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Test for independence of long-range dependent time series using distance covariance

We apply the concept of distance covariance for testing independence of two long-range dependent time series. As test statistic we propose a linear combination of empirical distance cross covariances. We derive the asymptotic distribution of our test statistics, and we show consistency against a large class of alternatives. The asymptotic theory developed in this paper is based on a novel non-central limit theorem for stochastic processes with values in a Hilbert space.
Joint work with Annika Betken, TU Twente, The Netherlands.