

ELASTIC MAGNETIC CURVES OF FERROMAGNETIC AND SUPERPARAMAGNETIC MODELS

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Abstract

We are interested in defining new energy functionals and solving them by using the variational approach method. That is, we aim to define a new class of elastic curves in the three-dimensional ordinary space. We further improve an alternative method to find critical points of the bending energy functionals acting on a class of magnetic curves. Then, we classify these critical curves as elastic magnetic curves of the Frenet-Serret vector family. Moreover, we investigate the dynamics of the elastic magnetic curves of ferromagnetic and superparamagnetic models and discuss their numerical and analytical analysis.

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