

1147-94-917

June Zhang* (june.zhang@hawaii.edu), Electrical Engineering Department, University of Hawaii, Honolulu, HI 96822, and **Anders Host-Madsen** (ahm@hawaii.edu). *Impact of Topology on Epidemics and Cascading Failures.*

Complex systems of interdependent agents are of interest in many research areas. Examples of such systems are social networks or contact networks, through which rumors or viruses can spread from individual to individual, engineered networked systems such as the power grid, through which cascading failures can lead to large blackouts. These kinds of systems give rise to a new type of signal: graph signals, which exist not only in time but also in space (in the graph sense).

First, we will discuss network processes, random processes over networks from which graph signals can arise. Network processes have been used to model the spread of infection in a population or cascading failures in the power grid. We will see the challenges in analysis due to the inclusion of graph structure. Under special conditions, we can analyze the equilibrium distribution of a network process in closed-form. (Received January 29, 2019)