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Daniel C Slilaty* (daniel.slilaty@wright.edu), Dayton, OH 45435. *Signed-graphic matroids.*

A signed graph is a pair (G, σ) in which σ is a labeling of the edges of G with elements of the multiplicative group $\{+1, -1\}$. A circle (i.e., a simple closed path) in G is called *positive* if the product of labels on its edges is positive. Otherwise the circle is called negative. A subgraph of (G, σ) is called *balanced* when all of its circles are positive. There is a matroid $M(G, \sigma)$ whose elements are the edges of G . Given a subset of edges of G , the matroid $M(G, \sigma)$ is defined by the rank function $r(X) = v_X - b_X$ in which v_X is the number of vertices incident to edges in X and b_X is the number of balanced components of the subgraph defined by X .

It is known through results of Whittle and Zaslavsky that, as far as representability over finite fields goes, signed-graphic matroids come in three varieties: binary, quaternary, and non-quaternary. Within the class of binary matroids there are two other important classes of matroids: graphic matroid and cographic matroids. In this talk we will give detailed structure theorems for signed-graphic matroids that are graphic, cographic, binary, and quaternary. (Received February 06, 2008)