

國立中央大學數學系

專題演講

主 講 人：蘇瑋栢博士 (國家理論科學研究中心)

演講題目：Singularity formation in geometric flows

演講茶會：2025年03月06日(星期四) 3:30 p.m. ~ 4:00 p.m.

茶會地點：中央大學鴻經館M306

演講時間：2025年03月06日(星期四) 4:00 p.m. ~ 5:00 p.m.

演講地點：中央大學鴻經館M107

Abstract：

A defining feature of nonlinear PDEs is the formation of singularities, where certain quantities diverge to infinity, causing the PDE to break down in the classical sense. These singularities often indicate extreme physical phenomena, such as shock waves or the formation of black holes. Understanding how and when singularities form is therefore essential.

Since singularities typically occur on very small scales, one can "zoom in" around the singular region to study their structure more closely. The resulting limiting solutions are known as singularity models. Classifying these models reveals potential singular structures, while conversely, one can investigate whether a given model can arise as the blow-up limit of a solution.

In this talk, I will explore both perspectives, focusing on Lagrangian mean curvature flow (LMCF) and curve shortening flow (CSF). I will present our construction of solutions to LMCF that develop finite-time / infinite-time singularities, with prescribed singularity models and precise blow-up rates for the curvature. Additionally, I will discuss the construction of new singularity models in LMCF and partial classifications in CSF.

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