# The Number of $k$-Nearly Independent Subsets 

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Let $G=(V, E)$ be a graph with vertex set $V$ and edge set $E$. A subset $I$ of $V$ is an independent vertex subset if for every $u, v \in I, u v \notin E$. The number of vertex independent subset of a graph is a popular graph invariant with rich literature. See the survey in $[\mathrm{S}$. Wagner, I. Gutman, Maxima and Minima of the Hosoya Index and the Merrifield-Simmons Index. Acta Appl Math 112, $323-346$ (2010)], where it is called Hosoya index. In this paper we generalise the notion of vertex independent subsets, and we wish to understand the behaviour of the number $\sigma_{k}(G)$ of all subsets of the set of vertices of $G$ that contain $k$ edges. We call those sets $k$-nearly independent vertex subsets. We prove a lower (and upper) bound on $\sigma_{1}(G)$, where $G$ is a graph of order $n$ and size $m$. The families of graphs attaining these bounds are also characterised.
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