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Frozen Landweber iteration for nonlinear ill-posed problems. (English) Zbl 1182.65085
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Summary: We propose a modification of the Landweber iteration termed frozen Landweber iteration for nonlinear ill-posed problems. A convergence analysis for this iteration is presented. The numerical performance of this frozen Landweber iteration for a nonlinear Hammerstein integral equation is compared with that of the Landweber iteration. We obtain a shorter running time of the frozen Landweber iteration based on the same convergence accuracy.

MSC:

- [65J15](#) Numerical solutions to equations with nonlinear operators (do not use 65Hxx) Cited in 2 Documents
- [65J20](#) Numerical solutions of ill-posed problems in abstract spaces; regularization
- [47J06](#) Nonlinear ill-posed problems
- [45G10](#) Other nonlinear integral equations
- [65R20](#) Numerical methods for integral equations
- [47H30](#) Particular nonlinear operators (superposition, Hammerstein, Nemytskiĭ, Uryson, etc.)

Keywords:

regularization; Landweber iteration; numerical examples; nonlinear ill-posed problems; convergence; performance; nonlinear Hammerstein integral equation

Full Text: [DOI](#)

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