

# **PRESERVATION OF POINCARÉ INEQUALITIES UNDER SPHERICALIZATION AND FLATTENING IN THE METRIC SETTING.**

**ESTIBALITZ DURAND CARTAGENA**  
UNED

ABSTRACT. The process of obtaining the Riemann sphere from the complex plane, and vice versa, was generalized in the metric setting by using sphericalization and flattening. These conformal transformations are dual to each other, and the performance of sphericalization followed by flattening, or vice versa, results in a metric space that is bi-Lipschitz equivalent to the original space. A very natural problem is therefore to study which geometric properties are preserved under these transformations.

Metric spaces endowed with a doubling measure and supporting a Poincaré inequality are nowadays considered a standard class of spaces when developing a first order differential analysis in a metric measure space setting. In this talk we will focus on the preservation of Poincaré inequalities under sphericalization and flattening. Part of the talk is based on a joint work with Xining Li