

UNIVERSITY OF SYDNEY

SCHOOL OF MATHEMATICS AND STATISTICS

Statistics Seminar

Friday September 14, 2.00pm., Carslaw Lecture Room 173 (Level 1)

**Permutation tests for equality of distributions in
high-dimensional settings**

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Abstract

Motivated by applications in high-dimensional settings, we suggest a test of the hypothesis H_0 that two sampled distributions are identical. It is assumed that two independent datasets are drawn from the respective populations, which may be very general. In particular, the distributions may be multivariate or infinite-dimensional, in the latter case representing, for example, the distributions of random functions from one Euclidean space to another. Our test uses a measure of distance between data. This measure should be symmetric but need not satisfy the triangle inequality, so it is not essential that it be a metric. The test is based on ranking the pooled dataset, with respect to the distance and relative to any fixed data value; and repeating this operation for each fixed datum. A permutation argument enables a critical point to be chosen such that the test has concisely known significance level, conditional on the set of all pairwise distances.

*** This is joint work with Peter Hall. ***

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