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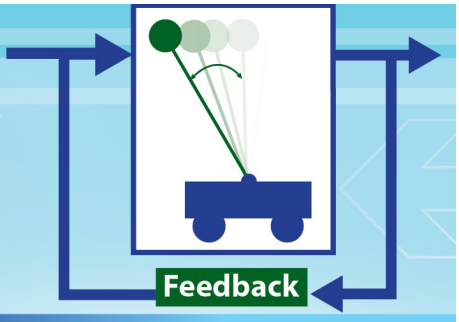
Control Seminar



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Representing storage and demand response in power system operations

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Friday, October 23, 2015

3:30 – 4:30 pm • 1500 EECS

ABSTRACT: Flexibility from energy storage and flexible load aggregations is essential to renewable energy integration. Presently, high costs and awkward regulatory rules hinder the broad adoption of storage in power systems. In this talk, we present the financial storage right, a new payment mechanism that widens the economic viability of energy storage. Financial storage rights let storage to participate in electricity markets in the same manner as transmission lines, and further enables risk-adverse market participants to hedge against nodal price volatility resulting from storage congestion.

In the second part of this talk, we develop a new framework for concisely respresenting load aggregations in a way that can be incorporated into power system operations and markets. The framework functions by approximating the Minkowski sum of loads represented by polytopes as another low-dimensional polytope.

BIO: Josh A. Taylor received the B.S. degree from Carnegie Mellon University in 2006, and the S.M. and Ph.D. degrees from the Massachusetts Institute of Technology in 2008 and 2011, all in Mechanical Engineering. From 2011 to 2012, he was a postdoctoral researcher in Electrical Engineering and Computer Sciences at the University of California, Berkeley. He is currently an assistant professor in the Department of Electrical and Computer Engineering and the associate director of the Institute for Sustainable Energy at the University of Toronto. His current research focuses on control and economics of electric power systems

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