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Nodal sets of eigenfunctions around interfaces.

Interfaces arise in the spectral theory of Laplacians or Schrodinger operators as caustics or boundaries. For instance the unit sphere in \mathbb{R}^d is a caustic for the isotropic harmonic oscillator, separating \mathbb{R}^d into allowed and forbidden regions. Nodal sets of eigenfunctions transition from the usual h^{-1} density inside the allowed region to sparse in the forbidden region. There is a small region around the caustic where an Airy type transition occurs. The boundary of the unit ball is also a caustic for Dirichlet/Neumann eigenfunctions of the Laplacian in the exterior of the unit ball. My talk is about joint results with B. Hanin and P. Zhou on the scaling behavior of nodal sets around each type of interface. (Received January 05, 2017)