

## ON SELKOW'S BOUND ON THE INDEPENDENCE NUMBER OF GRAPHS

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### Abstract

For a graph  $G$  with vertex set  $V(G)$  and independence number  $\alpha(G)$ , Selkow [*A Probabilistic lower bound on the independence number of graphs*, Discrete Math. 132 (1994) 363–365] established the famous lower bound  $\sum_{v \in V(G)} \frac{1}{d(v)+1} \left( 1 + \max \left\{ \frac{d(v)}{d(v)+1} - \sum_{u \in N(v)} \frac{1}{d(u)+1}, 0 \right\} \right)$  on  $\alpha(G)$ , where  $N(v)$  and  $d(v) = |N(v)|$  denote the neighborhood and the degree of a vertex  $v \in V(G)$ , respectively. However, Selkow's original proof of this result is incorrect. We give a new probabilistic proof of Selkow's bound here.

**Keywords:** graph, independence number.

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