

Flipping one-sided control to full regularity for solutions to nonlinear elliptic problems via Harnack approach

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In this lecture we present some recent advances on the regularity theory of non linear elliptic problems showing that weak Harnack type arguments allow the passage from one-side regularity to full regularity in Holder and Sobolev spaces. As a particular case of these phenomena, we can identify the Caffarelli, Kohn, Nirenberg and Spruck theorem (in the 80s), as well as, some more recent regularity results obtained together with Alessio Figalli (ETH) and Ederson Braga (UFC) both on the regularity of semiconvex supersolutions of uniformly elliptic equations. This is a joint work with Edgard Pimentel (University of Coimbra).