

Board Meeting  
January 23, 2014

APPOINT FELLOWS TO THE  
CENTER FOR ADVANCED STUDY, URBANA

**Action:** Appoint Fellows to the Center for Advanced Study for the Academic Year 2014-15

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

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 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 2014-15 academic year, and offers a brief description of their projects:

**Venera Bekteshi, Assistant Professor, Social Work, *Contextual approach to cultural implications of mammography screening in Mexican-born women in new-growth areas of Illinois***

Although there have been recent gains in the 2-year mammography utilization and breast cancer mortality rates, Latina immigrant women remain at higher risk of presenting with late-stage breast cancer than non-Hispanic white women. This study adopts a contextual approach to the impact of culturally based factors on mammography screening among Mexican-born women in Champaign, Douglas, Iroquois, Macon, and Vermilion counties in Illinois.

**\*\* Soon-Jo Chung, Assistant Professor, Aerospace Engineering, *Revolutionary Aerial Drones: Control and Motion Planning Algorithms for Robotic Falcons to Prevent Airport Bird Strikes***

This research represents the first major attempt to develop control and guidance strategies for a highly maneuverable, field-worthy robotic bird capable of performing a highly challenging mission of preventing bird strikes. This work will build upon the PI's previous work on the control of flapping-wing aircraft and PDE control of dynamics, and novel strategies for herding, utilizing state-of-the-art tools in control theory and real-time optimization, will be key contributions of the proposed work.

**\*\* Kathryn Clancy, Assistant Professor, Anthropology, *Ecological determinants of luteal reproductive function***

This research looks at ovarian and endometrial function through the implantation window in Polish agriculturalists as a way to better understand natural variation in reproduction during a miscarriage-sensitive period. Other goals of this project include developing a structured mentoring program for an all-female team of graduate and undergraduate students on this project and revitalizing online outreach.

**Neal Dalal, Assistant Professor, Astronomy, *New signatures of neutrinos in cosmology***

The purpose of this project is to perform supercomputer simulations of the formation of cosmological structure using a recently developed novel code. The results will lead to new probes of fundamental particles called neutrinos, fundamental particles whose properties remain poorly characterized, decades after their initial discovery.

**\*\* Philip Godfrey, Assistant Professor, Computer Science, *Networking at the Speed of Light***

Even a fraction of a second of delay significantly affects humans in interactive uses of the Internet. This proposed work attacks the challenge of networking at the speed of light: achieving responsiveness in the Internet close to the underlying physical limits, roughly an order of magnitude lower latency than today's Internet applications.

**\*\* Vera Mikyong Hur, Assistant Professor, Mathematics, *Analysis of Surface Water Waves***

This project will develop new technical tools in partial differential equations and other branches of mathematics, and will extend and combine existing tools in order to tackle challenging open problems in the mathematical aspects of surface water waves. They include global existence versus finite-time singularities for the initial value

problem, the existence of solitary waves and their classification, the stability and instability of traveling waves.

**Yi Lu, Assistant Professor, Electrical and Computer Engineering, *Designing Next Generation Computing***

This project will address the fundamental problems with scalability, response quality and speed, and energy consumption with cloud computing. The proposed research plan will design a computing system that is amenable to big data, is scalable, energy-efficient, and has performance guarantees. It will lead to new ways of interacting with data from, for instance, medical imaging, genomics, and social networks, and eventually to ubiquitous computing.

**\*\*Charles Schroeder, Assistant Professor, Chemical and Biomolecular Engineering, *Molecular Design and Engineering of Materials for Advanced Functionality***

This research aims to develop new molecular methods to control the structure, shape, and sequence of polymeric materials. In this way, the work is focused at the interface of single molecule polymer dynamics and materials chemistry, with the overall goal of developing advanced functional materials such as DNA-based hydrogels and chemically responsive “smart” materials.

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.

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\*\*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.