

Optimization of Distribution Functions for the Hysteresis Preisach Model by Genetic Algorithms

Mounir BOUDJERDA, Mounir AMIR, Mourad ZERGOUG, Siham AZZI, Mouhamed Sahnoun

Abstract: The description of hysteresis is one of the classical problems in magnetic materials. The progress in its solution determines the reliability of modeling and the quality of design of a wide range of contemporary devices, as well as devices that will be created in the future. The intensive investigations in hysteresis modeling were induced by the fact that accuracy models of magnetic hysteresis must be studied yet. In this paper, several identification procedures of the distribution functions of the Preisach model will be investigated by means of a genetic algorithm. The proposed approach has been applied to model the behavior of many samples and distribution functions are optimized which will give accurate results of the hysteresis loop. The results show the robustness and efficiency of genetic algorithm to model the phenomenon of hysteresis loop. This work can give solutions about the ferromagnetic material evaluations and shows the optimization of distribution functions according to the material behaviors.

Keywords : Preisach Model, distribution functions, genetic algorithms GA, optimization