Multipartite Graphs as Model of Complex Networks

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Abstract: To represent real-world complex networks, many random graph models were studied, especially the random bipartite graph model introduced by J. - L. Guillaume and M. Latapy. By using this model, the authors can produce graphs which have three main properties of comlex network. However, an important property about the overlapping clustereing was not taken into account by this model. In this paper, we investigate to multipartite graph model in order to achieve this property. We propose a procedure step by step to code an arbitrary graph by a multipartite graph by considering the overlapping of cliques in each step, and a methode to encoded this resulting multipartite graph. We first prove that this procedure is stop after a finite number of steps, which implies the validity of our model. We then study properties of this model by analyzing the evaluations of cliques and bicliques of graphs randomly generated by multipartite model.

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