

**Scattering Resonances through Subwavelength Holes: Theory, Computation and Applications**  
**in Imaging**

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The so-called extraordinary optical transmission (EOT) through metallic nanoholes has triggered extensive research in modern plasmonics and their applications in bio-sensing, imaging, etc. In this talk, I will give an overview of quantitative mathematical theory to understand a variety of resonances that induce the EOT phenomenon in 2D and 3D subwavelength structures, the computational methods for solving the multiscale problems, and the mathematical studies for their applications in imaging and sensing.