

**Title:** From spectral geometry to nonradial steady Euler flows of compact support

**Abstract:**

*Schiffer's conjecture in spectral geometry asserts that the only planar domains with a Neumann eigenfunction that is constant on the boundary are disks. If the hypothesis is relaxed so that the Neumann eigenfunction is only assumed to be locally constant on the boundary, we shall see that there are nontrivial doubly connected domains with this property, in spite of the fact that the relaxed problem shares many rigidity properties with Schiffer. This fact has a direct application to stationary solutions of the incompressible Euler equations on the plane. Moreover, with some further elaboration, this leads to the existence of smooth compactly supported stationary Euler flows that are not locally radial.*