



THE UNIVERSITY OF CHICAGO

Department of Statistics

SCIENTIFIC AND STATISTICAL COMPUTING SEMINAR

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Joint Limiting Laws and New High-dimensional Independence Tests

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133 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

Testing independence is of significant interest in many areas of high-dimensional statistical analysis. Existing methods either employ the quadratic-type statistics to test against the dense alternative where the covariance contains a lot of small nonzero entries, or utilize the extreme-value-type statistics to test against the sparse alternative where the covariance has a few nonzero entries. However, both methods do not have good power against the general alternative (either dense or sparse), which is more realistic in practice. In order to resolve this issue, we propose a new high-dimensional independence test, which combines both advantages of the extreme-value-type statistic and the quadratic-type statistic. We study the joint limiting laws of the new test statistics in the high-dimensional setting where the dimension can be much larger than the sample size. Furthermore we derive the convergence rate of the limiting distribution. Numerical performance of the new statistic is also examined.

Organizers:

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