3

Board Meeting
March 13, 2007

APPOINT ASSOCIATES TO THE CENTER FOR ADVANCED STUDY, URBANA

Action: Approve Appointment of Associates in the Center for Advanced Study for the Academic Year 2007-2008

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

Each year the Center for Advanced Study (CAS) awards appointments as Associates to the Center, providing one semester of release time for creative work. Associates 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 at Urbana recommends the following list of Associates selected for the 2007-2008 academic year, and offers a brief description of their projects:

James R. Barrett, Professor, History, *Americanization from the Bottom, Up*
This project explains how diverse Irish American voices contributed to the formation of a new and more diverse American culture in the context of the massive migration of "new immigrants" and people of color. The Irish were well-placed "Americanizers" in workplaces, churches, vaudeville stages, political machines, and streets of American cities between the end of the nineteenth century and the Great Depression, conveying to more recent migrants what it meant to be "American."

Aida Xenia El-Khadra, Associate Professor, Physics, *High Precision Flavor Physics with Lattice QCD*
Our limited understanding of the strong interactions currently contributes the dominant uncertainty in determinations of standard model parameters from precision flavor physics experiments. The focus of this project is to drastically reduce the theoretical uncertainties in our current lattice calculations from about 10 percent to the 1-2 percent level by improving the heavy quark action.

Ying-yi Hong, Professor, Psychology, *The Role of Essentialist Race Belief on Self and Identity Processes*

This research seeks to examine lay people's beliefs in genetic determinism of racial differences and the impacts of such false beliefs on the self and identity for members of racial/ethnic majority and minority groups. It enriches our understanding of how the relationship between genomics, race, and ethnicity could impact on people's psychological processes.

Tony M. Liss, Professor, Physics, *Searching for New Phenomena at the Large Hadron Collider*

In late 2007 at CERN, the European laboratory for high-energy physics in Geneva, Switzerland, the Large Hadron Collider (LHC) will begin operation for the first time. When that happens, the LHC will become the highest energy accelerator in the world, eclipsing the Fermilab Tevatron by a factor of seven in energy. At such extremely high energy the LHC will probe the physics of the very early Universe, just moments after the Big Bang, and by doing such we expect to answer some of the deepest mysteries about what our Universe is made of and how it evolved from the Big Bang to what we observe today.

Liss' research group will collaborate in the commissioning of the ATLAS detector at the LHC, preparing the detector for full operation and the graduate students for the analysis of the data. Experience has shown that those that are most effective at physics analysis are those people that have worked closely on commissioning of the detector in order to build up an understanding of how to extract the most from a complex instrument.

The commissioning task will involve two stages. The first stage is to develop software tools to use for detector "alignment." The ATLAS detector is an enormous device that is tens of meters in diameter. In order to make the precision measurements necessary of very high-energy phenomena, the positions of the individual components of the detector have to be known to about a tenth of a millimeter or better. The procedure of determining these positions is known as detector alignment. The second stage of the commissioning task is more oriented towards the physics itself. It involves using the data from the collisions in the accelerator to develop a detailed understanding of the behavior of the detector. The idea is to measure known and well understood physics processes. Only when one understands the detector response to these processes can one move on to the exciting discoveries for which the LHC was designed. Liss' CAS release time appointment comes at an important time when crucial groundwork for future discoveries will be laid.

Craig C. Lundstrom, Associate Professor, Geology, *Re-evaluation of the Process Producing Earth's Granites and Continental Crust*

This project tests Lundstrom's proposed hypothesis of the origin of Earth's distinctive continental crust. Data obtained from experiments, analyses of granitic rocks, and numerical modeling will support or refute the hypothesis that granites reflect a long-time scale mechanism of diffusion-based differentiation.

Romana Nowak, Associate Professor, Animal Sciences, *Relationship between Metabolic Syndrome and Uterine Leiomyomas*

This proposal is for an epidemiological study to determine whether African-American women who suffer from several of the physiological disturbances associated with metabolic syndrome including obesity, type II diabetes, and hypertension show an increased incidence of symptomatic uterine leiomyomas.

David Joseph O'Brien, Associate Professor, Art and Design, *Delacroix and North Africa*

The focus of this project is to complete research on a book about the French artist Eugène Delacroix's depictions of North Africa. This study will relate Delacroix's treatment of North African subjects to three closely allied phenomena: the development of French colonialism in North Africa, the growth of travel and tourism in the region, and the proliferation of Orientalism in visual culture.

Michel Regenwetter, Associate Professor, Psychology, *Behavioral Social Choice: Consensus among Consensus Methods*

The proposed project will allow Regenwetter to write a sequel to his book entitled, Cambridge University Press book, *Behavioral Social Choice: Probabilistic Models, Statistical Inference, and Applications*. The main thrust of the first book was to demonstrate that the theoretical literature overstates the importance of the so-called "Condorcet paradox" (of "majority cycles") and thus, that Arrow's Impossibility Theorem may have limited real world implications. The main thrust of the second book is to demonstrate that the theoretical literature's emphasis on the conceptual and mathematical incompatibility of competing aggregation methods is also misleading. Again, based in large part on Arrow's theorem, the theoretical literature makes pessimistic predictions on how different social choice rules are mathematically irreconcilable, and how policy makers are doomed to choose one voting method over others at the expense of violating some of the fundamental principles underlying those alternative voting methods. The 2006 book provides tools that allow us to compare different voting procedures on survey or ballot data collected under a single voting method, as long as certain requirements hold. From empirical investigation of U.S. presidential election survey data as well as data from various elections under various voting rules, competing voting methods appear to be, by and large, in agreement, at least on who is the best and who is the worst candidate (in multi-candidate elections). In other words, another situation arises where social choice in practice may bypass the pessimistic predictions of rational choice theory.

Paul E. Schupp, Professor, Math, *Algebraic, Computational and Geometric Properties of Random Groups*

Random finitely presented groups possess amazingly good algebraic, computational, and geometric properties. This study plans to continue finding new properties and extending similar results to other types of mathematical structures.

Danuta Renu Shanzer, Professor, Classics, *The Origins of the Early Medieval Judicial Ordeal by Fire*
  This project studies the origins of various ordeals used in the European early Middle Ages, primarily those by fire, but also ordeal by water, oath, and bread and cheese. The scholarly consensus has been that the adoption of these irrational methods of proof came about under the influence of Germanic law; Shanzer argues for Roman and specifically Christian origins.

Slawomir Solecki, Professor, Math, *Metric Spaces and Combinatorics*
  This project investigates two mathematical problems related to metric structures from the point of view of finite combinatorics and finite model theory. The problems concern connections between the notions of distance and size and algebraic properties of isometry groups.

Richard Sproat, Professor, Linguistics and Electrical and Computer Engineering, *Multi-agent Simulation of the Evolution of Complex Morphology*
  This project builds a computational model of language change. The model is based on a simulation of a community of speakers where "children" learn language from "parents," and errors introduced result in a change of the language over time.

  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 President of the University concurs.