

國立清華大學數學系學術演講

NTHU MATH Colloquium

- 講題 Heat kernel asymptotics and analytic torsion on non-degenerate CR manifolds
- 講者 Prof. Rung-Tzung Huang(National Central University)
- 時間 2026.05.18 (Mon.) 16:00 – 17:00
- 地點 第三綜合大樓**2樓 Room 201**
- 茶會 15:30, Room 707

Abstract

We present recent developments on heat kernel asymptotics and analytic torsion in the setting of CR manifolds with non-degenerate Levi form. While heat kernel methods play a central role in connecting analysis, geometry, and topology in the elliptic setting, the study of the Kohn Laplacian on CR manifolds introduces significant challenges due to its non-ellipticity.

In this talk, we explain how microlocal techniques can be used to analyze the small-time behavior of the associated heat kernel. We describe the emergence of different asymptotic regimes depending on geometric conditions, and how suitable modifications restore smooth expansions.

As an application, we introduce analytic torsion in the CR setting and discuss its asymptotic behavior, particularly in the presence of high tensor powers of line bundles. The talk is based on joint work with Chin-Yu Hsiao and Guokuan Shao.