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**Isaac Harris\*** (iharris@tamu.edu), **Fioralba Cakoni** and **Housseem Haddar**. *Homogenization of the Transmission Eigenvalue Problem for a Periodic Media.*

In this talk we consider the inverse acoustic/electromagnetic scattering problem of determining information about the macro and micro-structure of a periodic media where the period is characterized by a small parameter. To this end, we study the transmission eigenvalue problem as the small parameter tends to zero to obtain the homogenized eigenvalue problem. This is a non-linear and non-selfadjoint eigenvalue problem which makes its investigation mathematically challenging. We prove (weak) convergence of the eigenvalues/functions as well as show that the effective material properties can be determined by the measured homogenized transmission eigenvalues. (Received September 21, 2017)