Discrete Mathematics Seminar

Illinois State University

2:00–2:50 pm, March 3

Speaker: Afshin Behmaram, Tabriz University

Asymptotic enumeration of perfect matchings in Fullerene graphs

Fullerenes are famous chemical graphs that were introduced by Harold Kroto, Richard Smalley and Robert Curl in 1985 and in 1996, the Nobel prize of Chemistry was awarded to them for discovery of fullerenes. Fullerene graph is a planar cubic graph whose faces are pentagons or hexagons.

A matching M in a graph G is a collection of edges of G such that no two edges of M share a vertex. If every vertex of G is incident to an edge of M, the matching M is called perfect matchings and has played an important role in the fullerene graph, because it is highly related to stability of Fullerene .

In this Talk, we present some upper and lower bounds for the number of perfect matchings in fullerene graphs and then we apply some linear Algebra methods for asymptotic enumeration of perfect matchings in some symmetric class of fullerene.