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Wind Turbine Control Systems: Adventures in Research and Teaching

Dr. Kathryn Johnson

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Joint Appointee, NREL

Date: Tuesday April 23, 2013 at 3:30 p.m.
Location: ECCR 265 (Engineering Center)

Abstract:

Wind turbines and wind farms benefit from modern control theory, which can drive cost of energy reductions by reducing turbine loads and increasing energy capture. Numerous feedforward and feedback control techniques are currently being evaluated toward these ends, and the talk will provide an overview of those strategies being tested at the Colorado School of Mines (CSM) and National Renewable Energy Laboratory's National Wind Technology Center (NWTC). Both simulation and field test results will be presented. The talk will then describe how wind energy and wind turbine control lends itself to a project-based learning methodology in a graduate class offered at CSM, now in its second semester. Students in the spring 2012 class designed and built a 2-m diameter turbine, and students in the spring 2013 class are improving it.

BIO:

Kathryn Johnson is an Associate Professor at the Colorado School of Mines in the Department of Electrical Engineering and Computer Science and is Jointly Appointed at the National Renewable Energy Laboratory's NWTC. In the fall 2011, she was a visiting researcher at the Vestas-funded Aalborg University Wind Turbine Control research program in Denmark. She has researched wind turbine control systems since 2002, with various projects related to reducing turbine loads and increasing energy capture.

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