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Analyticity of the Dirichlet-to-Neumann map
for Maxwell's equations in passive composite media

In this talk, I will discuss the analyticity properties of the electromagnetic Dirichlet-to-Neumann (DtN) map for the time-harmonic Maxwell's equations for passive linear multicomponent media. I will also discuss the connection of this map to Herglotz functions for isotropic and anisotropic multicomponent composites. The focus of the discussion will be on two different types of geometry, namely, layered media and bounded media (with Lipschitz domains). For these geometries I will derive the analyticity properties of the associated DtN map in terms of the transfer matrix for layered media and, for bounded media, using a variational formulation of the time-harmonic Maxwell's equations. This is joint work with Graeme Milton (University of Utah) and Maxence Cassier (University of Utah).