More Classes of \( H \)-Supermagic Graphs

Abstract:
A simple graph \( G = (V,E) \) admits an \( H \)-covering if every edge in \( E \) belongs to a subgraph of \( G \) isomorphic to \( H \). We say that \( G \) is \( H \)-magic if there is a total labeling \( f : V \cup E \rightarrow \{1,2,...,|V|+|E|\} \) such that for each subgraph \( H' = (V',E') \) of \( G \) isomorphic to \( H \), the sum \( \sum_{v \in V'} f(v) + \sum_{e \in E'} f(e) \) is constant.

When \( f(V) = \{1,2,...,|V|\} \), then \( G \) is said to be \( H \)-supermagic. In this paper we prove that one point union of \( n \) copies of a 2-connected graph \( H \) is \( H \)-supermagic for any positive integer \( n \). We define a garland and a linear garland of a connected graph \( H \). We also prove that the linear garland of a 2-connected \((p,q)\)-simple graph with \( p, q \geq 4 \) of length \( n \) is \( H \)-supermagic if either \( n \) is odd or both \( n \) and \( p + q \) are even.