

Discrete Mathematics Seminar

Illinois State University

2:00–2:50 pm, August 20

Speaker: Songling Shan, Illinois State University

Antimagic orientation of graphs with minimum degree at least 33

An antimagic labeling of a directed graph D with n vertices and m arcs is a bijection from the set of arcs of D to the integers $\{1, \dots, m\}$ such that all n oriented vertex sums are pairwise distinct, where an oriented vertex sum is the sum of labels of all arcs entering that vertex minus the sum of labels of all arcs leaving it. A graph G has an antimagic orientation if it has an orientation which admits an antimagic labeling. Hefetz, Mütze, and Schwartz conjectured that every connected graph admits an antimagic orientation. We show that every bipartite graph with no vertex of degree 0 or 2 admits an antimagic orientation and every graph G with $\delta(G) \geq 33$ admits an antimagic orientation. Our proof relies on a newly developed structural property of bipartite graphs, which might be of independent interest.

