

1146-15-510

Marina Arav* (marav@gsu.edu), 25 Park Place, Atlanta, GA 30303, and **F. Scott Dahlgren** and **Hendricus van der Holst**. *A characterization of signed graphs (G, Σ) with $\xi(G, \Sigma) \leq 2$.*

A signed graph is a pair (G, Σ) where G is an undirected graph (we allow parallel edges but no loops) and $\Sigma \subseteq E(G)$. An edge in Σ is called odd, otherwise it is called even. If (G, Σ) is a signed graph with vertex-set $V = \{1, \dots, n\}$, $S(G, \Sigma)$ is the set of all symmetric $n \times n$ matrices $A = [a_{i,j}]$ with $a_{i,j} > 0$ if i and j are adjacent and connected by only odd edges, $a_{i,j} < 0$ if i and j are adjacent and connected by only even edges, $a_{i,j} \in \mathbb{R}$ if i and j are adjacent and connected by both even and odd edges, $a_{i,j} = 0$ if i and j are not adjacent, and $a_{i,i} \in \mathbb{R}$ for all vertices i . The parameter $\xi(G, \Sigma)$ is defined as the largest corank of any matrix $A \in S(G, \Sigma)$ satisfying the Strong Arnold Hypothesis. This invariant is closed under taking minors. Arav, Hall, van der Holst, and Li gave a characterization of 2-connected signed graphs (G, Σ) with $\xi(G, \Sigma) \leq 2$. A full characterization was still open.

In this talk, we discuss a full characterization of signed graphs (G, Σ) with $\xi(G, \Sigma) \leq 2$. This is joint work with Dahlgren and van der Holst. (Received January 29, 2019)