Discrete Mathematics Seminar

Time: Friday, 19 March 2010, 12:30-1:30 PM
Room: 238 Derrick Hall
Title: Interdicting Nuclear Smugglers
Speaker: Dr. David Morton, Graduate Program in Operations Research, UT-Austin

Abstract:

We describe a model for deploying radiation detectors on a transportation network consisting of two adversaries, a nuclear-material smuggler and an interdictor. The interdictor first installs the detectors subject to a budget constraint. These installations are transparent to the smuggler, and are made under an uncertain threat scenario, which specifies the smuggler's origin and destination along with other details regarding the material and the manner in which it is shielded. The interdictor's goal is to minimize the probability the smuggler evades detection. We establish a complexity landscape for a class of models of increasing difficulty. And, for our simplest model we describe conditions under which optimal detector locations are nested as the budget grows.