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Joint Geometric Analysis Seminar

(Part of MIST program)

Degeneration of 7-dimensional minimal hypersurfaces with bounded index

Prof. Nick Edelen
University of Notre Dame

Abstract

A 7D area-minimizing hypersurface M can in general have a discrete singular set. The same is true if M is only locally-stable for the area-functional, provided $H^6(\text{sing } M) = 0$. In this paper we show that if M_i is a sequence of 7D minimal hypersurfaces with discrete singular set which are minimizing, stable, or have bounded index, and varifold-converge to some M , then the geometry, topology, and singular set of the M_i can degenerate in only a very precise manner. We show that one can always “parameterize” a subsequence i' by ambient, controlled bi-Lipschitz maps taking $\varphi_{i'}(M_1) = M_{i'}$. As a consequence, we prove that the space of closed, C^2 embedded minimal hypersurfaces in a closed 8-manifold (N, g) with a priori bounds $H^7(M) \leq \Lambda$ and $\text{index}(M) \leq \Lambda$ divides into finitely-many diffeomorphism types, and this finiteness continues to hold if one allows the metric g to vary, or M to be singular.

Date: 3 December 2021 (Friday)

Time: 9:00am – 10:00am (Hong Kong time)

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

All are Welcome