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*Seeing sounds, hearing shapes and beyond*

Geometric spectral theory has a long and fascinating history. It goes back to the experiments of Chladni with vibrating plates and to the ground-breaking work of Rayleigh on the theory of sound, to Weyl's law for the asymptotic distribution of eigenvalues and to Kac's celebrated question "Can one hear the shape of a drum?". In my talk, I will discuss some of the old problems and related recent developments in the field.