Centro de Matemática da Universidade do Minho

Seminário de Análise

Date :: 2012 November 19, 16:00h

Place :: Seminars Room of DMA (B4009), Campus of Gualtar

Speaker :: Rojbin Laleoglu, Centro de Matemática – Universidade de Trás-os-Montes e Alto Douro

Title :: Regularity for some doubly nonlinear parabolic equations

Abstract :: We will consider the regularity question for the nonnegative weak solutions of certain doubly nonlinear parabolic equations falling into a very large and important class of equations, namely the class of degenerate and singular equations. These type of evolutionary equations appear in the modeling of turbulent filtration of non-Newtonian fluids through a porous media. We will consider the prototype equation

$$\frac{\partial(u^q)}{\partial t} - \nabla \cdot \left(|\nabla u|^{p-2}\nabla u\right) = 0,$$

for two different ranges of parameters: $q = p-1$, $1 < p < 2$, which corresponds to the singular Trudinger's equation, and $0 < q < 1$, $p > 2$. We will show that the nonnegative weak solutions are locally Hölder continuous in measure spaces assuming only the measure to be a doubling non-trivial Borel measure supporting a Poincaré inequality.