Interfaces between allowed and forbidden behavior

Abstract:

In quantum mechanics, at an energy level $E$, there arises an allowed region $A(E)$, a forbidden region $F(E)$ and an interface $C(E)$ between them. Most quantities of interest, ranging from sizes of quantum states to their nodal sets, exhibit a transition across the interface between allowed and forbidden behavior. I will illustrate these interfaces with two different types of problems: nodal sets of eigenfunctions of Schrodinger equations and “partial Bergman kernels” for ample line bundles over Kahler manifolds. The two settings seem quite different at first sight but they are just two types of geometry in phase space. No prior knowledge of quantum mechanics is assumed.