

Title: Renormalized Area of Spherical Catenoids in 5-Dimensional Hyperbolic Space

Abstract:

The renormalized area is amongst the most important invariants of minimal submanifolds within Poincaré-Einstein spaces. It was introduced by Graham-Witten in 1999 and is defined by taking the finite term in an expansion of the area functional with respect to a coordinate system that is closely related to the conformal geometry of the boundary. In 2008 Alexakis-Mazzeo published a paper outlining an extensive study of the renormalized area functional for 2D surfaces in hyperbolic spaces. One result they showed was a relation between the renormalized area of such surfaces and the Willmore energy of their double. The resolution of the Willmore conjecture by Marques-Neves then leads to a rigidity result for the renormalized area of surfaces in 3D hyperbolic space. When studying the renormalized area functional on hypersurfaces of 5D hyperbolic space it is then natural to ask whether an analogous rigidity result exists and what additional conditions may be necessary to obtain one. In this talk we will outline some recent work on the renormalized area of catenoids in 5D hyperbolic space as a test case for such a conjecture.