1. Record Nr. UNINA9911020445503321 Autore Pregla Reinhold Titolo Analysis of electromagnetic fields and waves : the method of lines // Reinhold Pregla; with the assistance of Stefan Helfert Chichester, England: ; Hoboken, NJ, ; J. Wiley & Sons/Research Studies Pubbl/distr/stampa Press, c2008 **ISBN** 9786612346231 9781282346239 1282346237 9780470058503 0470058501 9780470058510 047005851X Descrizione fisica 1 online resource (523 p.) Collana RSP;; v.21 Altri autori (Persone) HelfertStefan Disciplina 530.14/1 Soggetti Electromagnetic devices - Mathematical models Electromagnetism - Mathematics Differential equations, Partial - Numerical solutions Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Nota di bibliografia Includes bibliographical references and index. Analysis of Electromagnetic Fields and Waves; Contents; D EQUIVALENT Nota di contenuto CIRCUITS FOR DISCONTINUITIES; Preface; 1 THE METHOD OF LINES; 1.1 INTRODUCTION: 1.2 MOL: FUNDAMENTALS OF DISCRETISATION: 1.2.1 Qualitative description; 1.2.2 Quantitative description of the discretisation: 1.2.3 Numerical example: 2 BASIC PRINCIPLES OF THE METHOD OF LINES; 2.1 INTRODUCTION; 2.2 BASIC EQUATIONS; 2.2.1 Anisotropicmaterial parameters; 2.2.2 Relations between transversal electric and magnetic fields - generalised transmission line (GTL) equations: 2.2.3 Relation to the analysis with vector potentials 2.2.4 GTL equations for 2D structures 2.2.5 Solution of the GTL equations; 2.2.6 Numerical examples; 2.3 EIGENMODES IN PLANAR WAVEGUIDE STRUCTURES WITH ANISOTROPIC LAYERS; 2.3.1

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Sommario/riassunto

The Method of Lines (MOL) is a versatile approach to obtaining numerical solutions to partial differential equations (PDEs) as they appear in dynamic and static problems. This method, popular in science and engineering, essentially reduces PDEs to a set of ordinary differential equations that can be integrated using standard numerical integration methods. Its significant advantage is that the analysis algorithms follow the physical wave propagation and are therefore efficient. This is because the fields on the discretisation lines are described by generalised transmission line (GTL) equations.