

Mês de: JANEIRO 2014

**SEMINÁRIO DE ANÁLISE E EQUAÇÕES
DIFERENCIAIS**

Dia 16 de Janeiro (quinta-feira), às 13:30h, na Sala B3-01

On the space localization of solutions of anisotropic diffusion equations

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Abstract:

We present a review of the recent results on the localization properties of solutions of parabolic equations with variable and/or anisotropic growth:

$$u_t - \sum_{i=1}^n D_i \left(|D_i u|^{p_i(z)-2} D_i u \right) + f(z, u) = 0, \quad u_t - \operatorname{div} \left(|\nabla u|^{p(z)-2} \nabla u \right) + f(z, u) = 0,$$

where $z = (x, t)$ denote the points of the cylinder $Q = \Omega \times (0, T)$, p_i and p are given functions of the argument z . The nonnegative function f models the presence of absorption.

The following issues are discussed:

- conditions of space localization caused by a suitable balance between isotropic variable diffusion and the absorption,
- directional localization caused by the anisotropic diffusion in the absence of absorption ($f \equiv 0$),
- nonpropagation of disturbances from the data in certain space directions, the effect of infinite waiting time,
- formation of “dead cores” near the boundary in solutions of the equation of anisotropic diffusion,
- solvability of the Dirichlet problem in unbounded domains.

This is a joint work with S. Antontsev. The presentation is based on results from papers [1-3].

REFERENCES

- [1] S. N. ANTONTSEV AND S. I. SHMAREV *Anisotropic parabolic equations with variable nonlinearity*. Publ. Mat. 53 (2009), no.2, pp. 355–399.
- [2] S. N. ANTONTSEV AND S. I. SHMAREV, *Parabolic equations with anisotropic nonstandard growth conditions*, in Internat. Ser. Numer. Math. 154, Birkhäuser, Verlag Basel/Switzerland, 2006, pp. 33–44.
- [3] S. ANTONTSEV AND S. SHMAREV, *Elliptic equations with anisotropic nonlinearity and nonstandard growth conditions*, vol. 3 of Handbook of Differential Equations, Stationary Partial Differential Equations, Elsevier B.V., 2006, ch. 1, pp. 1–100.

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