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ONE WORLD OPTIMIZATION SEMINAR

December 14th, 2020 @ 15:30 CET (Central European Time)

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Orthogonality-free Approaches for Optimization Problems on Stiefel Manifold

Abstract. In this talk, I will discuss some orthogonality-free approaches for optimization problems on Stiefel manifold. Stiefel manifold consists of matrices with orthogonal columns. Optimization problems with orthogonality constraints appear in many important applications such as leading eigenvalues computation, discretized Kohn-Sham total energy minimization, and sparse principal component analysis. We present new algorithms for solving optimization problems on Stieful manifold. These algorithms are based on penalty functions, thus there are no needs to carry out orthogonalization calculations in each iteration. The major computation cost of orthogonality-free algorithms is in the form of matrix-matrix multiplication, which has the advantage of being parallelized easily. Problems with both smooth and nonsmooth objective functions are considered. Theoretical properties of our algorithms are discussed and numerical experiments are also presented.

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.