

# Isospectrality in number theory, geometry and combinatorics

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In 1966, Marc Kac posed the question “Can one hear the shape of a drum?” It can be rephrased as “Does the spectrum of the Laplacian on a compact Riemannian manifold determine the manifold up to isometry?” This problem had attracted many people in geometry. To this day, interesting pairs of isospectral but nonisometric manifolds, graphs and complexes have been constructed. Some constructions are based on Sunada’s algebraic criterion published in 1985. In this talk we shall discuss isospectrality in the context of number theory, geometry and combinatorics, as well as the role played by Sunada’s criterion.