SPECTRA OF COMPLEX NETWORKS I.
CENTRALITY MEASURES AND ITS APPLICATIONS

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We introduce basic concepts on graph spectra and apply them to the definition of some centrality measures of complex networks. First, we give the definition of the subgraph centrality of a node in a complex network. We extend this concept to the subgraph centralization of the network and show that it corresponds to the partition function of the network. Using this interpretation we investigate several statistical mechanical properties of complex networks. Finally, we illustrate some applications of these measures to the study of complex socio-economical networks.

Keywords
complex networks, subgraph centrality, partition function, socio-economical network

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