

1086-VL-2950 **Assane Gueye*** (assane.gueye@gmail.com). *A Game Theoretic Approach to Communication Security*. Preliminary report.

We consider the security/availability problem and model it as a 2-player quasizero-sum game. We use the theory of blocking pairs of polyhedra (BPP) to characterize and analyze the Nash equilibria of the game. We illustrate the study by considering the particular problem of security/availability of communication networks. Using the theory of blocking pairs of polyhedra to analyze communication network security games has permitted us to 1) describe the worst-case attack on a communication network, 2) derive a closed-form characterization of the most critical links of the network, and 3) derive meaningful metrics for communication network vulnerability. All our game theory based metrics can be related to metrics derived from a purely graph theory analysis. (Received September 26, 2012)