1138-05-294   **Nathan Kahl***, nathan.kahl@shu.edu. *Vulnerability Parameters and Graph Compression.*

Given a simple graph G and vertices $u, v \in V(G)$, let X denote the set of vertices adjacent to u but not adjacent to v. The compression of G from u to v produces a new graph $G_{u \to v}$ by, for each $x \in X$, removing edges from G of the form ux and replacing them with corresponding edges of the form vx. Kelmans, and independently Satyanarayana, Schoppmann, and Suffel, showed that for any graph G and any $u, v \in V(G)$, compression from u to v could not increase, and typically decreased, both the number of spanning trees of G and the all-terminal reliability of G. Both of these are vulnerability parameters, i.e., measures of the strength of a network. We show that a number of other prominent vulnerability parameters—including vertex connectivity, edge connectivity, toughness, scattering number, and binding number—are affected by compression in exactly the same way as number of spanning trees and all-terminal reliability. As a corollary all of the vulnerability parameters considered are, like number of spanning trees and all-terminal reliability, minimized by threshold graphs. (Received February 12, 2018)

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