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Jiaao Li* (joli@mix.wvu.edu), Department of Mathematics, West Virginia University,
Morgantown, WV 26506-6310. *Group connectivity, graph strength and degree sequence realization.*

The concept of group connectivity was introduced by Jaeger as a generalization of nowhere-zero flows. Let G be a graph and Π be the set of all partitions of $V(G)$. The strength of G , $\eta(G)$, is defined as $\eta(G) = \min_{\pi \in \Pi} \frac{|\partial\pi|}{|\pi| - 1}$, where $\partial\pi$ denotes the set of edges crossing over the sets of partition $\pi \in \Pi$. Both of group connectivity and graph strength problems can be well studied by contraction and reduction method. In this talk, we discuss the relationship between group connectivity and graph strength. We prove that if G is Z_k -connected, then $\eta(G) \geq \frac{k-1}{k-2}$. This solves a conjecture of Luo et al. for Z_k -connected graphs while it was unknown for even integer $k \geq 6$ previously. As an application, we solve the corresponding graphic and multigraphic sequence Z_k -connected realization problems. (Received August 07, 2015)