



## Radiation and Scattering from Bodies Coated with Metamaterials by GPU

By Mourad Said

LAP Lambert Academic Publishing Apr 2012, 2012. Taschenbuch. Book Condition: Neu. 220x150x9 mm. This item is printed on demand - Print on Demand Neuware - The electromagnetic scattering from bodies coated with metamaterials by using Finite Difference Frequency-Domain (FDFD). A formulation for the FDFD method is presented. A hybrid technique from FDFD and Particle Swarm Optimization technique (PSO) is used to reconstruct both the shape and the relative permittivity of a homogenous dielectric cylinder. The dielectric constants of materials in solid, liquid, or paste forms are considered. The thesis presents a graphics processing based implementation of FDFD method. The FDFD code has been implemented for CPU calculations and the same code is implemented for the Graphical Processing Unit (GPU) calculations using the Brook+ developed by AMD. The solution obtained by using the GPU based-code showed more than 40 times speed over the CPU based- code. Metamaterial superstrates used for directivity enhancement of cylindrical Dielectric Resonator Antenna (DRA) mounted on both circular and curved ground planes. Mutual coupling reduction between two cylindrical DRAs over infinite size ground plane or mounted on hollow circular cylindrical ground plane by using metamaterials are also investigated. 152 pp. Englisch.



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