

**Dorin Bucur**

*Optimal shapes maximizing the Steklov eigenvalues*

**Abstract**

This talk deals with the problem of maximizing the  $k$ -th Steklov eigenvalue of the Laplacian, among all sets of  $\mathbb{R}^d$  of prescribed volume. We prove existence of an optimal set and get some qualitative properties of the solutions in a relaxed setting. In particular, in  $\mathbb{R}^2$ , we prove that the optimal set consists in the union of at most  $k$  disjoint Jordan domains with finite perimeter. A key point of our analysis is played by an isodiametric control of the Steklov spectrum. We also exhibit some numerical results. This is a joint work with B. Bogosel and A. Giacomini.