Some uniqueness results for minimizers of classical integral functionals

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The existence of Lipschitz minimizers of classical integral functionals with prescribed boundary conditions dates back to '70 (Hartmann and Stampacchia) and nowdays it is a classical result. In the absence of strict convexity of the integrand, the uniqueness of minimizers is not in general guaranteed. Nevertheless, Parks in '80 proved, by means of a minimal surfaces argument, that the total variation has a unique Lipschitz minimizer. Together with Elvira Mascolo (University of Florence), in 2017 we proved the uniqueness of Lipschitz minimizers for more general functionals in dimension 2. When the dimension is bigger than 2 the result is still true but it requires a more careful analysis of the level sets of Lipschitz functions, and this is contained in a work I'm writing together with Giovanni Alberti (University of Pisa).

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