AN EIGENVALUE PROBLEM FOR THE LAPLACE OPERATOR IN DOUBLY CONNECTED DOMAINS

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Abstract. In this talk I will discuss about an eigenvalue problem for the Laplace operator in annular domains $\Omega = \Omega_0 \setminus \overline{B_{R_1}}$, where $\Omega_0 \subset \mathbb{R}^n$ is a convex set and B_{R_1} is the ball of $\mathbb{R}^n$ centered at the origin with radius $R_1 > 0$ such that $\overline{B_{R_1}} \subset \Omega_0$. More precisely Dirichlet and Steklov boundary conditions are imposed on ∂B_{R_1} and on $\partial\Omega_0$, respectively. The aim of the talk is to describe the main properties of the first eigenvalue of this problem and to discuss about some related optimization problems. The results I will describe are contained in two joint works with Gloria Paoli, Gianpaolo Piscitelli and Rossano Sannipoli.