1135-15-2980 **Christopher Logan Hambric*** (clhambric@email.wm.edu), **Chi-Kwong Li** (math.ckli@gmail.com), **Diane Pelejo** (dcpelejo@math.upd.edu.ph) and **Junping Shi** (junpingshi@gmail.com). *Potential Stability of Matrix Sign Patterns.*

The study of stable matrices has several applications in predicting the long-term behavior of a system. We consider matrix sign patterns which have stable realizations in order to find general restrictions on the structure of an n-by-n stable matrix. In our research, we expand upon previous results regarding the minimum number of non-zero entries necessary for an irreducible n-by-n matrix to be stable, and time allowing we will discuss the problem of completely characterizing the set of potentially stable 3-by-3 sign patterns. Our approach uses a combination of graph and matrix theory in order to examine the structure and properties of these sign patterns. (Received September 26, 2017)