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**Sponsors:**

American Automatic

Control (AACC)

Technical Committee on

Education

IEEE Control Systems

Society (CSS) Technical

Committee on Control

Education

This outreach event is designed to increase the general awareness of the importance of systems and control technology and its cross-disciplinary nature among high school students and teachers. Control is used in many common devices and systems: cell phones, computer hard drives, automobiles, and aircraft. The control field spans science, technology, engineering and mathematics (STEM). The success of all STEM disciplines depends on attracting the most gifted young people to science and engineering professions.

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# Workshop for Middle and High School Students and Teachers

Wednesday, July 1, 2015

9:30 am – 2:30 pm

Red Lacquer Room, Hilton Palmer House\*

## The Power, Beauty and Excitement of Cross-Boundaries Nature of Control, a Field that Spans Science, Technology, Engineering & Mathematics (STEM) 15<sup>th</sup> Anniversary

This workshop is held in conjunction with the 2015 American Control Conference.

[http://acc2015.a2c2.org/hs\\_workshop.html](http://acc2015.a2c2.org/hs_workshop.html)

### PROGRAM

- 9:30 Welcome**  
**Bozenna Pasik-Duncan**, University of Kansas and Chair AACC Committee on Education  
**Richard Braatz**, Massachusetts Institute of Technology and General Chair, 2015 American Control Conference  
**Radhakishan Baheti**, Program Director, National Science Foundation
- 10:00 *The Miracle of Stabilization***  
**Dennis Bernstein**, Professor of Aerospace Engineering, University of Michigan
- 10:20 *How to Design a Self-Driving Car***  
**Richard Murray**, Everhart Professor of Control and Dynamical Systems and Bioengineering, California Institute of Technology
- 10:40 *Molecular Robots***  
**Elisa Franco**, Assistant Professor of Mechanical Engineering, University of California, Riverside
- 11:00 *Controlling Batteries and Fuel Cells: Mastering the Mysterious World of Ions***  
**Anna Stefanopoulou**, Professor of Mechanical Engineering and Naval Architecture and Marine Engineering, University of Michigan
- 11:20 *From Wright Brothers First Flight to Curiosity's Landing on Mars: What Makes Flight Control Challenging and How to Provide Guarantees of Performance***  
**Naira Hovakimyan**, Professor, University Scholar and Schaller Faculty Scholar of Mechanical Science and Engineering, University of Illinois, Urbana-Champaign
- 11:40 *Computational Thinking as the Link Between Recent Curriculum and Applied Mathematics***  
**Andrew Bucki**, Associate Professor of Mathematics, Langston University and Faculty Member, Oklahoma School of Science and Mathematics
- 12:00 Lunch** (provided on site) / **Tour conference exhibits / Meet control researchers**
- 12:50 *Control of Complex Networks***  
**Andrew Clark**, Assistant Professor of Electrical and Computer Engineering, Worcester Polytechnic Institute
- 1:10 *Think Mathematically Act Computationally***  
**Alec Knutsen**, B.S. Student in Math and Computer Science, University of Kansas
- 1:30 *Medically Inspired Engineering: Building an Artificial Pancreas***  
**Francis J. Doyle III**, Dean, Paulson School of Engineering and Applied Sciences, Harvard University (Beginning August 1)  
Mellichamp Endowed Chair Professor in Process Control at UCSB
- 1:50 *Communicating Through Motion in Dance***  
**John Baillieul**, Distinguished Professor of Mechanical Engineering, Boston University and **Kayan Ozcimder**, Postdoctoral Research Associate, Princeton University
- 2:10 Student Reflections of the Workshop / Closing Discussion and Remarks**  
**Bozenna Pasik-Duncan** and **Linda Bushnell**

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