Nelson, P.; Radcliffe, A. J.
Semi-regular graphs of minimum independence number. (English) Zbl 1030.05059

Summary: Many functions of the degree sequence of a graph give lower bounds on the graph’s independence number. In particular, \( \alpha(G) \geq R(d(G)) \), where \( R \) is the residue of the degree sequence of \( G \). We consider the precision of this estimate when it is applied to semi-regular degree sequences, showing that the residue nearly always gives the best possible estimate on independence number: when \( d \) is semi-regular and graphic, we construct a graph \( G \) realizing \( d \) with \( R(d) \leq \alpha(G) \leq R(d) + 1 \). Moreover, we determine explicitly which inequality is strict. We prove this directly for most semi-regular sequences, giving an outline of proof for the remainder.

MSC:
05C35 Extremal problems in graph theory
05C07 Vertex degrees

Keywords:
Independence number; Degree sequence; Finite simple graph; Estimating lower bounds

Full Text: DOI

References:

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