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Peter Kuchment* (kuchment@math.tamu.edu), Mathematics Department, Texas A&M University, College Station, TX 77843-3368. *Some problems of spectral theory arising in photonics and waveguide theory.*

The talk will contain a survey of some spectral problems of mathematical physics arising in photonic crystal theory, waveguide theory, and mesoscopic physics. The discussion will concentrate on the issues that are either partially, or completely unresolved. (Received September 16, 2005)