SHARP REGULATITY FOR THE INHOMOGENOUS POROUS MEDIUM EQUATION

DAMIÃO JÚNIO ARAÚJO
UNIVERSIDADE FEDERAL DA PARAIBA - UFPB

Abstract

In this talk we shall consider the inhomogeneous porous medium equation

$$\partial u_t - \Delta u^m = f \in L^{q,r} \quad m > 1.$$

Here we show that weak solutions are Hölder continuous, with the following sharp exponent

$$\min\left\{\frac{\alpha_0^-}{m}, \frac{[(2q-n)r-2q]}{q[mr-(m-1)]}\right\},$$

where α_0 denotes the optimal Hölder exponent for solutions of the Homogeneous equation. The method relies on an approximation lemma and geometric iteration with the appropriate instrinsic scaling.