



THE UNIVERSITY OF
CHICAGO

Department of Statistics

STATISTICS COLLOQUIUM

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Marginal and multivariate ranks, optimal transport theory,
and Le Cam

MONDAY, December 2, 2019 at 4:30 PM

Jones 303, 5747 S. Ellis Avenue

Refreshments before the seminar at 4:00 PM in Jones 304

ABSTRACT

This talk aims to connect five keywords in statistics/probability -- ranks, (degenerate) U-statistics, combinatorial (non-)CLT, optimal transport theory, and Le Cam's contiguity lemma -- through one theme, nonparametric independence testing. The corresponding results show the existence of consistent rate-optimal distribution-free tests of two null hypotheses, mutual independence and independence of two random vectors, both for the first time. In technical terms, we give (1) the first Cramer-type moderate deviation theorem for degenerate U-statistics, (2) a new type of combinatorial non-central limit theorem for double- and multiple-indexed permutation statistics, and (3) a nontrivial use of Le Cam's third lemma with elements of non-normal limits.

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