Progress in Development of Jiles-Atherton Model of Magnetic Hysteresis

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Abstract. Paper presents the review of recent advances in development of Jiles-Atherton model. Solutions of anhysteretic curve considering uniaxial and grain-oriented anisotropy are presented. Moreover, different concepts of differential equations stating magnetic hysteresis are explained. Finally, problems connected with solving ordinary differential equations, stability, and parameters identification are briefly elaborated. On the base of presented advances in model development, issues connected with interaction of anisotropy energies as well as stability criteria are identified, as a key barriers creating difficulties for understanding the principles of magnetization process and efficient application of Jiles-Atherton model for modelling inductive components with cores made of soft magnetic materials.