

NONUNIFORMLY ELLIPTIC SCHAUDER THEORY

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Around twenty years ago, Jan Kristensen and I introduced a fractional approach to Hausdorff dimension estimates for singular sets in variational problems. This method allowed us to resolve several longstanding regularity issues that had remained open since the early 1980s, following the foundational work of Giaquinta, Giusti, and Evans. Over the years, together with Frank Duzaar and Tuomo Kuusi, we developed effective nonlinear potential-theoretic techniques to establish gradient estimates for nonlinear equations and systems. More recently, thanks to the decisive insight of Cristiana De Filippis, all these methods—particularly those initiated with Jan—merged with new ideas to provide a solution to another classical problem in regularity: the validity of Schauder estimates for nonuniformly elliptic equations.