

## On the various concepts of central vertex sets of a graph

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Based on several concepts of measures of centrality of a graph  $G$  in social networks we consider distinct sets of central vertices of  $G$ . Among them, there is one central vertex set which comes from the spectrum of the graph: the *Perron vertex set*, obtained from the eigenvector centrality. Since the *characteristic vertex set*, given by the Fiedler vector, can be construed as a central vertex set, we also include it here. The relationship of these central vertex sets on trees through the properties involving both of these vectors will be discussed. Besides, we will show that there are few advances in an attempt to answer the question proposed by Merris in 1987: What is the relationship between the characteristic vertex (vertices) and the centroid(s) and central vertex (vertices) of a tree? In this opportunity, we will also investigate where the characteristic vertices of trees could be located according to the most central vertices resulting from the measures of centrality studied in social networks.

This talk is a joint work with Cláudia Justel (IME-RJ).