

Optimal partition problems for the first eigenvalue of the Laplace operator with volume constraint

Pêdra Andrade

Instituto Superior Técnico - Universidade de Lisboa

In this talk, we will discuss a class of spectral optimal partition problems with volume constraints for partitions of a given bounded domain. We prove an optimal open partition exists by establishing that the corresponding eigenfunctions are locally Lipschitz continuous. Our proofs are based on a weak formulation involving a minimization problem of a penalized functional where the variables are functions rather than domains, suitable deformations, blowup techniques and a monotonicity formula. This is joint work with Ederson Moreira dos Santos, Makson Santos, and Hugo Tavares.