1064-05-268 **Lale Ozkahya*** (ozkahya@iastate.edu) and **Yury Person** (person@informatik.hu-berlin.de). *Minimum H-decompositions of graphs: edge-critical case.*

For a given graph H, let $\phi_H(n)$ be the maximum number of parts that are needed to partition the edge set of any graph on n vertices such that every member of the partition is either an edge or it is isomorphic to H. Bollobás showed that when $H = K_r$, $r \geq 3$, $\phi_H(n)$ is equal to $t_{r-1}(n)$, the size of the $(r-1)$-partite Turán graph. Pikhurko and Sousa extended this result to any graph H, with chromatic number $\chi(H) = r \geq 3$, and proved that $\phi_H(n)$ is at most $t_{r-1}(n) + o(n^2)$. Pikhurko and Sousa conjectured that $\phi_H(n) = \mathrm{ex}(n, H)$ when $\chi(H) \geq 3$ and n is sufficiently large, where $\mathrm{ex}(n, H)$ denotes the maximum size of a graph on n vertices that does not contain H as a subgraph. We verify their conjecture for any edge-critical graph H and show that the graphs maximizing $\phi_H(n)$ for such H are $(\chi(H) - 1)$-partite Turán graphs. This is joint work with Yury Person. (Received September 12, 2010)