

**ON DISCRETIZATION OF METHODS FOR LOCALIZATION OF
SINGULARITIES A NOISY FUNCTION****A. L. Ageev, T. V. Antonova**

Received December 05, 2014

Ill-posed problems of localizing the singularities of a noisy function of one or two variables are studied. For functions of one variable, singularities are discontinuities of the first kind; for a function of two variables, singularities are lines of discontinuity. The discretization of regular localization methods is investigated. Correctness classes are introduced, and error estimates are obtained for the approximation of singularities and separability threshold of the constructed algorithms. It is shown that discrete algorithms for localizing discontinuities of the first kind of a noisy function of one variable are order-optimal.

Keywords: ill-posed problem, discontinuity of the first kind, localization of singularities, regularizing method, discretization.

A. L. Ageev Dr. Phys.-Math. Sci., Krasovskii Institute of Mathematics and Mechanics, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, 620990 Russia; Ural Federal University, Yekaterinburg, 620002 Russia, e-mail: ageev@imm.uran.ru .

T. V. Antonova Dr. Phys.-Math. Sci., Krasovskii Institute of Mathematics and Mechanics, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, 620990 Russia, e-mail: tvantonova@imm.uran.ru.

Cite this article as:

A. L. Ageev, T. V. Antonova, On discretization of methods for localization of singularities a noisy function, *Tr. Inst. Mat. Mekh. UrO RAN*, 2015, vol. 21, no. 1, pp. 3–13 .