Filimonenkova, N. V.; **Ivochkina, N. M.**

On variational ground of the m-Hessian operators. (English) Zbl 1311.35082

Apushkinskaya, Darya (ed.) et al., Proceedings of the St. Petersburg Mathematical Society. Vol. XV. Advances in mathematical analysis of partial differential equations. Workshop dedicated to the 90th anniversary of the O. A. Ladyzhenskaya birthday, Stockholm, Sweden, July 9–13, 2012. Providence, RI: American Mathematical Society (AMS) (ISBN 978-1-4704-1551-8/hbk). Translations. Series 2. American Mathematical Society 232, 35-51 (2014).

Summary: In frames of the theory of m-Hessian equations there were introduced three types of functionals. Two of them are the basis of the theory of m-Hessian measures developed by *N. S. Trudinger* and *X.-J. Wang* [Topol. Methods Nonlinear Anal. 10, No. 2, 225–239 (1997; Zbl 0915.35039); Ann. Math. (2) 150, No. 2, 579–604 (1999; Zbl 0947.35055); J. Funct. Anal. 193, No. 1, 1–23 (2002; Zbl 1119.35325)] in particular in order to obtain some analogs of classic embedding theorems.

On the other hand, the second author has introduced in the beginning of 1990s the m-Hessian analog of the Dirichlet integral in order to obtain variational description of the cone of m-admissible functions, i.e., in terms of local minimizers in C^2.

In this paper we present a survey of some known properties of these functionals and establish some connection between them. It also contains new results.

For the entire collection see [Zbl 1296.35004].

MSC:

35J20 Variational methods for second-order elliptic equations
35J60 Nonlinear elliptic equations

Keywords:

m-Hessian operators; m-curvatures; functionals