Parameters Identification for Jiles-Atherton Model using Genetic Algorithms

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Abstract : The aims of this work is the modeling of the hysteresis loop in ferromagnetic materials, and allowed to highlight of the difficulty that exists in the choice of an model, both accurate and fast, for implantation in a calculation code field. Through this work, we tried to implement the means to incorporate the hysteresis phenomenon; we proposed a procedure for the identification and optimization of the hysteresis loop by genetic algorithms (GA). The obtained results by this method permit to get the hysteresis loop using numerical simulation techniques. Experimental cycles on different samples allowed to us to identify the different optimized parameters and determine the GA approach on the calculation of various parameters of the hysteresis loop.

Keywords : Hysteresis Loop, Ferromagnetic Materials, genetic algorithms (GA), Jiles-Atherton model