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Erdős, Paul; Sos, V.T.

On a generalization of Turan's graph-theorem. (In English)

Studies in pure mathematics, Mem. of P. Turan, 181-185 (1983).

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Let $t(n,k)$ be the number of edges in Turán's graph, i.e. the complete $(k-1)$-partite graph on n vertices with color classes of nearly equal sizes. The following refinement of Turán's theorem is proved: if the graph G on n vertices has more than $t(n,k)$ edges, then there is a vertex v such that $e(v) > t(d(v), k-1)$, where $d(v)$ is the degree of v and $e(v)$ is the number of edges in the graph induced by the neighbors of v. This result was proved independently by *B.Bollobás* and *A.Thomason* [Comb. Theory, Ser. B 31, 111-114 (1981; Zbl 456.05037)]; and a very short proof was published by *J.A.Bondy* [ibid., Ser. B 34, 109-111 (1983; Zbl 498.05041)].

D.de Caen

Classification:
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