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Cascading Failures Due to Multiple Causes in Interdependent Networks YOSEF KORNBLUTH, SERGEY BULDYREV, Yeshiva University — In recent years, several models of network failure have been introduced. Some of these models are based on overload, in which increased traffic destroys nodes, while others are based on partial isolation, in which a node needs several functional neighbors to survive. In these systems, failure of a small fraction of nodes can cause a cascade of failures which may completely destroy the network. The majority of these models are studied in single networks. However, many real-world systems are comprised of multiple interdependent networks. Recent studies based on the concept of mutual percolation show that these systems are much more vulnerable than a single network. We numerically and analytically investigate how multiple causes of failure simultaneously acting in a system of interdependent networks affect their vulnerability.

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