

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Identification of Interventions to Control Network Crises JIE SUN, SAGAR SAHASRABUDHE, ADILSON MOTTER, Northwestern University — Large-scale crises in financial, social, infrastructure, genetic and ecological networks often result from the spread of disturbances that in isolation would only cause limited damage. Here we present a method to identify and schedule interventions that can mitigate cascading failures in general complex networks. When applied to competition networks, our method shows that the system can often be rescued from global failures through actions that satisfy restrictive constraints typical of real-world conditions. However, under such constraints, interventions that can rescue the system from a propagating cascade exist over specific periods of time that do not always include the early postperturbation period, suggesting that scheduling is critical in the control of network cascades.

Jie Sun
Northwestern University

Date submitted: 10 Nov 2011

Electronic form version 1.4