ACCELERATED BREGMAN METHOD FOR LINEARLY CONSTRAINED $\ell_1$-$\ell_2$ MINIMIZATION

Myeongmin Kang $^1$, Sangwoon Yun $^2$, Hyenkyun Woo $^1$ and Myungjoo Kang $^1$

1) Department of Mathematics, Seoul National University, Seoul 151-747, KOREA
2) Department of Mathematics Education, SungKyunKwan University, Seoul 110-745, KOREA

Corresponding Author: Myeongmin Kang, wjdjr1@snu.ac.kr

ABSTRACT

We consider the linearly constrained $\ell_1$-$\ell_2$ minimization and propose the accelerated Bregman method for solving this minimization problem. The proposed method is based on the extrapolation technique, which is used in accelerated proximal gradient methods studied by Nesterov, Nemirovski, and others, and the equivalence between the Bregman method and the augmented Lagrangian method. $O(\frac{1}{k^2})$ convergence rate is proved for the proposed method when it is applied to solve a more general linearly constrained nonsmooth convex minimization problem. We numerically test our proposed method on the synthetic problem from compressive sensing. Numerical results confirm that the accelerated Bregman method is faster than the original Bregman method.

REFERENCES
