Robust Portfolio Solutions to the Mean-Variance Portfolio Selection

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The Markowitz portfolio selection method has difficulty performing in practice due to estimation errors in means and covariance matrix of asset returns. Recent min-max robust optimization methods promise new solutions to the old mean-variance portfolio selection problem. How well do the min-max robust optimal portfolios perform in practice? How should different robust optimization solutions be evaluated?

In this talk, we will focus on estimation error in mean returns and discuss impact of estimation error for optimal mean variance portfolio selection, min-max robust optimization methods, and a CVaR robust mean variance optimal portfolio selection approach. In addition, we will discuss computation efficiency issues in CVaR optimization and compare linear/quadratic programming methods with a smoothing average method for CVaR optimizations.