1125-05-2170 **M. N. Ellingham** (mark.ellingham@vanderbilt.edu), **Songling Shan*** (songling.shan@vanderbilt.edu), **Dong Ye** (dong.ye@mtsu.edu) and **Xiaoya Zha** (xiaoya.zha@mtsu.edu). *Toughness condition for k-trees in K_4-minor-free graphs.*

Let k be a positive integer. A k-tree is a tree with maximum degree at most k, and a k-walk is a closed walk with each vertex repeated at most k times. A k-walk can be obtained from a k-tree by visiting each edge twice. Jackson and Wormald in 1990 conjectured that any $\frac{1}{k-1}$-tough graph contains a spanning k-walk for $k \geq 2$. This conjecture is widely open even for planar graphs. We confirm this conjecture for K_4-minor-free graphs, an important subclass of planar graphs, by showing that any $\frac{1}{k-1}$-tough K_4-minor-free graph contains a spanning k-tree for any integer $k \geq 2$. (Received September 19, 2016)