Equivalences of generalized quasirandom properties of expanding graph sequences

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Abstract

We consider special spectral, discrepancy, degree, and codegree properties of expanding graph sequences. As we can prove equivalences and implications between them and the definition of the generalized (multiclass) quasirandomness of Lovász–Sós, they can be regarded as generalized quasirandom properties akin to the equivalent quasirandom properties of the seminal Chung–Graham–Wilson paper in the one-class scenario. Since these properties are valid for certain 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.