



北京理工大学

数学与统计学院学术报告

Adaptive adequacy testing of high-dimensional factor-augmented regression model

报告人: 郭旭 (北京师范大学)

时间: 2025.6.11 上午10:30--11:30

地点: 文萃楼F 303

摘要: In this paper, we investigate the adequacy testing problem of high-dimensional factor-augmented regression model. Existing test procedures perform not well under dense alternatives. To address this drawback, we introduce a novel quadratic-type test statistic which can efficiently detect dense alternative hypotheses. We further propose an adaptive test procedure to remain powerful under both sparse and dense alternative hypotheses. Theoretically, under the null hypothesis, we establish the asymptotic normality of the proposed quadratic-type test statistic and asymptotic independence of the newly introduced quadratic-type test statistic and an existing maximum-type test. We also prove that our adaptive test procedure is powerful to detect signals under either sparse or dense alternative hypotheses. Numerical studies are carried out to illustrate the empirical performance of our introduced procedures.

报告人简介: 郭旭, 现任北京师范大学统计学院教授, 博士生导师。现主持国家自然科学基金青年科学基金项目B类(原国家自然科学基金优秀青年基金)。曾荣获北京师范大学第十一届“最受本科生欢迎的十佳教师”, 北京师范大学第十八届“青教赛”一等奖和北京市第十三届“青教赛”三等奖。目前主要关注高维回归模型中的假设检验问题, 已发表高水平学术论文40余篇, 包括统计学国际顶尖期刊在统计学和计量经济学的国际顶级期刊JRSSB, JASA, Biometrika, JOE, JBES和机器学习顶会NeurIPS。