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Joint Geometric Analysis Seminar

(Part of MIST program)

The Existence of Singular Isoperimetric Hypersurfaces

Mr. Gongping Niu

University of California San Diego

Abstract

It is well-known that isoperimetric hypersurfaces in a smooth, compact $(n+1)$ -manifold are smooth up to a closed set of codimension at least 7. We prove that the dimension estimate of singularities is sharp. In this talk, we will explore an example of an 8-dimensional closed smooth Riemannian manifold, whose unique isoperimetric region, with half the volume of the manifold, displays two isolated singularities on its boundary. Furthermore, for $n > 7$, we utilize similar methods to construct singular isoperimetric hypersurfaces in higher dimensions.

Date: Dec 15, 2023 (Friday)

Time: 11:00am-noon (Hong Kong time)

ZOOM link: <https://cuhk.zoom.us/j/91805734715>

All are Welcome