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## **SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS**

**Dia 18 de Janeiro (quinta-feira), às 13H30, na sala 6.2.33**

### **Optimizing the first Dirichlet eigenvalue of the Laplacian with an obstacle**

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#### **Abstract**

We discuss various shape optimization problems for the first eigenvalue of the Laplacian of a fixed bounded domain in the plane with Dirichlet boundary conditions. We impose the Dirichlet condition over a supplementary region, the obstacle (i.e., a compact set of possibly positive measure), which is the unknown in the optimization problem and is subjected to perimeter or area constraints. Then, we look for the best obstacle, both in shape and location, which optimizes this eigenvalue.

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