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Title: Broadband directional invisibility for scalar and electromagnetic waves

Abstract: We address the problem of finding sufficient conditions for broadband directional invisibility in potential scattering in two and three dimensions as well as the scattering of electromagnetic waves by inhomogeneities of a general (possibly anisotropic, active, or lossy) dielectric medium in three dimensions. More specifically, given a positive real number α and a set of unit vectors Ω, we provide explicit conditions on the interaction potential (or the permittivity and permeability tensors of the medium in the case of electromagnetic scattering) under which it displays perfect (non-approximate) invisibility whenever the incident wavenumber k does not exceed α (i.e., $k \in (0, \alpha]$) and the direction of the incident wave vector ranges over Ω. We construct explicit examples of potentials and dielectric media fulfilling these conditions.