

Wiener Index Of A Graph And Chemical Applications

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The Steiner Wiener index of a graph | Semantic Scholar

The Wiener index of a graph G is equal to the sum of distances between all pairs of vertices of G . It is known that the Wiener index of a molecular graph correlates with certain physical and chemical properties of a molecule.

How to compute the Wiener index of a graph

Recently, the Steiner Wiener index of a graph was introduced by replacing the classical graph distance used in the Wiener index with the Steiner distance. Moreover, the Steiner degree distance and the Steiner Hosoya polynomial also appeared in the literature. In this paper, we focus on the Steiner hyper-Wiener index of graphs.

The Wiener Index of Circulant Graphs

The contemporary literature cites Wiener index as a topological parameter associated with tree-like molecular graphs derived from organic molecular structures. Given a graph G the corresponding Wiener index or total distance $W(G)$ is defined as the sum of the graphic distances reckoned across all possible vertex-pairs of G .

Wiener Index of Graphs and Their Line Graphs | SpringerLink

The Wiener index is a distance-based graph invariant, used as one of the structure descriptors for predicting physicochemical properties of organic compounds (often those significant for pharmacology, agriculture, environment-

Wiener index - Wikipedia

The Wiener index, denoted (W (1947) and also known as the "path number" or Wiener number (Plavšić et al. 1993), is a graph index defined for a graph on nodes by where is the graph distance matrix .

Molecular graphs and the inverse Wiener index problem

Circulant graphs are an important class of interconnection networks in parallel and distributed computing. In this paper, we discuss the relation of the Wiener index and the Harary index of circulant graphs and the largest eigenvalues of distance matrix and reciprocal distance matrix of circulants. We obtain the following consequence: ; , where W , H denote the Wiener index and the Harary ...

Wiener Index Of A Graph

In chemical graph theory, the Wiener index (also Wiener number) introduced by Harry Wiener, is a topological index of a molecule, defined as the sum of the lengths of the shortest paths between all pairs of vertices in the chemical graph representing the non- hydrogen atoms in the molecule.

The Wiener index of a graph - Mathematics TU Graz

The sum of all Steiner distances on sets of size k is called the Steiner k -Wiener index, hence for $k = 2$ we get the Wiener index. The modular graphs are graphs in which every three vertices x , y and z have at least one median vertex $m(x, y, z)$ that belongs to shortest paths between each pair of x , y and z . The Steiner 3-Wiener index of a modular graph is expressed in terms of its Wiener index.

The edge-Wiener index of a graph - ScienceDirect

The Wiener index $W(G)$ of a graph G is defined as the sum of the half of the distances between every pair of vertices of G . $W(G) = \frac{1}{2} \sum_{i,j \in V(G)} d(u,v)$. Outline of the paper The rest of the paper is organized as follows. In Section 2, we compute Wiener index of a graph by the following ways: (i) Through Super edge-magic sequence and (ii)General method-Minimal Spanning Tree

WIENER INDEX OF A GRAPH AND CHEMICAL APPLICATIONS

Wiener index of a graph 1.1 Introduction Let $G = (V(G), E(G))$ be a simple connected undirected graph. For sub-sequent discussions we will always consider such graphs only. The Wiener index or Wiener number $W(G)$ of G is defined as $W(G) = \sum_{u,v \in V(G)} d(u,v)$. (1.1) Here, $d(u,v)$ (or simply $d(u,v)$ when no confusion arises) denotes the

(PDF) On the Wiener index of a graph - ResearchGate

The Wiener index $W(G)$ of a connected graph G , introduced by Wiener in 1947, is defined as $W(G) = \sum_{u,v \in V(G)} d(u,v)$ where $d(u,v)$ is the distance between vertices u and v of G . The Steiner distance in a graph, introduced by Chartrand et al. in 1989, is a natural generalization of the concept of classical graph distance.

Wiener index of some graph operations - ScienceDirect

The Wiener index of a graph G , denoted by $W(G)$ is the sum of the distances between all (unordered) pairs of vertices of G . In this paper, we obtain the Wiener index of line graphs and some class of graphs. Key words: Wiener index, line graph, distance, diameter.

[1710.07507v1] On the Steiner hyper-Wiener index of a graph

The Wiener index of a graph G is defined as $W(G) = \sum_{u,v \in V(G)} d(u,v)$, where $d(u,v)$ is the distance between u and v in G , and the sum goes over all pairs of vertices. In this paper, we characterize the connected unicyclic graph with minimum Wiener indices among all connected unicyclic graphs of order n and girth g with k pendant vertices.

(PDF) The Steiner Wiener Index of A Graph

The Wiener index, the sum of distances between all pairs of vertices in a connected graph, is a graph invariant much studied in both mathematical and chemical literature; for details see the reviews , , , and the references cited therein. In this paper we are concerned with a quantity closely analogous to the Wiener index, namely the sum of all ...

On the Wiener index of a graph | SpringerLink

Wiener index of trees As the path and therefore the distance between two vertices of a tree is unique, the Wiener index of a tree is much easier to compute than that of an arbitrary graph. In the following, we will show different formulas for computing the Wiener index, in the first part direct

Wiener Index -- from Wolfram MathWorld

On the Wiener index of a graph. Abstract. A modification of the Wiener index which properly takes into account the symmetry of a graph is proposed. The explicit formulae for the modified Wiener index of path, cycle, complete bipartite, cube and lattice graphs are derived and compared with their standard Wiener index.

Wiener index and Steiner 3-Wiener index of a graph

This index was the first topological index to be used in chemistry. The Wiener index of a graph $G = (V, E)$, denoted by $W(G)$, was introduced in 1947 by chemist Harold Wiener as the sum of distances between all vertices of G : $W(G) = \sum_{\{u,v\} \subseteq V(G)} d(u,v)$.

Wiener index of graphs: Some Graph-Theoretic and ...

The Wiener index $W(G)$ of a connected graph G , introduced by Wiener in 1947, is defined as $W(G) = \sum_{u,v \in V(G)} d(u,v)$ where $d(u,v)$ is the distance between vertices u and v of G . The Steiner distance in a graph, introduced by Chartrand et al. in 1989, is a natural generalization of the concept of classical graph distance.

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The Wiener index $W(G)$ of a graph G is a distance-based topological index defined as the sum of distances between all pairs of vertices in G .

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