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15. Numerical Analysis and Scientific Computing

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Iterative methods for the solution of nonlinear operator equations without property of the regularity.

The problem of approximate solution of operator equations F(x)=0, F is a smooth operator acting from a Hibert space X into a Hibert space Y, without any assumption concerning the regularity of the operator is considered. A great many modern theoretical and applied problems (identification of systems, inverse problems, etc.) one can formulate in the form of smooth nonlinear operator equation without the regularity. A few years ago the author suggested a new approach to the construction of the iterative technique for these equations. The talk studies the last results about the convergence and stability of mentioned iterative methods. Some new methods are considered too.

References: 1. A. B. Bakushinskii, Iterative methods for the solving nonlinear operator equations without condition of regularity. A new approach, Dokl. Acad. Sci. Russia, 330(1993), 282-284. 2. A. B. Bakushinskii, A. V. Goncharskii. Ill-posed problems: theory and applications. - Kluwer Acad. Publ., Dordrecht, 1995.