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On Proximal Forward-Backward Splitting Method for Nonsmooth Optimization Problems

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Resumo

In this talk we focus on the convergence analysis of the proximal Forward-Backward splitting method for solving nonsmooth optimization problems in Hilbert spaces, when the objective function is the sum of two convex functions. Assuming that one of the function is Gâteaux differentiable, whose Gâteaux derivative is supposed to be uniformly continuous on bounded sets and using two new linesearches, the weak convergence is established. Using linesearch in the proximal Forward-Backward splitting iteration, we allow long stepsizes employing more information available at each iteration. Moreover the weak convergence is proved without Lipschitz continuity assumption, getting back the optimal complexity of the iterates when the stepsizes are bounded below. We also analyze a fast version with linesearch improving the complexity of the iterates preserving the optimal complexity of this kind of variants. Furthermore, we present an image restoration problem, illustrating the applicability of the linesearches in the absence of the Lipschitz continuity assumption.