THE DEPARTMENT OF MATHEMATICAL SCIENCES

Indiana University - Purdue University Fort Wayne

is pleased to present

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The Power Domination Problem

Abstract

Electric power companies need to monitor the state of their networks continually in order to prevent power surges and black-outs. One method to accomplish this task is to place Phase Measurement Units (PMUs) at selected network locations. The synchronized readings provided by these PMUs, in conjunction with Kirchhoff's laws, permit one to determine the state of the network at any location. Because of the high cost of a PMU, it is important to minimize their number while maintaining the ability to monitor the entire system. This problem translates into the power domination problem in graph theory.

In this talk we will present some recent results in the study of the power domination problem, including a connection with the zero-forcing problem in linear algebra. We will show how the interplay between those problems allows to advance the state-of-the-art in both problems as well as in some extensions of both zero-forcing and power domination. In addition, we will present some very recent results on Nordhaus-Gaddum type bounds for the power domination number.

Noon – 1:00, Monday, Oct. 31, 2016. Location: Kettler 216

`http://ipfw.edu/departments/coas/depts/math/news/seminars.html`