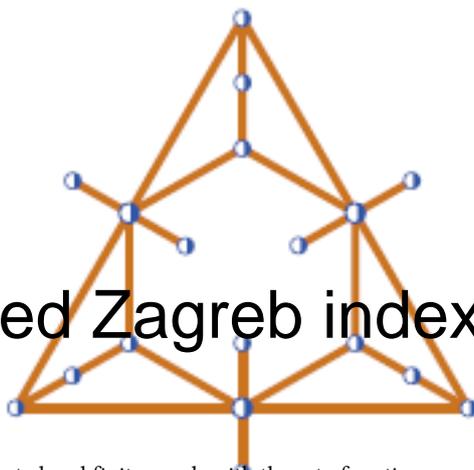# Bled'11 - 7th Slovenian International Conference on Graph Theory

Contribution ID : 65

Generalized Zagreb index of graphs

Content :

Let G be a simple, undirected, connected and finite graph with the set of vertices V(G) and the set of edges E(G). The degree of a vertex u of G is the number of edges incident to u and it is denoted by deg(u). A topological index Top(G) of G is a real number with this property that for every graph H isomorphic to G, Top(H)=Top(G). Wiener index is the first topological index in Chemistry which was introduced by the Chemist, Harold Wiener, within the study of relations between the structure of organic compounds and their properties [1]. The Wiener index of G is denoted by W(G) and it is defined as the sum of distances between all pairs of vertices of G. The two other topological indices of G are Zagreb indices which were defined by Gutman and Trinajestic [2].

The first Zagreb index of G is denoted by $M_1(G)$ and it is equal to the summation of $deg(u)^2$ over all vertices u of G and the second Zagreb index of G is denoted by $M_2(G)$ and it is equal to the summation of deg(u)*deg(v) over all edges uv of G. In this paper, we introduce the generalized Zagreb index of graphs and express some of the properties of this index. Then we find this index for some nano-structures.

Key words. The first and second Zagreb indices, Generalized Zagreb index, nanotubes and nanotori.

References

[1] H. Wiener, Structural determination of paraffin boiling points, J. Am. Chem. Soc., 69 (1947), 17-20.

[2] I. Gutman and N. Trinajstic, Graph theory and molecular orbitals, Total electron energy of alternant hydrocarbons, Chem. Phys. Lett., 17 (1972), 535-538.

Primary authors : Mrs. AZARI, Mahdieh (Kazerun Branch, Islamic azad university)

Co-authors : Prof. IRANMANESH, Ali (Tarbiat Modares University) ; Dr. TEHRANIAN, Abolfazl (Science and Research Branch, Islamic Azad University)

Presenter : Mrs. AZARI, Mahdieh (Kazerun Branch, Islamic azad university)

Session classification : --not yet classified--

Track classification : Mathematical Chemistry

Type : Oral presentation