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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PURE MATHEMATICS

Hamilton-Ivey estimates for gradient Ricci solitons

by

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Abstract

One special feature for the Ricci flow in dimension 3 is the Hamilton-Ivey estimate. The curvature pinching estimate provides a lot of information about the ancient solution and plays a crucial role in the singularity formation of the flow in dimension 3. We study the pinching estimate on 3 dimensional expanding and 4 dimensional steady gradient Ricci solitons. A sufficient condition for a 3-dimensional expanding soliton to have positive curvature is established. This condition is satisfied by a large class of conical expanders. As an application, we show that any 3-dimensional gradient Ricci expander C^2 asymptotic to certain cones is rotationally symmetric. We also prove that the norm of the curvature tensor is bounded by the scalar curvature on 4 dimensional non Ricci flat steady soliton singularity model and derive a quantitative lower bound of the curvature operator for 4-dimensional steady solitons with linear scalar curvature decay and proper potential function. This talk is based on a joint work with Zilu Ma and Yongjia Zhang.

Date : 10 August 2022 (Wednesday)

Time : 3:40pm – 4:40pm

Venue : Room 3494 (near Lifts 25/26)

Zoom Meeting : https://hkust.zoom.us/j/92883040936 (Passcode: 558687)

All are Welcome!