Abstracts

A new finite element model for reduced order electromagnetic modeling

Yu Zhu and A.C. Cangellaris. "A new finite element model for reduced order electromagnetic modeling." 2001 Microwave and Wireless Components Letters 11.5 (May 2001 [MWCL]): 211-213.

This paper introduces a new formulation suitable for direct model order reduction of finite element approximations of electromagnetic systems using Krylov subspace methods. The proposed formulation utilizes a finite element model of Maxwell's curl equations to generate a state-space representation of the electromagnetic system most suitable for the implementation of model order reduction techniques based on Krylov subspaces. It is shown that, with a proper selection of the finite element interpolation functions for the fields, the proposed formulation is equivalent to the commonly used approximation of the vector wave equation with tangentially continuous vector finite elements. This equivalence is exploited to improve the computational efficiency of the model order reduction process.

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