

Foundation of Multidimensional Network Analysis: Abstract for the Presentation

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Complex network analysis is a field gaining increasing and exponential attention in the last years, both from scientific and economic perspectives. However, for many years, only monodimensional networks have been extensively studied. In the last year, we record a new interest for multidimensional networks, i.e. networks containing multiple different qualities and quantities of relations. These studies are focused on adapting and applying complex monodimensional techniques in this novel setting, disgreaging the revolutionary changes in the basic theory of graph analysis posed by the multidimensionality. Here we are interested in studying these possibilities. We show how simple modifications in very basic concepts such as the degree are able to unveil novel analytical powers (with applications, for example, in query contextualization for search engines). Further, we define simple new measures which are trivially useless in the monodimensional setting, but gain an incredible analytical power in multidimensional setting and show also how to include the temporal dynamic analysis of networks in the multidimensional framework. We conclude the presentation with possible applications of these multidimensional concepts on well known and crucial modern problem, such as depicting an image of the international aid community or rethink and browse an established hierarchy of concepts in classical archaeology.