1132-05-319 **Ron Gould**, **Victor Larsen*** (vlarsen@kennesaw.edu) and **Luke Postle**. *Using discharging to understand structure in k-critical graphs.*

Ore conjectured in 1967 that $f_k(n)$, the minimum number of edges in a k-critical graph on n vertices, followed the formula $f_k(n+k-1) = f_k(n) + (k-1)\left(\frac{k}{2} - \frac{1}{k-1}\right)$. This formula mimics the growth of a k-critical graph using the Hajós construction, which modifies a k-critical graph to obtain a k-critical graph with $k-1$ extra vertices and $\binom{k}{2} - 1$ extra edges.

Recently, this conjecture has been shown to be asymptotically true. The proof method used a type of discharging argument to exhibit a lower bound on $f_k(n)$. We further examine this bound and show that a modification of the discharging method used gives extra information about the structure of k-critical graphs near the lower bound. (Received July 25, 2017)