

Contribution Title: ISOPERIMETRIC INEQUALITIES FOR EIGENVALUES OF THE LAPLACIAN
Authors: R. Benguria
Presenting author: Benguria R.
Affiliation: Departamento de Física, P. Universidad Católica de Chile, Santiago, Chile
E-mail: rafael.benguria@googlemail.com
Invited speaker: YRS
YRS seminar: NO

Isoperimetric Inequalities have a long tradition in Mathematical Physics. There are well known isoperimetric inequalities for many physical quantities (e.g., the electrostatic capacity, the torsional rigidity, the principal eigenfrequency of a membrane, etc.) For the derivation of these inequalities several new tools of mathematical analysis and geometric measure theory had to be introduced during the last century. In this talk I will start with a quick review of some classical isoperimetric inequalities of mathematical physics, and of the main tools used in their proof. In the main part of my talk I will concentrate on isoperimetric inequalities for the eigenvalues of the Dirichlet and Neumann Laplacians, and their applications. Finally I will present a selection of open problems in this field.