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Jiaao Li, Yezhou Wu and Dong Ye* (dong.ye@mtsu.edu), Department of Mathematical Sciences, Middle Tennessee State University, Murfreesboro, TN 37132. *Integer Flows and Signed-Circuit Covering*.

A signed graph (G, σ) is a graph G associated with a mapping $\sigma : E(G) \rightarrow \{-1, +1\}$. A *circuit* of a signed graph is a minimal dependent set of its graphical matroid, and a *circuit cover* is a family of circuits which covers all edges of G . Bouchet proved that a signed graph has a circuit cover if and only if it has a nowhere-zero integer flows. An interesting optimization problem is to find a circuit cover of a signed graph with the shortest length. In this talk, we will present our recent results on circuit covers of signed graphs via integer flows. (Received January 15, 2021)