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Yezhou Wu and **Dong Ye***, 1301 E. Main St., Murfreesboro, TN 37132. *Circuit Covers of Highly Connected Signed Graphs*. Preliminary report.

A signed graph (G, σ) is a graph associated with a mapping $\sigma : E(G) \rightarrow \{-1, +1\}$. A cycle is positive if it has an even number of negative edges and negative otherwise. A barbell is a subgraph consisting of two negative cycles intersecting exactly at one vertex or two disjoint negative cycles joined by a path internally disjoint from the two cycles. A circuit is either a positive cycle or a barbell. A circuit cover is a family of circuits which cover all edges of G . It is known that a signed graph has a nowhere-zero flow if and only if it has a circuit cover. However, it is also known that a 3-connected signed graph may not have a circuit 4-cover. In this talk, we talk about the circuit k -cover and shortest circuit cover of highly connected signed graphs. (Received September 17, 2018)