Some extremal and spectral properties for fractional matchings in graphs

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ABSTRACT

A fractional matching of a graph $G$ is a function $\phi : E(G) \to [0, 1]$ such that for each vertex $v$, $\sum_{e \in \Gamma(v)} \phi(e) \leq 1$, where $\Gamma(v)$ is the set of edges incident to $v$. The fractional matching number of $G$, written $\alpha'_f(G)$, is the maximum of $\sum_{e \in E(G)} \phi(e)$ over all fractional matchings $\phi$. In this talk, we talk about some tight bounds for $\alpha'_f(G)$ in terms of $|V(G)|$, $|E(G)|$, $\delta(G)$, and $\Delta(G)$. Furthermore, we give tight upper bounds for the difference and ratio of the fractional matching number and the matching number. A relationship between the spectral radius of $G$ and its fractional matching number will also be presented.

This is a partly joint work with R. E. Behrend, I. Choi, J. Kim, and D. B. West.

REFERENCES