ON UNIQUENESS OF AN INVERSE PROBLEM FOR THE TIME-HARMONIC MAXWELL EQUATIONS

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The inverse boundary value problem for the time-harmonic Maxwell equations is a nonlinear problem to determine electromagnetic parameters of the medium, namely the magnetic permeability, the electric permittivity and the conductivity, on a bounded domain using the measurements of the electromagnetic fields on the boundary of the domain. I will present both the boundary uniqueness and interior uniqueness of the parameters, where we assume that the unknown parameters are described by continuously differentiable functions. The key ingredient in proving the uniqueness is the complex geometrical optics (CGO) solutions.
(THIS IS A JOINT WORK WITH DR. PEDRO CARO.)