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## Calibrations for nonlocal elliptic functionals

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The Calculus of Variations deals with the minimization of functionals. While every minimizer must satisfy the associated Euler-Lagrange equation, the converse is not true in general. To show that a solution is a minimizer typically involves building a calibration, that is, a null-Lagrangian satisfying certain additional properties. For classical (local) equations, such a construction is well-known and goes back to the celebrated Weierstrass theory of extremal fields.

In this talk, I will describe some recent works with X. Cabré and J.C. Felipe-Navarro where we extend the construction of calibrations to the nonlocal setting. I will first give an overview of the classical theory of calibrations and its relation to fields of extremals. Our novel analysis of the local case will then lead naturally to a nonlocal analogue of the calibration. I will conclude by explaining several relevant applications of our construction.