World Academy of Science, Engineering and Technology
International Journal of Physical and Mathematical Sciences
Vol:12, No:10, 2018

Spectral Clustering from the Discrepancy View and Generalized Quasirandomness

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Abstract : The aim of this paper is to compare spectral, discrepancy, and degree properties of expanding graph sequences. As we can prove equivalences and implications between them and the definition of the generalized (multiclass) quasirandomness of Lovasz–Sos (2008), they can be regarded as generalized quasirandom properties akin to the equivalent quasirandom properties of the seminal Chung-Graham-Wilson paper (1989) in the one-class scenario. Since these properties are valid for deterministic graph sequences, irrespective of stochastic models, the partial implications also justify for low-dimensional embedding of large-scale graphs and for discrepancy minimizing spectral clustering.

Keywords : generalized random graphs, multiway discrepancy, normalized modularity spectra, spectral clustering
Conference Title : ICMAGT 2018 : International Conference on Mathematical Analysis and Graph Theory
Conference Location : Paris, France
Conference Dates : October 29-30, 2018