

3D Coupled Field – Circuit Analysis of Nonlinear System

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Abstract

This paper presents an effective scheme for coupling electric circuits with magnetic fields. Indirect coupling on example of transformer and full wave rectifier with filtering system is presented. 3D Transient finite element model of transformer is described by magnetic vector potential \mathbf{A} formulation. Non-linear material characteristic of ferrite core has been taken into account. A sequential coupled field – circuit model is presented.