Inverse boundary value problems by partial Cauchy data for Maxwell's equations and Schrödinger equations: cases of waveguides and cylindrical domains

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We consider the inverse boundary value problems of determining coefficients by Dirichlet-to-Neumann map. In the two dimensional cases, a Dirichlet-to-Neumann map limited to an arbitrary subboundary uniquely determines a potential in a Schrödinger equation (Imanuvilov, Uhlmann and Yamamoto 2010). On the other hand, in higher dimensional case, to the best knowledge, it is open if such data limited to an arbitrary subboundary guarantee the uniqueness. First we survey the uniqueness results for the Schrödinger equations in higher dimensions. Next we discuss the inverse boundary value prolems for Maxwell's equations in the waveguide and in a cylindrical domain.

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