

## **Extremal Eigenvalue Problem for Inhomogeneous Materials**

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In this talk we consider an extremal eigenvalue problem corresponding to an inhomogeneous membrane which is composed of two different materials with different densities. A simple P1 finite element discretization is applied to the given problem and the optimal convergence rate is provided. A monotonic decreasing algorithm is presented to solve the discretized problem and numerical examples are given to demonstrate the error estimation as well as the efficiency of the method.