

Entropies and Aviles-Giga model

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Domain walls are transition layers connecting two limit states in physical models (e.g. ferromagnetic thin films, liquid-crystals...) We study them in a Ginzburg-Landau type model for curl-free vector fields, the so-called Aviles-Giga model, that depends on a small parameter ε . As $\varepsilon \rightarrow 0$, the limit configurations satisfy the eikonal equation. We develop a theory of entropies/calibrations for this equation and prove their characterization and a Liouville type rigidity result which enable us to obtain sharp lower bounds for domain walls in dimension 3 for the Aviles-Giga model.

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