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Eigenvalues and factors in graphs

Monday, 20 December 2021 15:00 (50 minutes)

Let g, f be non-negative integer-valued functions on $V(G)$ such that $g(v) \leq f(v) \leq d_G(v)$ for all $v \in V(G)$. A (g, f)-factor of G is a spanning subgraph H of G such that for every vertex $v \in V(G)$, $g(v) \leq d_H(v) \leq f(v)$. For g and f with $g(v) \equiv f(v)(\mod 2)$ for all $v \in V(G)$, a (g, f)-parity factor of G is a (g, f)-factor H such that $d_H(v) \equiv f(v)(\mod 2)$ for all $v \in V(G)$.
For integers a and b, an $[a, b]$-factor of G is a (g, f)-factor such that $g(v) = a$ and $f(v) = b$ for all $v \in V(G)$, and a k-factor is a $[k, k]$-factor. For odd (or even, respectively) integers a and b, an odd (or even, respectively) $[a, b]$-factor is an $[a, b]$-factor H such that $d_H(v)$ is odd (or even, respectively). The eigenvalues of G are the eigenvalues of its adjacency matrix.

In this talk, we investigate eigenvalue conditions for a certain graph to have a k-factor, an (even or odd) $[a, b]$-factor,
a (g, f)-parity factor, or a connected (even or odd) factor.

Presenter: Prof. O, Suil (SUNY Korea)

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