01.02.2021

Monday's Nonstandard Seminar 18

14:00

Author: Mikhail Surnachev (Keldysh Institute of Applied Mathematics RAS)

Title: **On regularity properties of $p(x)$-harmonic functions**

Abstract: This talk is based on the joint work with Yurij Alkhutov (Vladimir State University). I shall present a number of results concerning regularity properties of solutions to the $p(x)$-Laplace equation

$$\operatorname{div}\left(|\nabla u|^{p(x)}\nabla u\right) = 0.$$

While the most widespread condition is the log-Hölder continuity of the variable exponent $p(\cdot)$ we are interested in what can be obtained under more relaxed assumptions. First, we study cases when the exponent $p(\cdot)$ is discontinuous but enjoys clear geometric structure. Second, we work with the modulus of continuity worse than log-Hölder. Of special interest is when $p(\cdot)$ is regular only at one point.