

abstract-burczak

Abstract:

The main part of my talk will concentrate on evolutionary  $p$ -Laplacian with  $\nabla u$  replaced by its symmetric part, i.e. on the symmetric  $p$ -Laplace system. It can be seen as a simplification of real-life models stemming from non-newtonian hydrodynamics or from nonlinear elasticity. Despite lack of Uhlenbeck structure, it enjoys certain higher interior regularity. I will sketch its proof, paying special attention to new techniques, including iteration scheme in Nikolskii-Bochner spaces and symmetric caloric approximation lemma. If time permits, I will mention recent regularity results for other systems: (i) disproof of blowup conjecture for the critical, fractional Keller-Segel system, (ii) short time / small data regularity for compressible Navier-Stokes with heat conduction, (iii) studies towards so-called numerical verification of regularity of Navier-Stokes system. Please find attached the abstract.