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Catherine A. Buell* (cbuell11@fitchburgstate.edu) and **Alex Nowak**. *Stabilizing Discrete Event Systems with Tropical Eigenvectors*. Preliminary report.

Tropical mathematics describes both the max-plus and min-plus algebras. These algebras provide a language through which we elegantly describe everyday phenomena such as the long-term behavior of discrete event systems. Extending the notion of tropical arithmetic to matrices and vectors, determining eigenvalues and associated eigenvectors, allows us to construct event systems that behave predictably and stably. First, we explore the graph theory associated with tropical eigenvalues and associated eigenspaces to address questions like shortest paths. Then, considering two classes of tropical matrices, irreducible and reducible, we look at how current algorithms compute eigenvalues of the former and conjecture necessary conditions for a stabilizing eigenvalue-vector for a reducible system. (Received September 07, 2014)