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Title: Testing independence for high-dimensional data with application to time series

Abstract:  
Distance correlation and Brownian correlation were introduced about five years ago by G.J. Szekely. These correlations characterize independence and determine a consistent test of multivariate independence for random vectors in arbitrary dimension. In this talk a modified distance correlation is proposed and applied to the problem of testing the independence of random vectors in high dimension. The distribution of a simple transformation of the test statistic converges to Student $t$ as dimension tends to infinity for any fixed sample size. Thus we obtain a distance correlation $t$ test for independence of random vectors in arbitrarily high dimension, applicable under very general conditions. One of the important applications, testing independence of two times series, is illustrated for financial data.