Combinatorics Seminar

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Multiplicative Zagreb indices of k-trees

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ABSTRACT

Let G be a graph with vetex set $V(G)$ and edge set $E(G)$. The first generalized multiplicative Zagreb index of G is $\prod_{1,c}(G) = \prod_{v \in V(G)} d(v)^c$, for a real number $c > 0$, and the second multiplicative Zagreb index is $\prod_2(G) = \prod_{uv \in E(G)} d(u)d(v)$, where $d(u), d(v)$ are the degrees of the vertices of u, v. The multiplicative Zagreb indices have been the focus of considerable research in computational chemistry dating back to Narumi and Katayama in 1980s. In this talk, we will generalize Narumi-Katayama index and the first multicative index, where $c = 1, 2$, respectively, and investigate the lower and upper bounds for both $\prod_{1,c}(G)$ and $\prod_2(G)$ when G is a k-tree. Our results extend the results of Gutman for trees to k-trees. Additionally, we characterize the extremal graphs and determine the exact bounds of these indices of k-trees, which attain the lower and upper bounds.