ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

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"Möbius Transform Based Bounds for Constant Weight Codes"

V.1.34 Wednesday, 8 November 2023 11:00 a.m.

Abstract

A popular method for obtaining upper bounds on the size of error-correcting codes is to first reformulate the problem as an (integer) optimization problem, and then relax it to a semidefinite programming problem. Any feasible solution of the dual of such a relaxation gives an upper bound on the size of the corresponding class of codes. The main problem of this approach is the size of the relaxation, usually requiring technical representation theoretic arguments (specific to the case) to exploit the symmetries of the relaxations to make them computationally feasible.

We propose a new hierarchy of semidefinite relaxations for constant weight codes, which, in contrast to more usual Lasserre-style relaxations, allow for near-trivial symmetry reductions. To do this, we generalize ideas coming from Razborov's flag algebras, and focus on Möbius transforms to reduce the size of the optimization problem.

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