

1145-35-2191 **Junshan Lin***, 231 Paker Hall, Department of Mathematics and Statistics, Auburn Unviversity,
Auburn, AL 36830. *Resonances for Photonic Nanocavities and Their Optimal Design.*

Photonic nanocavities are periodic arrays of dielectric materials embedded with defects, and they have applications in many areas of physics and engineering. In practice, it is desirable to design photonic nanocavity with high quality factor, which is closely related to the scattering resonances of the underlying structure. In this talk, I will present mathematical studies of resonances for such photonic structure and a closely related Schrodinger operator. I will begin with a study on a 1D finite symmetric photoinc structure to illustrate the convergence behavior of resonances. Then a general perturbation approach will be introduced for the analysis of near bound-state resonances in higher dimensions. (Received September 25, 2018)