

Mark Srednicki (Monday, Nov 7)

Title: Katz-Sarnak families and the Riemann hamiltonian

Abstract:

Katz and Sarnak have conjectured that L functions of quadratic Dirichlet characters form a "family" with a symplectic symmetry. If such L functions are also spectral determinants of quantum hamiltonians, as implied by the generalized Hilbert-Polya conjecture, then this symplectic symmetry implies that they should be in Class C of the Altland-Zirnbauer "tenfold way" classification of physical systems that can be modeled by random matrices. This in turn ameliorates a sign problem that arises in the comparison of the Riemann-zero counting function and the energy-level counting function in a quantum-chaotic system, a comparison that I will review. Reference: M. Srednicki, Nonclassical Degrees of Freedom in the Riemann Hamiltonian, Phys. Rev. Lett. 107, 100201 (2011).