Minimum Wiener Index in Triangulations and Quadrangulations

Éva Czabarka, *Trevor Olsen, Stephen Smith, László A. Székely, University of South Carolina

Let $G$ be a connected graph. The Wiener index of a connected graph is the sum of the distances between all unordered pairs of vertices. We provide formulae for the minimum Wiener index of simple triangulations and quadrangulations with given connectivity, as the order increases, and provide the extremal structures which attain these values. Additionally, we provide upper bounds for the maximum degree of highly connected triangulations and quadrangulations.

Keywords: distance, Wiener index, planar graph, triangulation, quadrangulation, connectivity, maximum degree