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Magnetization dynamics at elevated temperatures<sup>1</sup> LEI XU, SHUFENG ZHANG, The University of Arizona — The conventional Landau-Lifshitz (LL) equation is the basis for simulation of magnetic structure and dynamics as long as the temperature is not too close to Curie temperature. In order to model the magnetization dynamics at elevated temperatures, one needs to extend the LL equation by including a finite longitudinal relaxation. Here within the self-consistent mean-field treatment of ferromagnetism, we propose an effective equation which is capable of addressing magnetization dynamics for a wide range of temperatures. At low temperatures, the equation reduces to the Landau-Lifshitz equation, namely, the transverse relaxation governs the dynamics. At high temperatures, it reduces to paramagnetic Block equation. Near the Curie temperature, the longitudinal relaxations play a more important role on the magnetization reversal. We present numerical calculations to simulate a heat-assisted-magnetic-recording process when the temperature is heated and cooled through the Curie temperature.

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