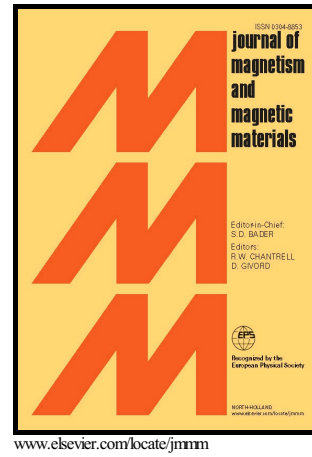


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Transient magnetization dynamics in the free energy formulation of the Landau-Lifshitz equation

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Abstract

Transient magnetization dynamics are calculated from the Landau-Lifshitz-Gilbert equation. The internal fields are described by partial derivatives of the sample's free energy density. This description allows the calculation of the magnetization trajectory of homogeneously magnetized samples for all kinds of energy contributions. It provides a general solution for transient magnetization dynamics. The model is used to determine the magnetization response to excitation profiles like rectangular or Gaussian pulses, frequency bursts, wavelet excitations, and chirped THz pulses.

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