

## AWARDS

### **Brian Munsky and Cristiano Nisoli receive Leon Heller Postdoctoral Publication Prizes**

The Leon Heller Postdoctoral Publication Prize in Theoretical Physics is a biennial prize, jointly sponsored by the Laboratory and retired scientist Leon Heller. The prize is awarded for the best article in theoretical physics, published or accepted for publication after January 1, 2008. The article must describe work performed primarily during the postdoctoral appointment. Heller, who created the prize in 1976, provides the prize money. He has paid the cash award since the inception of the program.



Brian Munsky (Information Sciences, CCS-3/Advanced Measurement Science, B-9) is the winner of the Leon Heller Postdoctoral Publication Prize for his paper, “Listening to the Noise: Random Fluctuations Reveal Gene Network Parameters,” in *Molecular Systems Biology*, October 2009, and co-authored with Brooke Trinh and Mustafa Khammash. Munsky applied Finite State Projection methods to develop a quantitative model of induction of the lac operon in *E. coli*, and worked with an experimental group to design and perform experiments to validate his approaches. A key advance is the recognition of the importance of dynamic single-cell measurements of lac induction, with determination of histograms of lac expression levels. These data were then assimilated with the stochastic models Munsky developed to enable prediction of the system’s behavior in previously unstudied regimes. The paper has been among the highest-accessed manuscripts in a very high-impact journal, and the work has formed the basis of several new collaborations between experimental teams and Munsky. Michael Wall (CCS-3) nominated Munsky.



Cristiano Nisoli (Physics of Condensed Matter and Complex Systems, T-4/Center for Nonlinear Studies, T-CNLS) received “Honorable Mention” for “Thermally Induced Local Failures in Quasi-One-Dimensional Systems: Collapse in Carbon Nanotubes, Necking in Nanowires, and Opening of Bubbles in DNA”, in *Physical Review Letters*, January 2010, co-authored with Douglas Abraham, Turab Lookman, and Avadh Saxena. Nisoli developed a general and powerful statistical framework to explore thermally activated failures in quasi-1-D systems. He analyzed collapse in carbon nanotubes and the formation of bottlenecks in nanowires, both of which affect conductance. Nisoli extended this model to describe the opening of bubbles of base pairs in DNA double strands, which is relevant for transcription and denaturation. He predicted the probability of the opening of bubbles in DNA, the average distance between flattened regions of a nanotube or necking in a nanowire, and a critical temperature below which these events become very rare. His work may impact the improved synthesis of longer nanotubes and nanowires, and offers a statistical insight into the unbinding of DNA. Avadh Saxena (T-4) nominated him.

### **Emily Schultz-Fellenz and George Perkins receive ADCLES awards**

The Associate Directorate for Chemistry, Earth, and Life Sciences (ADCLES) gave Technologist of the Year awards to recognize and acknowledge the valuable contributions of CLES technicians and technologists to Laboratory science, technology, and engineering. The primary work of a CLES technician and technologist is to help solve scientific problems, discover new scientific knowledge, and/or advance technology. Mary Neu, Associate Director of CLES, presented the awards.