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Fakultät für Mathematik

EINLADUNG

zum

HABILITATIONSVORTRAG

Leonidas Mindrinos, PhD
(Johann Radon Institut (RICAM))

"Electromagnetic scattering problems for obstacle reconstruction and quantitative imaging"

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Abstract: In this study, we examine direct and inverse scattering problems of electromagnetic waves by dielectric media. We focus on the unique solvability of direct problems and on the numerical solution of inverse problems for reconstructing the position, the shape and the properties of the medium from far-field measurements or tomographic data.

Initially, we consider the scattering of an obliquely incident electromagnetic wave by a penetrable cylindrical domain. The boundary value problem is equivalently transformed to a system of non-linear boundary integral equations. We solve the direct problem using an exponentially convergent scheme and we present accurate reconstructions of the unknown boundary.

In the second part, we focus on Optical Coherence Tomography, where the scattering of light by an inhomogeneous medium is modeled as an integral equation (Lippmann - Schwinger type) in the whole space. We examine the quantitative problem of reconstructing the optical properties of the medium. Because of lack of information, we either impose assumptions on the medium or we consider additional internal data, provided by another imaging modality.

Donnerstag, 29. November 2018,
10:00 Uhr – 10:45 Uhr,

Fakultät für Mathematik,
Sky Lounge, 12. OG.
Oskar-Morgenstern-Platz 1
1090 Wien

Gerald Teschl
Christian Krattenthaler