

VCU Discrete Mathematics Seminar

Better Traveling Salesman Tours on Cubic Bipartite Graphs

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Wednesday, Apr. 12

1:00-1:50

4119 Harris Hall (conference room)



The traveling salesman problem (TSP) is perhaps the most famous problem in combinatorial optimization. Finding an optimal tour is known to be hard; nevertheless, the past decades have seen great progress in solving real-world instances of the TSP, and new techniques for the TSP have been driving progress for other combinatorial optimization problems as well.

At the basis of these developments is a linear programming relaxation of the TSP by Dantzig, Fulkerson and Johnson from 1954 called the subtour LP relaxation. The subtour LP is known to give excellent lower bounds on the optimal tour length in practice, but the bound is not well understood from a theoretical point of view.

A longstanding conjecture states that the integrality gap of the subtour LP (the worst case ratio between the optimal tour length and the subtour LP bound) is $4/3$. In this talk, I will discuss results motivated by this conjecture and a conjecture in graph theory by Barnette that states that every cubic planar bipartite 3-connected graph is Hamiltonian.

For the DM seminar schedule, see:

<http://www.people.vcu.edu/~clarson/DM-seminar.html>