Courant Institute of Mathematical Sciences  
Mathematics Colloquium  
December 1, 2014

Speaker: Barry Simon, Caltech

Title: Singular Eigenvalue Perturbation Theory

Abstract:

Eigenvalue Perturbation Theory is central to the theory of nonrelativistic quantum mechanics going back to Schrodinger's first papers. This lecture will review what is known about the eigenvalues in physical situations where one doesn't have simple convergence to a new isolated eigenvalue. Included are the anharmonic oscillator and Zeeman effect (divergent series and summability), autoionizing states in atoms (complex scaling and resonances), Stark effect (exponentially small resonances) and double wells (instantons).