Sets of Parter Vertices which are Parter Sets

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Resumo: Let $G = (X, U)$ be a tree (connected graph without cycles), with n vertices $x_1, \ldots, x_n$. Let $A = [a_{i,j}]$ be a real symmetric matrix associated with G, that is, $a_{ij} \neq 0$, with $i \neq j$, if and only if there is an edge between x_i and x_j.

If $1 \leq i \leq n$, then we denote the principal matrix of A resulting from deletion of row and column i by $A(i)$. Note that $A(i)$ is a direct sum whose summands we call blocks and correspond to components of $G - x_i$. We denote the multiplicity of $\lambda \in \mathbb{R}$ as an eigenvalue of A by $m_A(\lambda)$.

If $m_A(\lambda) \geq 1$, then the generalization of Parter-Wiener theorem guarantees the existence of a vertex x_i of G for which $m_{A(i)}(\lambda) = m_A(\lambda) + 1$. The vertices of the tree whose removal give rise to these principal submatrices are called weak Parter vertices and with some additional conditions are called Parter vertices. A set of k Parter vertices whose removal increase the multiplicity of λ by k is called Parter set. As observed by several authors a set of Parter vertices is not necessarily a Parter set.

In this talk we show when a set of Parter vertices is a Parter set.

palavras-chave: Parter vertices; Parter set; eigenvalues.

Referências

[1] R. Fernandes, H.F. da Cruz, "Sets of Parter Vertices which are Parter Sets", *Linear Algebra and its Applications*, Vol.448, (2014), pp. 37-54.