

1145-05-270

**Kevin K Ferland\*** (kferland@bloomu.edu), Mathematical and Digital Sciences, Bloomsburg University of PA, Bloomsburg, PA 17815. *Advancing Results in Maximum Toughness.*

Suppose a graph represents a computer network. The toughness of that graph is then a measure of how well the network can handle a computer-disabling attack seeking to maximize the ratio of resultant components left behind to disabled computers. Thus, given  $n$  computers and  $m$  cables with which to directly connect pairs of computers, it is preferable to build the toughest possible network. That is, we are interested in the maximum toughness among graphs with  $n$  vertices and  $m$  edges. After formally defining the graph vulnerability parameter toughness, we survey the known results on the maximum toughness among graphs. Along with some new results, several conjectures and open questions are expressed and meant to serve as a call to arms on this problem. (Received August 27, 2018)