

## Instructorship position in Applied and/or Computational Mathematics

### Talks via zoom – Schedule

**Thursday, 11<sup>th</sup> February, 2021**

**16h30 - 17h00**

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**MIT, Cambridge**

**Zoom link:**

**Title:** Scalable Convex Optimization for Semidefinite Programming

**Abstract:** Storage and arithmetic costs are critical bottlenecks that prevent us from solving semidefinite programs (SDP) at the scale demanded by real-world applications. For instance, SDPs often have low-rank solutions, but the conventional methods work on a large matrix decision variable. We ask a fundamental question to address this problem: Suppose that the solution to an SDP has a compact representation. Can we develop algorithms that provably approximate a solution using storage that does not exceed the size of the problem data or the size of the solution? This talk presents a convex optimization paradigm that achieves this goal. The key insight is to design algorithms that maintain only a small sketch of the matrix variable. Combining this idea with the conditional gradient methods, we introduce an algorithm that can solve large SDPs that are not accessible to other convex optimization methods.