1107-34-176   **David Colton*** (`colton@math.udel.edu`). *Transmission Eigenvalues for Spherically Stratified Media.*

The transmission eigenvalue problem plays a central role in the qualitative approach to inverse scattering theory (c.f. F. Cakoni and D. Colton, A Qualitative Approach to Inverse Scattering Theory, Springer, 2014). In this talk we consider the transmission eigenvalue problem for spherically stratified media such that the eigenfunctions are also spherically stratified. Even this simple case has a surprisingly rich analytic theory. In this talk we will show that, for non-absorbing media, complex eigenvalues exist in general (but not always!) and under certain conditions lie in a strip parallel to the real axis (but under other conditions do not lie in a strip!). In general real eigenvalues always exist but there are examples for which real eigenvalues do not exist. We will also briefly consider the case of absorbing media and will conclude our talk with the inverse spectral problem for non-absorbing media. This is joint work with Y.J. Leung and S. Meng. (Received January 13, 2015)