
Zbl 454.05038

Babai, Laszlo; Erdős, Paul; Selkow, Stanley M.

Random graph isomorphism. (In English)

SIAM J. Comput. 9, 628-635 (1980). [0097-5397]

A straightforward linear time canonical labeling algorithm is shown to apply to almost all graphs (i.e. all but $O(2^{\binom{n}{2}})$ of the $2^{\binom{n}{2}}$) graphs on n vertices). Hence, for almost all graphs X, and graph Y can be easily tested for isomorphism to X by an extremly naive linear time algorithm. This result is based on the following: In almost all graphs on n vertices, the largest $n^{0,15}$ degrees are distinct. In fact, they are pairwise at least $n^{0,03}$ apart.

Classification:
05C35 Extremal problems (graph theory)
68Q20 Nonnumerical algorithms

Keywords:
isomorphism testing; canonical labeling; random graph; linear time; degree sequence of a graph