

Perturbations beyond Schauder

Giuseppe Mingione
University of Parma (Italy)

`giuseppe.mingione@unipr.it`

Abstract

Nonuniformly elliptic and parabolic problems are a classical topic since the pioneering work of Finn, Gilbarg, Ladyzhenskaya, Uraltseva, Trudinger, Serrin, Ivanov, Ivochkina. There has been an intensive activity in proving regularity results for solutions since the 60s. Such problems play also an important role in the Calculus of Variations, where they arise in connection to the Euler-Lagrange equations of functionals with non-standard growth conditions. A basic issue that has remained open is the validity of Schauder estimates, whose lack is connected with the failure of classical perturbation methods in the nonuniformly elliptic case. In this talk I will present the first solution to this problem, providing an approach to Hölder continuity which is alternative to the classical ones based on perturbations.

From joint work with Cristiana De Filippis (Torino)