We consider the stability of isoperimetric inequalities under quasi-isometries between Riemann surfaces. Kanai observed that quasi-isometries preserve isoperimetric inequalities on complete Riemannian manifolds with finite geometry: positive injectivity radius and Ricci curvature bounded from below (see [2]). In [1], it is shown that the linear isoperimetric inequality is a quasi-isometric invariant for planar Riemann surfaces (genus zero surfaces) with vanishing injectivity radius. Moreover, it is proved that non-linear isoperimetric inequalities can only hold for Riemann surfaces with positive injectivity radius, and hence, by Kanai’s observation, preserved by quasi-isometries. In this talk we present an overview on isoperimetric inequalities and give some of the ideas of the proofs of the results cited above.

Keywords: Riemann surface, isoperimetric inequality, quasi-isometry

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References


Departmento de Ciencias Aplicadas a la Ingeniería Naval
Universidad Politécnica de Madrid
Avda. Arco de la Victoria 4, 38040 Madrid (Spain)
alicia.canton@upm.es

2Mathematics Division
St. Louis University (Madrid Campus)
Avda. del Valle 34, 38003 Madrid (Spain)
agranado@slu.edu

3Mathematics Division
St. Louis University (Madrid Campus)
Avda. del Valle 34, 38003 Madrid (Spain)
aportil2@slu.edu