國立中正大學數學系
暨應用數學碩士班、統計科學碩士班
學　術　演　講

Concavity Inequalities for Hessian and Curvature Equations

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Abstract

Motivated by the Minkowski problem and its variants, an important question in fully nonlinear geometric PDE is to obtain a priori curvature estimates for hypersurfaces with prescribed curvature. A common approach is the Bernstein technique, where we apply the maximum principle to a suitable auxiliary function. This naturally leads to some difficult third-order terms, which cannot always be controlled by the usual concavity of the curvature operator.

In this talk, we will discuss refined concavity inequalities for elementary symmetric functions and related Hessian-type operators. We will explain the main ideas behind these inequalities, why stronger concavity inequalities naturally appear in Bernstein-type arguments, and how they can be used to obtain second-order estimates for fully nonlinear equations. We will then discuss some recent developments, including results from our recent work, and briefly mention their applications to second-order and curvature estimates for Hessian-type equations. Finally, we will mention some open questions about concavity inequalities for Hessian and curvature equations.

日　期：115 年 9 月 9 日(星期三) 16:10~17:00

地　點：本校數學館 307B 教室（嘉義縣民雄鄉大學路 168 號）

茶　會：15:30~16:00 數學館三樓 305 室舉行

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