

1027-35-26

**Fioralba Cakoni\*** ([cakoni@math.udel.edu](mailto:cakoni@math.udel.edu)), Department of Mathematical Sciences, University of Delaware, Newark, DE 19716. *On the use of transmission eigenvalues to estimate the index of refraction from far field data.*

We consider the scattering of time harmonic electromagnetic plane waves by a bounded inhomogeneous anisotropic medium and show that under certain assumptions a lower bound on the index of refraction can be obtained from a knowledge of the smallest transmission eigenvalue corresponding to the medium. It is then shown by numerical examples that this eigenvalue can be determined from a knowledge of the far field pattern of the scattered wave, thus providing a practical method for estimating the index of refraction from far field data. (Received January 18, 2007)