



TEXAS A&M UNIVERSITY

Department of Electrical
& Computer Engineering

TRANSFORMING ENGINEERING EDUCATION

ENERGY & POWER SEMINAR

Wide-Area Resilience of Power System Dynamics

Abstract

My group's recent research on power systems has been focused on coordinating sensing and control assets to manage network-wide swing dynamics during severe disruption events. These efforts are aimed at building wide-area resilience in power systems, through coordination of controls and fast situational awareness of disruptions. In this talk, I will discuss three recent projects in this direction:



1. A study of how control-system tuning and control interdependencies modulate oscillatory swing dynamics in the bulk grid.
2. Design of coordinated controls in power distribution systems with high penetration of inverter-based resources, to ensure localization of disturbances.
3. Methods for fast alarming of forced oscillations and poorly-damped natural oscillations using data from multiple synchrophasors across the bulk power grid.

Beyond discussing these projects, we will briefly introduce a broader framework for understanding wide-area resilience in complex infrastructures, and highlight some new data-driven approaches based on sparsification of network signals.

Dr. Sandip Roy

Professor
Electrical & Computer Engineering
Texas A&M University

Friday, October 27

11:30 am - 12:20 pm

244 ZACH

Biography

Sandip Roy is a professor in the Electrical & Computer Engineering Department at Texas A&M University, and Director of the Global Cyber Research Institute. His research is concerned with achieving mission-level security and resilience in cyber-physical systems, primarily using network control theory approaches.

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