ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

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"Integer Semidefinite Programming for the Quadratic Minimum Spanning Tree Problem"

N.1.44 | Wednesday, 9 October 2024 | 11:00 a.m.

Abstract

In the quadratic minimum spanning tree problem (QMSTP), one wants to find the minimizer of a quadratic function over all possible spanning trees of a graph. In this talk give two formulations of the QMSTP as mixed-integer semidefinite programs exploiting the algebraic connectivity of a graph. Based on these formulations, we derive a doubly nonnegative relaxation for the QMSTP and present valid inequalities to strengthen the relaxation using the Chvátal-Gomory procedure for mixed-integer conic programming. We present a version of the Peaceman-Rachford splitting method, which allows us to compute strong bounds for graphs from the literature up to 50 vertices, and report computation results.

Angelika Wiegele and the Department of Mathematics look forward to seeing you at the talk!