Approved by the Board of Trustees
January 15, 2015

9

Board Meeting
January 15, 2015

APPOINT FELLOWS TO THE CENTER FOR ADVANCED STUDY, URBANA

Action: Appoint Fellows to the Center for Advanced Study for the Academic Year 2015-16

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 of the University of Illinois at Urbana-Champaign, and Vice President, University of Illinois recommends the following list of Fellows selected for the 2015-16 academic year, and offers a brief description of their projects:

Nora El-Gohary, Assistant Professor, Civil and Environmental Engineering, *Big Data Fusion and Analytics for Resorting and Improving Urban Infrastructure*

This project will explore the use and integration of big data fusion and analytics into infrastructure operation and maintenance decision-making. Big data analytics could allow for the extraction and analysis of actionable information/knowledge from large, diverse, distributed, and heterogeneous data sets that exist in the infrastructure domain for understanding the contributing factors to infrastructure deterioration and for selecting and prioritizing the operations necessary to maintain the reliability of the infrastructure system.

****Brendan Harley, Assistant Professor, Chemical and Biomolecular Engineering,** *Advanced biomaterials for cancer research and therapy*

This research project will develop new tools to improve the treatment of *glioblastoma multiforme*, the most common, aggressive, and deadly form of brain cancer. During his Center appointment he will work closely with collaborators at Mayo Clinic to validate an approach to grow a patient's own tumor cells in the laboratory using an engineered glioma biomaterial, a critical first step towards the goal of rapidly customizing personalized therapies for glioma.

****Taylor Hughes, Assistant Professor, Physics,** *Interplay of Symmetry, Geometry, and Topology in Crystalline Phases of Matter*

The central goal of this project is to discover new topological phases of quantum matter that are stabilized in crystalline materials. A target of identifying new fundamental phenomena and properties that is useful for technological applications will be pursued.

Charles Ledford, Assistant Professor, Journalism, *The Cultural Geography of Firearms: Illinois as Microcosm of the Nation*

The Cultural Geography of Firearms: Illinois as a Microcosm of the Nation examines a uniquely American issue: the role of firearms in a constitutional democracy, through the frame of the State's widely varied cultural geography. This project combines video journalism with data visualization to create an immersive four-part multimedia report suitable for broadcast, print, and digital dissemination.

Jian Ma, Assistant Professor, Bioengineering, *Evolutionary Annotation of Regulatory Sequences*

The goal of the proposed interdisciplinary research is to develop new comparative genomics methods to comprehensively annotate the detailed evolutionary history of regulatory elements in the human genome. This research will have the potential to help discover regulatory sequences that contribute to species-specific traits in mammalian evolution and human biology.

Robert Morrissey, Assistant Professor, History, *The Illinois and the Edge Effect: Bison Algonquians in the Tallgrass Prairie Borderlands, 1200-1850*

This book will be the first narrative ethnohistory and environmental history of the Illinois Indians and the tallgrass prairies. It will use the lens of human-animal studies, as well as archaeology, linguistics, and material culture, to tell early American history in a new way.

****Shinsei Ryu, Assistant Professor, Physics,** *Topological phases of matter and quantum anomalies*

This proposal aims to develop theoretical understanding of topological phases of condensed matter that can arise in the presence of or because of strong electron correlations, by using the concept of quantum anomalies. By developing new theoretical methods that can diagnose and describe interaction effects in topological phases, we will look for new kinds of topological phases of matter and novel fundamental topological effects in condensed matter systems.

****Joaquin Vieira, Assistant Professor, Astronomy,** *Observing the Birth of the Universe: Building and deploying a new camera for the South Pole Telescope*

The primary goal of the project is to build and deploy a new camera for the South Pole Telescope to study the cosmic microwave background, the epoch of inflation, and the birth of the universe. This project involves a team of graduate and undergraduate students who will help build optical and electronics elements, and deploy the camera at the geographic South Pole in the winter of 2015.

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 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.