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# Stability of the vortex in micromagnetics and related models

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**Abstract.** We consider line-energy models of Ginzburg-Landau type in a two-dimensional simply connected bounded domain. Configurations of vanishing energy have been characterized by Jabin, Otto and Perthame: the domain must be a disk and the configuration a vortex. We prove a quantitative version of this statement in the class of $C^{1,1}$ domains, improving on previous results by Lorent. In particular, the deviation of the domain from a disk is controlled by a power of the energy, and that power is optimal. The main tool is a Lagrangian representation introduced by the second author, which allows us to decompose the energy along characteristic curves.

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