

Stochastic Methods for Power System Modelling, Control and Optimization

Panel Session – IEEE PES Meeting 2016

Chair: Federico Milano – University College Dublin – federico.milano@ucd.ie

Co-chair: Chris Dent – Durham University – chris.dent@durham.ac.uk

Abstract

This panel covers the current state of the applications of stochastic methods for power system analysis and operation. After an overview talk that provides an outline of the topics to be covered in the panel, a survey of existing application of stochastic methods will be given. Different time scales will be discussed in the panel, as follows. The adequacy of stochastic differential equations to model short term phenomena, such as wind speed variations will be discussed under two different points of view, namely, forecasting and dynamic analysis. Then the potential of long-term optimization models based on stochastic programming will be illustrated through some specific applications to real-world systems with inclusion of high uncertainty. The talks will be mainly by researchers developing cutting-edge models and techniques based on advanced statistical methods. One talk from industry will complete the panel providing an overview from a practical perspective.

Panelists

1. Amy Wilson – Durham University – amy.wilson@durham.ac.uk

Using emulation to quantify uncertainty in energy system models

2. Pierre Pinson – DTU – ppin@elektro.dtu.dk; Emil B. Iversen – DTU - emilbanning@gmail.com

An open-source python platform to generate space-time scenarios of renewable power generation

3. Bryan Palmintier – NREL – Bryan.Palmintier@nrel.gov

Distribution system planning for uncertain DER futures using Adaptive Dynamic Programming (ADP)

4. Rafael Zárate – Universidad de Castilla-La Mancha – Rafael.Zarate@uclm.es

Comparison of different approaches to model wind speed based on stochastic differential equations

5. Eamonn Lannoye – EPRI – elannoye@epri.com

Stochastic approaches for reserve determination and operational planning