Fakultät für Mathematik
Oskar-Morgenstern-Platz 1
A-1090 Vienna
Austria

https://owos.univie.ac.at

ONE WORLD OPTIMIZATION SEMINAR

June 29th, 2020 @ 15:00 CEST (Central European Summer Time)

YURII NESTEROV

(CORE/INMA, UCLouvain)

Superfast Second-Order Methods for Unconstrained Convex Optimization

Abstract. In this talk, we present new second-order methods with convergence rate $\mathcal{O}(1/k^4)$, where k is the iteration counter. This is faster that the existing lower bound for this type of schemes, which is $\mathcal{O}(1/k^{7/2})$. Our progress can be explained by a finer specification of the problem class. The main idea of this approach consists in implementation of an accelerated third-order scheme using a second-order oracle. At each iteration of our method, we solve a nontrivial auxiliary problem by a linearly convergent scheme based on the relative non-degeneracy condition. During this process, the Hessian of the objective function is computed once, and the gradient is computed $\mathcal{O}(\ln(1/\varepsilon))$ times, where ε is the desired accuracy of the solution for our problem.

The link of the zoom-room of the meeting and the corresponding password will be announced the day before the talk on the mailing list of the seminar, to which one can subscribe on https://owos.univie.ac.at.