Mantle cloaks for elliptical cylinders excited by an electric line source

We investigate the ability of surface impedance mantle cloaks for cloaking of elliptical cylinders excited by an electric line source. The exact analytical solution of the problem utilizing Mathieu functions is obtained and is used to derive optimal surface impedances to cloak a number of configurations. Specifically, theoretical designs are presented which can minimize the scattering from line source excited dielectric elliptical cylinders, as well as conducting strips immersed in such structures. It will be shown that the required surface impedances are angle-dependent; that their performance has limitations with respect to the source and observation point locations.

General information
State: Published
Organisations: Department of Electrical Engineering, Electromagnetic Systems, University of Mississippi
Contributors: Kaminski, P. M., Yakovlev, A. B., Arslanagic, S.
Pages: 189-192
Publication date: 2016

Host publication information
Title of host publication: Proceedings of 2016 URSI International Symposium on Electromagnetic Theory
Publisher: IEEE
ISBN (Print): 978-1-5090-2502-2
(2016 URSI International Symposium on Electromagnetic Theory (emts)).
Keywords: Impedance, Surface impedance, Dielectrics, Electric fields, Strips, Scattering, Magnetic cores
DOI: 10.1109/URSI-EMTS.2016.7571349
Source: Findit
Source-ID: 2345731972
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016