1. Record Nr. UNISA990000941340203316

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Titolo	Mezzo secolo fra atomi e nuclei / Emilio Segré ; a cura di Ottavia Bassetti
Pubbl/distr/stampa	Milano : Montedison-Progetto cultura Milano : Imago, c1986
Descrizione fisica	95 p. : ill., 1 ritr. ; 21 cm
Collana	Letture Nobel ; 5
Disciplina	539.721
Collocazione	539.721 SEG 1 (CETERA 20) II.6. 206(Varie Coll. 805/5)
Lingua di pubblicazione	Italiano
Formato	Materiale a stampa
Livello bibliografico	Monografia

2. Record Nr. UNINA9911018908703321

Titolo	DPSM for modeling engineering problems / / edited by Dominique Placko and Tribikram Kundu
Pubbl/distr/stampa	Hoboken, N.J., : Wiley-Interscience, c2007
ISBN	9786610901159 9781280901157 1280901152 9780470142400 0470142405 9780470142394 0470142391
Descrizione fisica	1 online resource (394 p.)
Altri autori (Persone)	PlackoDominique KunduT (Tribikram)
Disciplina	620.001/51
Soggetti	Distributed point source method (Numerical analysis) Engineering mathematics Ultrasonic waves - Mathematical models Electromagnetic devices - Design and construction - Mathematics Electrostatics - Mathematics Electromagnetism - Mathematical models Magnetism - Mathematical models
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.
Nota di contenuto	DPSM FOR MODELING ENGINEERING PROBLEMS; CONTENTS; Preface; Contributors; Chapter 1 - Basic Theory of Distributed Point Source Method (DPSM) and Its Application to Some Simple Problems; 1.1 Introduction and Historical Development of DPSM; 1.2 Basic Principles of DPSM Modeling; 1.2.1 The fundamental idea; 1.2.1.1 Basic equations; 1.2.1.2 Boundary conditions; 1.2.2 Example in the case of a magnetic open core sensor; 1.2.2.1 Governing equations and solution; 1.2.2.2 Solution of coupling equations; 1.2.2.3 Results and discussion; 1.3 Examples From Ultrasonic Transducer Modeling

1.3.1 Justification of modeling a finite plane source by a distribution of point sources1.3.2 Planar piston transducer in a fluid; 1.3.2.1 Conventional surface integral technique; 1.3.2.2 Alternative DPSM for computing the ultrasonic field; 1.3.2.3 Restrictions on r(s) for point source distribution; 1.3.3 Focused transducer in a homogeneous fluid; 1.3.4 Ultrasonic field in a nonhomogeneous fluid in the presence of an interface; 1.3.4.1 Pressure field computation in fluid 1 at point P; 1.3.4.2 Pressure field computation in fluid 2 at point Q
1.3.5 DPSM technique for ultrasonic field modeling in nonhomogeneous fluid1.3.5.1 Field computation in fluid 1; 1.3.5.2 Field in fluid 2; 1.3.6 Ultrasonic field in the presence of a scatterer; 1.3.7 Numerical results; 1.3.7.1 Ultrasonic field in a homogeneous fluid; 1.3.7.2 Ultrasonic field in a nonhomogeneous fluid - DPSM technique; 1.3.7.3 Ultrasonic field in a nonhomogeneous fluid - surface integral method; 1.3.7.4 Ultrasonic field in the presence of a finite-size scatterer; References; Chapter 2-Advanced Theory of DPSM-Modeling Multilayered Medium and Inclusions of Arbitrary Shape
2.1 Introduction2.2 Theory of Multilayered Medium Modeling; 2.2.1 Transducer faces not coinciding with any interface; 2.2.1.1 Source strength determination from boundary and interface conditions; 2.2.2 Transducer faces coinciding with the interface - case 1: transducer faces modeled separately; 2.2.2.1 Source strength determination from interface and boundary conditions; 2.2.2.2 Counting number of equations and number of unknowns; 2.2.3 Transducer faces coinciding with the interface - case 2: transducer faces are part of the interface 2.2.3.1 Source strength determination from interface and boundary conditions2.2.4 Special case involving one interface and one transducer only; 2.3 Theory for Multilayered Medium Considering the Interaction Effect on the Transducer Surface; 2.3.1 Source strength determination from interface conditions; 2.3.2 Counting number of equations and number of unknowns; 2.4 Interference between Two Transducers: Step-by-Step Analysis of Multiple Reflection; 2.5 Scattering by an Inclusion of Arbitrary Shape; 2.6 Scattering by an Inclusion of Arbitrary Shape - An Alternative Approach
2.7 Electric Field in a Multilayered Medium

Sommario/riassunto

This book is the first book on this technique; it describes the theory of DPSM in detail and covers its applications in ultrasonic, magnetic, electrostatic and electromagnetic problems in engineering. For the convenience of the users, the detailed theory of DPSM and its applications in different engineering fields are published here in one book making it easy to acquire a unified knowledge on DPSM.