1.   Record Nr.   UNINA9910346912403321

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      Titolo   The factorization method for inverse scattering from periodic inhomogeneous media

      Pubbl/distr/stampa   KIT Scientific Publishing, 2010

      ISBN   1000019400

      Descrizione fisica   1 electronic resource (X, 152 p. p.)

      Lingua di pubblicazione   Inglese

      Formato   Materiale a stampa

      Livello bibliografico   Monografia

      Sommario/riassunto   This book addresses the identification of the shape of penetrable periodic media by means of scattered time-harmonic waves. Mathematically, this is about the determination of the support of a function which occurs in the governing equations. Our theoretical analysis shows that this problem can be strictly solved for acoustic as well as for electromagnetic radiation by the so-called Factorization Method. We apply this method to reconstruct a couple of media from numerically simulated field data.