

PROJECTION METHOD WITH LEVEL CONTROL IN CONVEX MINIMIZATION

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Abstract

We study a projection method with level control for nonsmooth convex minimization problems. We introduce a changeable level parameter to level control. The level estimates the minimal value of the objective function and is updated in each iteration. We analyse the convergence and estimate the efficiency of this method.

Keywords: projection method, convex nondifferentiable minimization, level control.

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REFERENCES

- [1] A. Cegielski, *Relaxation Methods in Convex Optimization Problems*, Higher College of Engineering, Series Monographies, No. **67** (1993), Zielona Góra, Poland (Polish).
- [2] A. Cegielski, *A method of projection onto an acute cone with level control in convex minimization*, Mathematical Programming **85** (1999), 469–490.
- [3] A. Cegielski and R. Dylewski, *Selection strategies in projection methods for convex minimization problems*, Discuss. Math. Differential Inclusions, Control and Optimization **22** (2002), 97–123. doi:10.7151/dmdico.1034
- [4] A. Cegielski and R. Dylewski, *Residual selection in a projection method for convex minimization problems*, Optimization **52** (2003), 211–220.
- [5] S. Kim, H. Ahn and S.-C. Cho, *Variable target value subgradient method*, Mathematical Programming **49** (1991), 359–369.

- [6] K.C. Kiwiel, *The efficiency of subgradient projection methods for convex optimization, part I: General level methods*, SIAM J. Control and Optimization **34** (1996), 660–676.
- [7] C. Lemaréchal, A.S. Nemirovskii and Yu.E. Nesterov, *New variants of bundle methods*, Mathematical Programming **69** (1995), 111–147.
- [8] B.T. Polyak, *Minimization of unsmooth functionals*, Zh. Vychisl. Mat. i Mat. Fiz. **9** (1969), 509–521.

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