Xin Liu, Assistant Professor, Astronomy, *A Systematic Search for Merging Black Holes in the Early Universe

During her Center appointment, Professor Liu will apply a new technique to identify merging cosmic black holes in the early Universe, which are thought to be common but have been elusive observationally, using data from astronomical time-domain surveys such as the Dark Energy Survey. Higher resolution imaging and spectroscopic follow up observations will be conducted to confirm candidates and assess the efficiency and feasibility of the technique.

Ting Lu, Assistant Professor, Bioengineering, *Integrative Dissection of Bacterial Community Assembly*

This proposal aims to develop a quantitative and integrated understanding of the organization of bacterial communities. The goal is to further our basic knowledge about microbial ecology and sociology, shedding new light on the dynamics of microbial communities as well as the engineering of synthetic consortia.

Gregory MacDougall, Assistant Professor, Physics, *Emergent Ground State Behavior in Materials with Strongly Coupled Order Parameters*

Professor MacDougall uses advanced characterization techniques at national laboratories to explore novel phases of matter in materials containing strong coupling between local magnetic, charge and lattice degrees-of-freedom. Specific phenomena of current interest are emergent phase separation and domain wall order in spin-lattice materials and spatially modulated superconducting condensates in the cuprates-- effects he seeks to understand, control and generalize to related systems.

Yilan Xu, Assistant Professor, Agricultural and Consumer Economics, *The Genetic and Environmental Influences on Social Mobility

The underlying mechanisms of social immobility, i.e., the strong and well-known persistence of wealth, income, education, and occupation across generations and over one's lifetime, remain a puzzle in the economics and sociology literature. Using twins and siblings from the National Longitudinal Survey of Adolescent Health (Add Health), Professor Xu proposes to explore the roles of genes, environments, and their interactions in explaining social mobility.

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 concurs.

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.