



CREW Seminar Series: Fall 2012

Framework for Investigating Impacts of Wind Energy Penetration on Unscheduled Flows in Bulk Interconnections

Abstract

Existence of unscheduled flows (USFs) in power system networks under deregulated market is significant component of operating scenarios as well as resource allocation. The prime reason of existence of USFs is inconsistency between physical laws of electricity and electricity trades in determining line flows. Tools and techniques required for the framework include graph theory, power flow analysis, estimation theory, and stochastic systems. Results on the IEEE 14 bus test system under various generation and load profiles will be discussed to explain both deterministic and stochastic USFs. Ordinary least squares and ridge regression are the two estimation techniques used in the analysis. The analytical ridge regression is applied for accommodating unscheduled flows (USFs) in bulk interconnection by estimating 'loop flows' is formulated. Ridge regression uses a bias parameter to minimize the mean squared error, as compared to ordinary least squares (OLS) method, when numerically ill-conditioned system matrices are present. The analytical approach is used in cases with large number of regressors when graphical choice of the bias parameter is cumbersome.

By **Manish Mohanpurkar** from **Colorado State University**

On **Friday, September 28, 2012, at 11:00am**

In **Bechtel Collaboratory (room 1B50), Discovery Learning Center**
University of Colorado at Boulder

Refreshments will be available at 10:50am

To attend the live broadcast (using Adobe Connect):

<https://meeting.colorado.edu/seminarseries-2012fall-manishmohanpurkar>



Manish Mohanpurkar received his Bachelor of Engineering degree in Electrical, Electronics & Power in the year 2008, from Dr. B. A. M. University, Aurangabad, India with distinction. He graduated with a Master of Science (Electrical Engineering) from Oklahoma State University in Dec 2010. He worked as a Research Assistant at the Engineering Energy Laboratory at Oklahoma State, from Aug. 2008 to Dec. 2010. Currently, he is working towards a PhD at Colorado State University, Fort Collins, CO in the area of power system planning for high renewable energy scenarios. Recipient of the prestigious Frontiers of Power/Bill Hughes scholarship in 2009 and won the 3rd prize, poster contest in IEEE PES GM 2012. Presently, his areas of interest are graph theory applications to power systems, planning and operation scenarios of wind energy, and estimation theory.

How to get to the CU-Boulder Discovery Learning Center

From 28th Street (Hwy 36), go west on Colorado Ave., which leads into the University. Take the next left (going south) onto Regent Drive. The Discovery Learning Center (DLC; highlighted in green below) is located on the west side of Regent Drive. Parking is available at visitor parking lots and nearby meters.

The seminar takes place in the Bechtel Collaboratory room (1B50), which is located in the 1st basement (ground level).

