The Salesman and the Postman:Frontiers and Gateways in Combinatorial Optimization

András Sebő
CNRS, Laboratoire G-SCOP, Univ. Grenoble France

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Venue: Room 102, SCMS

Abstract:

Combinatorial optimization has recently witnessed new and also simultaneous applications of probability theory, information theory, algebra, geometry, number theory, semidefinite programming, etc. This lecture aims to showcase some interactions between combinatorics and other branches of mathematics and also beyond the mathematical realm or between some pillars of combinatorics itself. The presentation plans to explore frontiers and gateways through various examples with the Traveling Salesman Problem (TSP) and the Chinese Postman Problem serving as primary threads. A potential side-effect of these explanations may be to share some concrete recent ideas related to the TSP itself, and to some other combinatorial problems, including some contributions of the lecturer.

The history of the TSP demonstrates how generic methods may predict new phenomena, stimulate the development of adapted specia--lized solutions, and how a synthesis of several methods finally leads to breakthroughs.