On some properties of Steklov eigenfunctions

Angela Pistoia

Dipartimento SBAI
Sapienza Università di Roma
via Antonio Scarpa 16
`angela.pistoia@uniroma1.it`

I focus on a couple of properties of the eigenfunctions of Steklov problem on a compact Riemannian manifold with boundary.

First, I give a precise count of the interior critical points of a Steklov eigenfunction in terms of the Euler characteristic of the manifold and of the number of its sign changes the boundary. Based on a joint work with Luca Battaglia (Università degli Studi Roma Tre) and Luigi Provenzano (Sapienza Università di Roma)

Next, I disprove the conjectured validity of Courant's theorem for the traces of Steklov eigenfunctions building a Riemannian metric for which the n-th eigenfunction has an arbitrary number of nodal domains on the boundary. Based on a joint work with Alberto Enciso (ICMAT Madrid) and Luigi Provenzano (Sapienza Università di Roma) .