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Title: Fast nonstationary iterated Tikhonov method for ill-posed problems with endogenous strategy for choosing the Lagrange multipliers: Application to Image Deblurring

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Abstract: In this talk we propose a novel *nonstationary iterated Tikhonov* (nIT) type method for obtaining stable approximate solutions to ill-posed operator equations modeled by linear operators acting between Hilbert spaces.

Geometrical properties of the problem are used to derive an endogenous strategy for choosing a sequence of regularization parameters (Lagrange multipliers) for the nIT iteration. Convergence analysis for this new method is provided.

Numerical experiments are presented for an image deblurring problem. The obtained results validate the efficiency of our method compared with standard implementations of the nIT method (where a geometrical choice is typically used for the sequence of Lagrange multipliers).