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Art Duval* (artduval@math.utep.edu), University of Texas at El Paso, Department of Mathematical Sciences, 500 W. University Ave., El Paso, TX 79968-0514, and **Caroline Klivans** and **Jeremy Martin**. *The G -Shi arrangement, and its relation to G -parking functions.*

Pak and Stanley found a bijection between parking functions on $[n]$ and regions of the complement of the Shi arrangement, $\{x_i - x_j = 0, 1: 1 \leq i < j \leq n\}$. In particular, there is a somewhat natural labeling of the regions such that every region has a different label, and these labels are precisely the parking functions on $[n]$.

We now define a G -Shi hyperplane arrangement

$$\{x_i - x_j = 0, 1: 1 \leq i < j \leq n; \{i, j\} \text{ is an edge of } G\}$$

of an arbitrary graph G , and compare the regions of the complement of this arrangement to G -parking functions, a well-studied generalization of parking functions to arbitrary graphs. In particular, while the Pak-Stanley labels of regions are no longer necessarily unique, we conjecture that the set of different Pak-Stanley labels of regions of the G -Shi arrangement is precisely the set of $(G+v)$ -parking functions, where $G+v$ is the join of G with a single vertex v . We offer some evidence in favor of the conjecture, including a proof that every label is a parking function. (Received September 16, 2010)