1125-VF-523 **Jian Cheng*** (`jiancheng@math.wvu.edu`), 320 Armstrong Hall, PO Box 6310, Morgantown, WV 26506, and **Y. Lu**, **R. Luo** and **C.-Q. Zhang**. *Shortest Circuit Covers of Signed Graphs.*

A shortest circuit cover $\mathcal{F}$ of a bridgeless graph G is a family of circuits that covers every edge of G and is of minimum total length. The total length of a shortest circuit cover $\mathcal{F}$ of G is denoted by $SCC(G)$. For ordinary graphs (graphs without sign), the subject of shortest circuit cover is closely related to some mainstream areas, such as, Tutte's integer flow theory, circuit double cover conjecture, Fulkerson conjecture, and others. For signed graphs G, it is proved recently by Máčajová, Raspaud, Rollová and Škoviera that $SCC(G) \leq 11|E|$ if G is s-bridgeless, and $SCC(G) \leq 9|E|$ if G is 2-edge-connected. In our paper this result is improved as follows,

$$SCC(G) \ \leq \ |E| + 3|V| + z$$

where $z \ = \ \min\{\frac{2}{3}|E| + \frac{4}{3}\epsilon_N - 7,\ |V| + 2\epsilon_N - 8\}$ and ϵ_N is the negativeness of G. As a corollary, we prove that $SCC(G) \leq \frac{14}{3}|E|$. The above upper bounds can be further reduced if G is 2-edge-connected with even negativeness. This is joint work with Y. Lu, R. Luo and C.-Q. Zhang from West Virginia University. (Received September 05, 2016)