國立中央大學數學系
專題演講

主 講 人： 李冀教授 (Macquarie University, Australia)

演講題目： Chernoff–Hoeffding inequalities and bounded
multi-parameter square functions

演講時間： 2025年06月23日(星期一) 11:00 a.m. ~ 11:50 a.m.

演講地點： 中央大學鴻經館M107

Abstract：

We establish Hoeffding inequalities for the summation of atomic functions possessing suitable almost-orthogonality via introducing a new square function and by constructing an iterative algorithm on the scales of this new square function. The main result yields new multi-parameter Hoeffding inequalities, and generalizes those for dyadic martingales. Our square function and the associated algorithm represent a refined design—contrasting with the classical dyadic martingale framework—enabling a layer-by-layer exploitation of multi-scale cancellation phenomena.

As an application, we obtain several equivalent characterizations of our Hoeffding inequalities, including the sharp order of local integrability for our generalized multi-parameter square functions. Our work extends the classical result of Chang–Wilson–Wolff (1985) in one-parameter setting and bridges the gap by resolving the multi-dimensional counterpart of Pipher's work on the bi-disc (1986).

This talk is mainly based on the recent progress:
Ji Li, Jill Pipher and Liangchuan Wu, "Chernoff–Hoeffding inequalities, almost orthogonality and bounded multi-parameter square functions", submitted.

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