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Weak and strong convergence theorems for new resolvents of maximal monotone operators in Banach spaces

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Abstract. In this paper, we prove weak and strong convergence theorems for new resolvents of a maximal monotone operator in a Banach space which are connected with the proximal point algorithm of Rockafellar(SIAM J. Control. Optim. 14:877–898, 1976). Using these results, we consider the problem of finding minimizers of convex functions defined on Banach spaces.

Key words: Banach space, generalized nonexpansive retraction, proximal point algorithm, convex minimization problem