11.01.2021

Monday's Nonstandard Seminar 14

14:00

Author: Dominic Breit (Heriot-Watt University)

Title: **Global Schauder estimates for the p-Laplace system**

Abstract: An optimal first-order global regularity theory, in spaces of functions defined in terms of oscillations, is established for solutions to the p-Laplace system with right-hand side in divergence form. The exact mutual dependence among the regularity of the solution, of the datum on the right-hand side, and of the boundary of the domain in these spaces is exhibited. A comprehensive formulation of our results is given in terms of Campanato seminorms. New regularity results in customary function spaces, such as Hölder, BMO and VMO spaces, follow as a consequence. Importantly, the conclusions are new even in the linear case when $p = 2$, and hence the differential operator is the plain Laplacian. Yet in this classical linear setting, our contribution completes and augments the celebrated Schauder theory in Hölder spaces. A distinctive trait of our results is their sharpness, which is demonstrated by a family of apropos examples.