

MATH/SIUC COLLOQUIUM



11-17-16 3:00PM
Neckers 156

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Title
A Semiparametric Method for Estimating
Nonlinear and Partial Linear Vector
Autoregressive Time Series Models with
Independent and Dependent Errors

Reception immediately following in Neckers 356.

Place: Neckers 156

Time: 3:00pm

Abstract

A semiparametric method is proposed to estimate vector autoregressive function in the nonlinear and partially linear vector time series model. We consider a combination of parametric and nonparametric estimation approach to estimate the nonlinear vector autoregressive function for both independent and dependent errors. The multivariate Taylor series expansion is utilized to approximate the vector regression function up to the second order. After the unknown parameters are estimated by the maximum likelihood estimation procedure, the obtained nonlinear vector autoregressive function is adjusted by a nonparametric diagonal matrix. The proposed adjusted matrix is estimated using nonparametric kernel method.

Asymptotic consistency properties of the proposed estimators are established. Simulation studies are conducted to evaluate the performance of the proposed semiparametric method. Finally, we demonstrate the application of the proposed approach with an empirical example.