

Monday's Nonstandard Seminar 32

15:00

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Title: **Continuity and Harnack's inequality for bounded solutions of elliptic and parabolic equations with non-standard growth under the non-logarithmic Zhikov's condition**

Abstract: We consider a wide class of elliptic and parabolic equations with non-standard growth under the non-logarithmic Zhikov's condition:

$$\operatorname{div}\left(g(x, |\nabla u|) \frac{\nabla u}{|\nabla u|}\right) = 0, \quad x \in \Omega,$$

$$g(x, v/r) \leq c(K)\mu(r)g(y, v/r), \quad x, y \in B_r(x_0), \quad 0 < v \leq K,$$

$$u_t - \operatorname{div}\left(g(x, t, |\nabla u|) \frac{\nabla u}{|\nabla u|}\right) = 0, \quad (x, t) \in \Omega_T := \Omega \times (0, T),$$

$$g(x, t, v/r) \leq c(K)\mu(r)g(y, \tau, v/r), \quad (x, t), (y, \tau) \in Q_{r,r}(x_0, t_0), \quad 0 < v \leq K,$$

$$\exists \beta > 0 : \int_0^\infty \mu(r)^{-\beta} \frac{dr}{r} = +\infty.$$

We prove interior continuity, continuity up to the boundary and Harnack's inequality for bounded solutions. This is a joint project with Oleksander Hadzhy and Mykhailo Voitovych.