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Applications of Interior Point Methods:
From Sparse Approximations to Discrete Optimal Transport

Abstract.
A variety of problems in modern applications of optimization require
a selection of a 'sparse' solution, a vector with preferably few nonzero
entries. Such problems may originate from very different applications
in computational statistics, signal or image processing or compressed
sensing, finance, machine learning and discrete optimal transport,
to mention just a few. Sparse approximation problems are often solved
with dedicated and highly specialised first-order methods of optimization.
In this talk I will argue that these problems may be very efficiently
solved by interior point methods.
The key to their success is a design of suitable preconditioners.

This is joint work with:

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