

Vertex degree sequences mod k

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The well known Erdős-Gallai theorem gives necessary and sufficient conditions for a simple graph to exist with a given sequence of vertex degrees, while the Gale-Ryser theorem does the same for bipartite graphs. In this talk we explore mod k analogs of both results and present an algorithm for constructing graphs whose degree sequences are entrywise congruent to a prescribed sequence. A surprising result will be presented, namely, the necessary inequalities in the theorems are true for all reasonable sequences when the number of vertices in the graph is large enough relative to the modulus.

Keywords: graphical sequence, Gale-Ryser Theorem, mod k matrix