# SPECTRA OF COMPLEX NETWORKS II.
# COMMUNICABILITY AND COMMUNITY STRUCTURE

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We introduce the concept of communicability of complex networks. We then show that the communicability function corresponds to the thermal Green's function of the graph. We give some of the bounds for the communicability for certain classes of networks and study the relationship between the communicability and node degrees. We finally propose a definition of network community based on the communicability function by means of the use of intra- and inter-cluster communicability functions. At this point, we introduce the concept of the communicability graph and an algorithm based of the detection of cliques in the graph to find the communities in the network. The application of these methods is illustrated in some socio-economical networks.

**Keywords**
complex networks, communicability, thermal Green's function, network community, socio-economical network

**References**

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