

On the Zagreb Matrices

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We formulated Zagreb matrices in terms of the vertex- and edge-degrees. The Zagreb matrices in terms of the vertex-degrees are the $V \times V$ matrices of six kinds: (1) two are diagonal matrices - vertex-Zagreb matrix and modified vertex-Zagreb matrix, (2) two are sparse matrices – edge-Zagreb matrix and modified edge-Zagreb matrix and (3) two are dense matrices – path-Zagreb matrix and modified path-Zagreb matrix.

The Zagreb matrices in terms of the edge-degrees are the $E \times E$ matrices. There are also six kinds of these matrices. However, it should be noted that the Zagreb matrices of a (molecular) graph G in terms of the edge-degrees are the Zagreb matrices of the corresponding line graph of G , $L(G)$, in terms of the vertex-degrees. The Zagreb matrices belong to the family of the vertex- and edge-connectivity matrices and lead to a variety of the Zagreb indices.