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Nonparametric Estimation of Copulas for Time Series

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Abstract:
We consider a nonparametric method to estimate copulas, i.e. functions linking joint distributions to their univariate margins. We derive the asymptotic properties of kernel estimators of copulas and their derivatives in the context of a multivariate stationary process satisfactory strong mixing conditions. Monte Carlo results are reported for a stationary vector autoregressive process of order one with Gaussian innovations. An empirical illustration containing a comparison with the independent, comotonic and Gaussian copulas is given for European and US stock index returns.