

A Modification of the Random Cutting Model

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We propose a modification to the random destruction of graphs: Given a finite network with a distinguished set of sources and targets, remove (cut) vertices at random, discarding components that do not contain a source node. We investigate the number of cuts required until all targets are removed, and the size of the remaining graph. This model interpolates between the random cutting model going back to Meir and Moon (1970) and site percolation. We prove several general results, including that the size of the remaining graph is a tight family of random variables for compatible sequences of expander-type graphs, and determine limiting distributions complete binary trees.