

Quasiconvexity meets nonlinear potential theory

A classical problem in the regularity theory for vector-valued minimizers of multiple integrals consists in proving their smoothness outside a negligible set, cf. Evans (*ARMA* '86), Acerbi & Fusco (*ARMA* '87), Duzaar & Mingione (*Ann. IHP-AN* '04), Schmidt (*ARMA* '09). In this talk, I will show how to infer sharp partial regularity results for relaxed minimizers of degenerate/singular, nonuniformly elliptic quasiconvex functionals, using tools from nonlinear potential theory. In particular, in the setting of functionals with (p, q) -growth - according to the terminology introduced by Marcellini (*Ann. IHP-AN* '86; *ARMA* '89) - I will derive optimal local regularity criteria under minimal assumptions on the data. This talk is partly based on joint work with Bianca Stroffolini (University of Naples Federico II).