A Note on First Zagreb Index of Hypergraphs

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Abstract

The First Zagreb index, introduced by Gutman and trinajstić, is a molecular descriptor used to study the relationship between molecular structure and various physico-chemical properties of molecule. A hypergraph H is a pair H = (V,E), where V is the set of elements called nodes or vertices, and E is the set of nonempty subsets of V called the set of hyperedges. The First Zagreb index of a hypergraph H=(V,E) is defined as

$$M_1(H) = \sum_{e_i \epsilon E} \left(\sum_{u \epsilon e_i} d_u \right)$$

In this study, we find extremal values of First Zagreb index over the collection of all connected hypergraphs and connected k-uniform hypergraphs. Additionally, we obtain First Zagreb index of some special hypergraphs.