

# On the Robustness of the Vertex Independence Number of a Forest with respect to Multiple Edge Removals

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A vertex subset  $X \subseteq V$  of a graph  $G = (V, E)$  is an *independent set* of  $G$  if no two vertices in  $X$  are adjacent in  $G$ . The cardinality of a largest independent set of  $G$  is called the (vertex) *independence number* of  $G$ . A nonempty graph  $G$  is *p-stable* if  $p$  is the largest number of *arbitrary* edges of  $G$  whose removal from  $G$  *necessarily* results in a graph with independence number equal to that of  $G$ , and *q-critical* if  $q$  is the smallest number of *arbitrary* edges of  $G$  whose removal from  $G$  *necessarily* results in a graph with independence number larger than that of  $G$ . The classes of *p-stable* and *q-critical* forests of order  $n$  are characterised in this paper for all admissible combinations of values of  $p$ ,  $q$  and  $n$ .