



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

PHD STUDENT SEMINAR

Longtime existence of the L^2 -gradient flow of the Hawking mass functional

By

Mr. Nicholas Cheng Hoong CHIN

Abstract

One of the important notions of quasi-local mass in general relativity is the one proposed by Hawking in 1968, nowadays commonly known as the Hawking mass. In this talk, we study the L^2 -gradient flow of the Hawking mass functional on a closed surface in the Riemannian Schwarzschild 3-manifold. We begin by a brief discussion of the higher order estimates, to see that the uniform curvature bounds hold under the absence of curvature concentration. Then, we carry out a blowup analysis to determine the required condition in order to eliminate such concentration phenomenon. We focus on the comparison between our work and the Willmore flow on a closed surface in \mathbb{R}^3 . Finally, we conclude by establishing the longtime existence of the solution.

Date : 18 June 2021 (Friday)

Time : 10:00am

Zoom Meeting : <https://hkust.zoom.us/j/99345221674> (Passcode: 605764)

All are Welcome!