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Gregory Berkolaiko* (berko@math.tamu.edu), Department of Mathematics, Texas A&M University, College Station, TX 77843-3368. *Nodal count of eigenfunctions as index of instability.*

Courant's celebrated nodal bound asserts that the zero curves of the n -th eigenfunction of the Laplace operator on a compact domain partition the domain into at most n parts (which are called "nodal domains"). However, the actual number of nodal domains is usually well below the Courant's bound.

It recently transpired that the difference between the bound and the actual value can be interpreted as an index of instability of a certain energy functional with respect to suitably chosen perturbations. The results concerning this phenomenon fall in two classes: (1) stability of the nodal partitions with respect to a perturbation of the partition boundaries and (2) stability of the eigenvalue with respect to a perturbation by magnetic field. We will discuss examples of the available results and the connections among them.

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