Golichev, I. I.

Some iterative methods for solving inverse problems. (English. Russian original) Zbl 0826.35135
Russ. Acad. Sci., Dokl., Math. 48, No. 2, 391-396 (1994); translation from Dokl. Akad. Nauk, Ross. Akad. Nauk 332, No. 6, 682-685 (1993).

An inverse problem is considered as an extremal problem. This approach to the solution of inverse problems is well known and has been most thoroughly presented in [*O. M. Alifanov*, *E. A. Artynkhin* and *S. V. Rumyantsev*, Extremal methods for the solution of ill-posed problems and their applications to inverse problems of heat transfer (1988; Zbl 0657.35003)], where gradient methods are used for solving extremal problems. The iteration processes constructed below, which are based on the use of the maximum principle for extremal problems, and the representation of the solution as a function of the operator have a considerably higher rate of convergence.

MSC:

35R30 Inverse problems for PDEs
65K10 Numerical optimization and variational techniques
49J27 Existence theories for problems in abstract spaces

Keywords:

extremal problem; iteration; maximum principle; rate of convergence