SEMINAR
DEPARTMENT OF STATISTICS
THE CHINESE UNIVERSITY OF HONG KONG

Berry-Esseen bounds for Studentized U-statistics

INVITED SPEAKER

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TIME

November 14, 2023 (Tue) · 2:30 pm - 3:30 pm

VENUE

SC L4 · Science Centre L4 · CUHK

ABSTRACT

Establishing limit theorems, such as Berry-Esseen (B-E) bounds, for Studentized statistics has always been more challenging than for standardized statistics, but the resulting theory is arguably more relevant to applications, as most statistics have to be "self-normalized" by a data-driven estimate of their own standard deviations in practice.

In this talk, we will discuss our recent uniform and non-uniform B-E bounds established for Studentized U-statistics of any given degree m, which cover Gosset's t-statistic as a special case with m =1. Under the Stein-method paradigm, a central proof device is a refined exponential randomized concentration inequality originating in the work of Shao (2010). Moreover, we highlight our nonuniform bound, since its form is not a direct parallel of the typical non-uniform bound known for the standardized U-statistics; while counterexamples (Novak, 2005) have shown that the non-uniform bound form for standardized U-statistics is invalid for their Studentized counterparts, our result restores its validity by augmenting the bound with an additive factor that decays exponentially in the sample size n.