1058-05-196 **P. Haxell** (pehaxell@math.uwaterloo.ca), Dept of Combinatorics and Optimization, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada, **A. Kostochka*** (kostochk@math.uiuc.edu), 1409 W. Green St., Dept. of Mathematics, Urbana, IL 61801, and **S. Thomasse** (Stephan.Thomasse@lirmm.fr), Universite Montpellier II, 34392 Montpellier, France. *Stability results on covering of triangles by edges.* Preliminary report.

Let $\nu(G)$ denote the maximum number of edge-disjoint triangles in a graph G and $\tau(G)$ denote the minimum number of edges covering all triangles of G. Motivated by Tuza's conjecture that $\tau(G) \leq 2\nu(G)$ for every graph G, we sharpen two known results in this direction. Tuza proved that his conjecture holds for planar graphs. This result is sharp, since for the graph K_4 we have $\nu(K_4) = 1$ and $\tau(K_4) = \tau^*(K_4) = 2$. We prove that for every planar graph G with no K_4, $\tau(G) \leq 1.5\nu(G)$. This bound is attained at the 5-wheel. It implies that every planar graph G with $\tau(G)$ "close" to $2\nu(G)$ contains "many" K_4-subgraphs.

Let $\tau^*(G)$ denote the minimum total weight of a fractional covering of its triangles by edges. Krivelevich proved that $\tau^*(G) \leq 2\nu(G)$ for every graph G. We refine this result by showing that if a graph G has $\tau^*(G) \geq 2\nu(G) - x$, then G contains $\nu(G) - \lfloor 10x \rfloor$ edge-disjoint K_4-subgraphs plus $\lfloor 10x \rfloor$ additional edge-disjoint triangles. Our proof also yields that $\tau^*(G) \leq 1.8\nu(G)$ for each K_4-free graph G. (Received February 16, 2010)