1146-15-137 **Wei Gao***, Department of Mathematics and Statistics, Auburn University, Auburn, AL 36849.
Zero-nonzero patterns that allow or require $\mathbb{S}_n^*$.

A zero-nonzero pattern matrix is a matrix with entries from $\{*, 0\}$, where $*$ is nonzero. Motivated by the possible onset of instability in dynamical systems associated with a zero eigenvalue, the inertia set $\mathbb{S}_n^*$ is defined to be $\mathbb{S}_n^* = \{(0, n, 0), (0, n-1, 1), (1, n-1, 0), (n, 0, 0), (n-1, 0, 1), (n-1, 1, 0)\}$. An $n \times n$ zero-nonzero pattern $\mathcal{A}$ allows $\mathbb{S}_n^*$ if $\mathbb{S}_n^* \subseteq i(\mathcal{A})$ and requires $\mathbb{S}_n^*$ if $\mathbb{S}_n^* = i(\mathcal{A})$. In this talk, some known results about zero-nonzero patterns that allow or require $\mathbb{S}_n^*$ will be shown. (Received January 16, 2019)