**2019青海师范大学**

**西部地区青年概率统计学者论坛**

**会**

**议**

**手**

**册**

**主办单位：国家天元数学西北中心**

**承办单位：青海师范大学数学与统计学院**

**中国 西宁**

**2019年6月21-23日**

青海师范大学概况介绍

青海师范大学建于1956年。学校已形成具有本科教育、研究生教育、留学生教育、成人教育和职业教育的完备教育体系，学科专业覆盖哲学、经济学、法学、教育学、文学、历史学、理学、工学、管理学、艺术学等10大门类，已成为文理工多学科协调发展，具有教师教育、高原地域和民族特色的省属重点大学。学校是博士学位授予单位、全国文明校园、国家级藏汉双语人才培养培训基地，全国培养高水平运动员试点院校、国家社会体育指导员培训基地、全国汉语言水平测试（HSK）主考单位、教育部卓越教师培养项目单位、教育部“长江学者和创新团队计划”入选单位、教育部第二批深化创新创业教育改革示范高校、中国教育和科研计算机网络青海省主节点院校、高校数字媒体产教融合创新应用示范基地、CALIS青海省文献信息服务中心,全国50所毕业生就业典型经验高校之一。具有推荐优秀应届本科毕业生免试攻读硕士学位研究生资格。
  学校设成人教育学院（职业学院）、民族师范学院2个副厅级建制二级学院,共设18个二级学院。建有高原科学与可持续发展研究院、青海省丝绸之路经济带研究院、盐湖学院、班禅研究院、青藏高原文化研究所、青藏高原资源与环境研究所、教师教育理论与实践研究所、藏文信息研究中心等24个研究机构（智库）和3所附属中学。 现有3个一级学科博士学位授权点，12个二级学科博士学位授权点，17个一级学科硕士学位授权点，102个二级学科硕士学位授权点，10个专业硕士学位授权点。有62个本科专业，其中4个国家级特色专业，3个省级特色专业，12个省级重点学科，1个省级重点建设学科，1门国家级精品课程，23门省级精品课程。有17个国家级、省级重点实验室，其中1个教育部重点实验室，1个省部共建实验室，1个国家级实验教学示范中心，10个省级重点实验室，1个省级重点建设实验室，3个省级实验教学示范中心。建有3个省级人文社会科学重点研究基地。

现有在校学生15000余人，现有教职工1238人，各类专业技术人员992人。其中，教授260人，副教授351人，博士生导师32人,硕士生导师232人，享受国务院政府特殊津贴专家24人，国家有突出贡献的中青年专家1人。建有1个国家级教学团队，1个教育部创新团队，9个省级教学团队。4个学科团队入选青海省“人才小高地”建设项目，6人入选教育部新世纪优秀人才计划，13人入选“西部之光”访问学者， 7人入选青海省优秀专家，7人入选青海省优秀专业技术人才，46人入选青海省“135高层次人才培养工程”人才计划, 5人入选青海省“昆仑英才”计划领军人才项目,22人和1个科研团队入选青海省“高端创新人才千人计划”培养人才（团队）项目, 4个教学科研团队5次入选青海省人才“小高地”建设项目。截至目前，学校已培养10万余名各类专业人才，为青海省和西部地区的经济社会发展做出了积极贡献。学校现与北京师范大学、山东大学、兰州大学、陕西师范大学、首都师范大学建立对口支援合作关系。与新加坡南洋理工大学、美国科罗拉多州立大学、美国普渡大学、韩国国立顺天大学、马来西亚伊德里斯教育大学等高校建立合作交流关系。
  近年来，学校承担国家、省部级科研项目600多项，包括2项国家“863”项目，3项国家重大基础研究专项“973”项目，2项国家科技进步二等奖。《藏文计算机键盘和输入编码方法研究》、《三江源区草地生态恢复及可持续管理技术创新和应用》分获2004年、2016年国家科学技术进步奖二等奖。国家“863”高科技项目“汉藏科技机器翻译系统”填补国内空白。“玛钦藏文平台、字库以及藏汉英电子词典”项目获2008年度青海省科学技术进步一等奖，使我国继续保持在世界藏文信息产业中的主导地位。“祁连山湿地生态系统修复保护技术集成与示范”项目被国家科技部列入科技支撑计划。史前人类在青藏高原活动遗迹研究成果被世界著名学术期刊《科学》（Science)选用并作封面报道。
  目前，学校有城西校区、城北校区和成都校区等三个校区。城北校区于2016年10月落成并投入使用，占地面积1303亩，各项建设总投资20亿元，是体现学科专业特色，具有丰富文化内涵，各项设施西部一流的新型大学校园。

  **2019青海师范大学西部地区青年概率统计学者论坛**

尊敬的专家、学者，大家好！

为了促进国内青年概率统计学者间的学术交流，促进西部地区统计学科的发展，并为西部地区统计学青年学者提供一个扩大视野，学习交流的平台和机会，将于2019年6月21日-6月23日在青海省西宁市组织召开由国家自然科学基金委“国家天元数学西北中心”项目资助，青海师范大学数学与统计学院具体承办的“2019青海师范大学西部地区青年概率统计学者论坛”。基于您在本领域做出的优秀成果，诚邀您参会。

国家天元数学西北中心是国家自然科学基金委员会天元数学基金为推动中国数学率先赶上世界先进水平、推动中国数学区域、领域均衡发展而设立的数学研究机构。青海师范大学数学与统计学院前身为数学系，建于1956年，是青海师范大学成立最早的院系之一，现有数学与应用数学专业（师范）、信息与计算科学专业、统计学专业和金融数学专业四个本科专业。1993年基础数学学科获批为硕士学位授权点，是我校首批硕士学位授权点之一，2011年数学、统计学两个一级学科硕士学位授权点获批。2006年数学与应用数学专业获批为第一批国家级特色专业建设点，2009年基础数学（藏汉双语）教学团队入选国家级教学团队，2017年学院入选国家天元数学西北中心共建单位。

1. 会议安排
2. 会议报道：6月21日（14:00-20:00）
3. 报道地点：假日王朝大酒店一楼大厅
4. 会议时间：6月22-23日学术报告和研讨，24日离会
5. 开会地点：青海师范大学城西校区田家炳综合楼会议室
6. 会议费用

本次论坛不收取会务费，主办方为参会专家提供会议期间的食宿费，交通费需自理。

1. 联系人

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热诚欢迎您能光临青海师大！

敬祝您事事顺心、健康平安！

 青海师范大学数学与统计学院

 2019年5月10日

**会议日程表**

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| 6月21日14:00-20:00注册报道（地点：假日王朝大酒店一楼大厅） |
| 6月22日，青海师大城西校区田家炳2楼会议室 |
| 时间 | 内容 | 主持人 |
| 8:30-9:00 | 开幕式1. 校领导致辞
2. 学院领导致辞
3. 集体合影
 | 陈占寿 |
| 时间 | 报告人 | 题目 | 主持人 |
| 9:00-9:30 | WU Yuehua | Association rule mining and market basket analysis | 毛亚平 |
| 9:30-9:55 | 夏志明 | Process Monitoring ROC Curve for Evaluating Dynamic Screening Methods |
| 9:55-10:20 | 李 东 | Non-standard inference for augmented double autoregressive models with null volatility coefficients |
| 茶歇(10:20-10:35,会议室门口) |
| 10:35-11:00 | 陈 夏 | Penalized empirical likelihood for high-dimensional generalized linear models with longitudinal data | 夏志明 |
| 11:00-11:25 | 秦国友 | Empirical likelihood inference for longitudinal data with covariate measurement errors: an application to LEAN study |
| 11:25-11:50 | 朱复康 | Self-Excited Hysteretic Negative Binomial Autoregression |
| 午餐（12:00-13:00,假日王朝大酒店2楼） |
| 14:00-14:25 | 张军舰 | 基于自适应LASSO 的均值变点检测 | 朱复康 |
| 14:25-14:50 | 王 涛 | Mixed Effects Model for analyzing Complex AIDS Clinical Data |
| 14:50-15:15 | 石峻驿 | Predicting Currency Crises: an Endogenous Multivariable Markov Regime Switching Approach |
| 15:15-15:40 | 赖 欣 | Competing Risk Model with Bivariate Random Effects for Clustered Survival Data |
| 茶歇(15:40-15:55,会议室门口) |
| 15:55-16:20 | 胡雪梅 | Generalized semi-varying coefﬁcient mixed effects models | 刘小惠 |
| 16:20-16:45 | 张庆昭 | Conditional Score Matching for High-Dimensional Partial Graphical Models |
| 16:45-17:10 | 刘小惠 | Fast computation of Tukey trimmed regions and median in dimension p>2 |
| 17:10-17:35 | 朱 莉 | 沪深300股指已实现波动率预测精度的比较研究——基于微观结构噪音分析 |
| 晚餐（18:30-，悦宾楼海湖店2楼大厅） |
| 6月23日，青海师大城西校区田家炳2楼会议室 |
| 8:30-8:55 | 谭常春 | Detection of Multiple Change-Points in the Scale Parameter of a Gamma Distributed Sequence Based on RJMCMC | 李忠华 |
| 8:55-9:20 | 李忠华 | A Control Scheme for Monitoring Process Covariance Matrices with More Variables than Observations |
| 9:20-9:45 | 刘 浏 | On-line profile monitoring for surgical outcomes using a weighted score test |
| 9:45-10:10 | 马健琦 | Detecting variance change point in long memory time series |
| 茶歇(10:10-10:25,会议室门口) |
| 10:25-10:50 | 金浩 | Modified tests for change points in variance in the possible presence of mean breaks | 金 浩 |
| 10:50-11:15 | 秦瑞兵 | Rank test for change in persistence |
| 11:15-11:40 | 李拂晓 | Change-point detection in panel data regression model with random individual effects |
| 11:40-12:00 | 徐琼瑶 | Inference for multiple change points in heavy tailed time series via rank scan statistics |
| 午餐（12:00-13:10,假日王朝大酒店2楼） |
| 6月23日下午，青海师大城北校区参观，自由研讨 |
| 晚餐（18:00-19:30，假日王朝大酒店2楼） |
| 6月24日，离会 |

**报告内容简介**

**Association rule mining and market basket analysis**

**WU Yuehua**,York University(加拿大)

摘要:Current algorithms for association rule mining from transaction data are mostly deterministic and enumerative. They can be computationally intractable even for mining a dataset containing just a few hundred transaction items, if no action is taken to constrain the search space. In this talk, we first briefly review the Apriori algorithm, and then introduce a Gibbs-sampling-induced stochastic search procedure to randomly sample association rules from the itemset space, and perform rule mining from the reduced transaction dataset generated by the sample. A general rule importance measure is also proposed to direct the stochastic search so that, as a result of the randomly generated association rules constituting an ergodic Markov chain, the overall most important rules in the itemset space can be uncovered from the reduced dataset with probability 1 in the limit. We end the talk by presenting some data examples.

**Process Monitoring ROC Curve for Evaluating Dynamic Screening Methods**

**夏志明**，西北大学

摘要:In practice, we often need to sequentially monitor the performance of individual subjects, so

that interventions can be made in a timely manner to avoid unpleasant consequences (e.g., the occurance of stroke or other deadly diseases) once the longitudinal patterns of their performance variables deviate significantly from the regular patterns of well-functioning subjects. Some statistical methods are available to handle this sequential diagnosis (SD) problem. Because the performance of the SD methods is related to their signal times, the conventional false positive rate (FPR) and false negative rate (FNR) cannot be effective in measuring their performance. In this paper, we propose a new performance evaluation approach, called dynamic ROC curve, which properly combines the signal times with (FPR, FNR). Numerical examples and theoretical justifications show that this approach provides an effective tool for measuring the performance of the SD methods.

**Non-standard inference for augmented double autoregressive models with null volatility coefficients**

**李东**，清华大学

摘要:This paper considers an augmented double autoregressive (DAR) model, which allows null volatility coefficients to circumvent the over-parameterization problem in the DAR model. Since the volatility coefficients might be on the boundary, the statistical inference methods based on the Gaussian quasi-maximum likelihood estimation (GQMLE) become non-standard, and their asymptotics require the data to have a finite sixth moment, which narrows applicable scope in studying heavy-tailed data. To overcome this deficiency, this paper develops a systematic statistical inference procedure based on the self-weighted GQMLE for the augmented DAR model. Specifically, we find except for the Lagrange multiplier test statistic, asymptotics for both the Wald and the quasi-likelihood ratio test statistics are non-standard. In addition, a new portmanteau test based on self-weighted residuals is proposed with non-standard asymptotics. The entire procedure is valid as long as the data is stationary, and its usefulness is illustrated by simulation studies and one real example.

**Penalized empirical likelihood for high-dimensional generalized linear models with longitudinal data**

**陈夏**，陕西师范大学

摘要:In this talk, we consider the application of penalized empirical likelihood to the high-dimensional generalized linear models with longitudinal data. Under regular conditions, it is shown that the penalized empirical likelihood has the oracle property. That is, the penalized empirical likelihood estimators correctly select covariates with nonzero coefficients with probability converging to one and that the estimators of nonzero coefficients have the same asymptotic distribution that they would have if zero coefficients were known in advance. Also, we find the asymptotic distribution of the penalized empirical likelihood ratio test statistic is the chi-square distribution. Thus the confidence regions can be constructed. Some simulations and a real data analysis are conducted to illustrate the proposed method.

**Empirical likelihood inference for longitudinal data with covariate measurement errors: an application to LEAN study**

**秦国友**，复旦大学

摘要:Measurement errors usually arise during the longitudinal data collection process and ignoring the effects of measurement errors will lead to invalid estimates. The Lifestyle Education for Activity and Nutrition (LEAN) study (Barry et al., 2011) was designed to assess the effectiveness of intervention for enhancing weight loss over a 9-month period in sedentary overweight or obese adults. The covariates systolic blood pressure (SBP) and diastolic blood pressure (DBP) were measured at baseline, month 4 and month 9. At each assessment time, there were two replicate measurements for SBP and DBP, where the replicate measurement errors of SBP and DBP respectively followed different distributions. In order to account for the different distributions of measurement errors, we develop a new method for analysis of longitudinal data with replicate covariate measurement errors based on the empirical likelihood method. The asymptotic properties of the proposed estimator are established under some regularity conditions and the confidence region for the parameters of interest can be constructed based on the chi-squared approximation without estimating the covariance matrix. Additionally, the proposed empirical likelihood estimator is asymptotically more efficient than the estimator of Lin et al. (2018). Extensive simulations also demonstrate that the proposed method can eliminate the effects of measurement errors in the covariate and has a high estimation efficiency. The proposed method indicates the significant effects of intervention, SBP and assessment time on BMI in the LEAN study.

**Self-Excited Hysteretic Negative Binomial Autoregression**

**朱复康**，吉林大学

摘要:As an extension of the classical two-regime threshold process, the hysteretic autoregression enjoys a more flexible regime-switching mechanism. This article studies an observation-driven model for time series of counts, in which the observations are supposed to follow a negative binomial distribution conditioned on past information with the form of the hysteretic autoregression. Stability properties of the model are established by the e-chain and Lyapunov's method. The estimator for regression parameters is obtained by the quasi-likelihood with Poisson-based score estimating function, and the corresponding asymptotic properties are established. Moreover, a reasonable method for selecting search ranges for thresholds is also proposed and simulation studies are considered. As an application, we bring attention to some features of the daily number of trades of Siparex Croissance which have been overlooked in previous studies.

**基于自适应LASSO 的均值变点检测**

**张军舰**，广西师范大学

摘要:变点检测，特别是多变点检测问题，一直是统计学研究的主要课题之一，在经济，金融，网络入侵，地质等领域都有大量的应用。在变点检测模型中， 比较常见且基础的是均值模型。论文主要借助自适应LASSO方法，讨论均值模型的变点检测方法和算法， 并与已有的LASSO均值变点检测方法进行了模拟比较，最后借助本文提出的方法，对湖南某地的一段岩溶数据进行实证分析。模拟结果显示，在真实均值具有连续递增或连续递减的趋势时，基于自适应LASSO的均值变点检测方法明显要优于（在Hausdorff 度量下）LASSO 均值变点检测方法；对于真实均值交错变化的情况，在数据波动较小时，变点估计整体误差较小，误差波动较大，在数据波动较大时，变点估计的整体误差和其波动均较小。实证结果显示，本文所提出的均值变点检测方法能够有效地检测到相应的变点，进一步说明本方法的适用性。

**Mixed Effects Model for analyzing Complex AIDS Clinical Data**

**王涛**，云南师范大学

摘要:Three kinds of correlative AIDS progression markers, i.e. unbalanced longitudinal CD4, CD8, and viral RNA data are included in general HIV clinical data. These data are typically intermittently missing and informatively left censored. In this talk, we propose a parsimonious generalized linear mixed effects model to jointly inference the dynamic progression of CD4, CD8 and viral RNA data for such AIDS clinical data sets. We characterize the CD4 CD8 and viral RNA dynamic progress, by taking the correlation among such three AIDS progression markers into account. Simulation studies and real data analysis demonstrate that our model performs well and is appropriate for evaluating HAART in practice.

**Predicting Currency Crises: an Endogenous Multivariable Markov Regime Switching Approach**

**石峻驿**，北京师范大学

摘要:In recent decades, there are lots of studies of Markov regime-switching model (this model is also called hidden Markov model (HMM) in statistics.) applied to economic field. This paper firstly gives three assumptions of HMM when it is applied to economic fields. Then an endogenous multivariable HMM is constructed and estimated. After that we apply this model to predict currency crises. The results show that the percentage of crises correctly predicted of our model is much greater than the current studies with the criterion of cut-off 50% and is greater than most of the current studies with the criterion of the optimal cut-off value. And this result is meaningful for the prudent policy makers. Furthermore, we compare our model’s forecasting performance with selecting different crisis exclusion window horizons. And the results show that horizon of 6 months can usually induce a better forecasting performance.

**Competing Risk Model with Bivariate Random Effects for Clustered Survival Data**

**赖欣**，西安交通大学

摘要:Competing risks are often observed in clinical trial studies. As exemplified in two data sets, the bone marrow transplantation study for leukemia patients and the primary biliary cirrhosis study, patients could experience two competing events which may be correlated due to shared unobservable factors within the same cluster. With the presence of random hospital/cluster effects, a cause-specific hazard model with bivariate random effects is proposed to analyze clustered survival data with two competing events. This model extends earlier work by allowing random effects in two hazard function parts to follow a bivariate normal distribution, which gives a generalized model with a correlation parameter governing the relationship between two events due to the hospital/cluster effects. By adopting the GLMM formulation, random effects are incorporated in the model via the linear predictor terms. Estimation of parameters is achieved via an iterative algorithm. A simulation study is conducted to assess the performance of the estimators, under the proposed numerical estimation scheme. Application to the two sets of data illustrates the usefulness of the proposed model.

**Generalized semi-varying coefﬁcient mixed effects models**

**胡雪梅**，重庆工商大学

摘要:We investigate semi-parametric small area inference in generalized semivarying coefﬁcient mixed effects models with application to longitudinal data. Combining the generalized proﬁled likelihood approaches for mixed effect models with kernel methods, we not only construct semi-parametric small area estimators, but also propose two test statistics for discriminating between a parametric mixed effects model and a generalized semi-varying coefﬁcient mixed effects model. The critical values are estimated by a bootstrap procedure. The asymptotic theory for the methods is provided. Simulations exhibit the ﬁnite-sample performance for the proposed estimators and test statistics. These verify the feasibility and the excellent behavior of the methods for moderate sample sizes.

**Conditional Score Matching for High-Dimensional Partial Graphical Models**

**张庆昭**，厦门大学

摘要:Network construction has been heavily exploited in multivariate data analysis. In many cases, connections between a large part of variables in the population are much less of importance. Thus modeling the partial graphs plays an important role in the network construction. Due to the existence of the multiplicative normalization constant, the computational cost of existing studies is expensive. In this paper, we propose the conditional score matching for high dimensional partial graphical models, which is not influenced by the multiplicative normalization constant. Effective computational algorithms are developed. The computational complexity of the proposed method is less than that in the literature. Statistical properties are established. In addition, two extensions of the proposed method are explored to incorporate much more information and accommodate more general distributions.  A wide spectrum of simulations and the analysis of a breast cancer gene expression data set demonstrate competitive performance of the proposed methods.

**Fast computation of Tukey trimmed regions and median in dimension p>2**

**刘小惠**，江西财经大学

摘要:Given data in $\mathbb{R}^{p}$, a Tukey $\kappa$-trimmed region is the set of all points that have at least Tukey depth $\kappa$ w.r.t. the data. As they are visual, affine equivariant and robust, Tukey regions are useful tools in nonparametric multivariate analysis. While these regions are easily defined and interpreted, their practical use in applications has been impeded so far by the lack of efficient computational procedures in dimension $p > 2$. We construct two novel algorithms to compute a Tukey $\kappa$-trimmed region, a na\"{i}ve one and a more sophisticated one that is much faster than known algorithms. Further, a strict bound on the number of facets of a Tukey region is derived. In a large simulation study the novel fast algorithm is compared with the na\"{i}ve one, which is slower and by construction exact, yielding in every case the same correct results. Finally, the approach is extended to an algorithm that calculates the innermost Tukey region and its barycenter, the Tukey median. Supplementary material is available online.

**沪深300股指已实现波动率预测精度的比较研究——基于微观结构噪音分析**

**朱莉**，新疆财经大学

摘要:文章依次采用小波降噪、EEMD降噪和EEMD+小波降噪三种方法对沪深300指数5分钟高频数据进行降噪处理，然后选用较成熟的波动率模型GARCH-RV、HAR-RV、HAR-RV-J、HAR-RV-CJ对波动率进行预测，最后使用SPA方法对波动率预测效果进行评估。实证结果表明：（1）降噪可以提高高频数据的有效性，其中有EEMD方法参与的降噪方法降噪效果较好；（2）在任意损失函数下，降噪后所有模型的预测效果均好于降噪前模型的预测效果，这说明降噪可以提高已实现波动率的预测效果；（3）经过SPA方法的检验，在不同的损失函数下，各种模型的表现不一样，但是经过EEMD+小波降噪方法降噪后的GARRV和RVJ模型在波动率预测中表现最好，EEMD+小波降噪方法可以最有效的改善波动率预测模型的预测效果。

**Detection of Multiple Change-Points in the Scale Parameter of a Gamma Distributed Sequence Based on RJMCMC**

**谭常春**，合肥工业大学

摘要:In this paper, the multiple change-point problem in the scale parameter of a sequence of independent gamma distributed observations is discussed. A reversible jump Markov chain Monte Carlo (RJMCMC) algorithm is developed to compute the posterior probabilities of the number and positions of the multiple change-points. Four types of jumps are designed, and the acceptance probability of each type is given. The simulation studies show that the RJMCMC-based method is efficient in the detection of multiple change-points in the scale parameter in gamma distributed sequence, and performs better than a self-normalization based method. In addition, a real data example about successive rises and falls of Shanghai stock exchange composite index (abbreviated by SSECI) yield is used to illustrate the proposed methodology.

**A Control Scheme for Monitoring Process Covariance Matrices with More Variables than Observations**

**李忠华**，南开大学

摘要:In this talk, we propose a new control chart that integrates a powerful high-dimensional covariance matrix test with the exponentially weighted moving average procedure for monitoring high-dimensional variability with individual observations. Design and implementation of the proposed chart are provided, including search algorithm and a table for the control limits, diagnostic aids after the signal, effect of misspecifying the in-control distribution and a bootstrap procedure. Monte-Carlo simulation results show that the new chart, with its powerful inherited properties, provides satisfactory performance in various cases, especially for covariance shifts that involve diagonal components. The application of the proposed method is illustrated with a real data example from a white wine production process.

**On-line profile monitoring for surgical outcomes using a weighted score test**

**刘浏**，四川师范大学

摘要:In the past decade, risk–adjusted control charts have been widely used to monitor surgical outcomes. However, most existing approaches focus on monitoring shifts in location parameters and may not be able to detect a scale change that is also likely to occur in surgical data. In this paper, we derive a weighted score test statistic to construct an exponentially weighted moving average chart and propose a new charting method to simultaneously monitor location and scale parameters. This new chart may be applied to monitoring surgical performance. Simulation results indicate that the proposed method is more efficient than existing methods such as the risk–adjusted cumulative sum chart in detecting the heterogeneity of surgical outcomes. A real data set from the Surgical Outcome Monitoring and Improvement Program in Hong Kong is used to illustrate the applicability of the proposed chart.

**Detecting variance change point in long memory time series**

**马健琦**，青海民族大学

摘要：In this talk, we propose a self-normalized ratio statistic to detect variance change point in long memory time series. The null distribution and its consistence are proved. In order to determine the critical values of test statistic, a sieve bootstrap method has also been proposed. Simulation and empirical application illustrate the finite sample performance of proposed method.

**Modified tests for change points in variance in the possible presence of mean breaks**

**金浩**，西安科技大学

摘要:This paper considers the detection problem of variance changes for the time series involving abrupt and/or smooth breaks in mean. Often, in these situations, the tests of choice are based on cumulative sum of squares statistics. We show that the test statistics are not robust in the presence of broken mean and their sizes suffer severe distortions. The adjusted residual-based method is then proposed to eliminate these deficiencies and makes a significant improvement. Finally, simulation results confirm the validity of these modified test statistics, and an empirical data analysis using some stock price series from the Shanghai Stock Exchange is reported.

**Rank test for change in persistence**

**秦瑞兵**，山西大学

摘要:This paper proposes a test to detect the change in persistence on the basis of ranks of a sequence, then investigates asymptotic properties under the null hypothesis and the alternative hypothesis. The Monte-Carlo simulations demonstrate that the proposed test has less powers but more correct sizes in finite samples, comparing with the test proposed by Kim (2000), that means the test has much lower rejection rate when the series has no change in persistence. As an illustration, We apply our test to the series of the monthly CPI rate and ISM non-manufacturing index of the America.

**Change-point detection in panel data regression model with random individual effects**

**李拂晓**，西安理工大学

摘要: Testing the structural stability of panel data has been an important issue in statistics and econometrics. The aim of this paper is to propose a procedure to test whether there exists structural change in the panel regression model with random individual effects. This change-point testing procedure is based on the CUSUMs of the residuals. The asymptotic distributions of our statistics are derived under the null hypothesis and a local alternative hypothesis, the consistency is proven under the fixed alternative hypothesis. Simulations and real data analysis show that CUSUM test based on residuals has very good power even in case of short panels with a small number of observations.

 **Inference for multiple change points in heavy tailed time series via rank scan statistics**

**徐琼瑶**，青海师范大学

摘要: This paper proposes a rank likelihood ratio scan method for estimating multiple change points in piecewise heavy tail time series. It can effectively solve the problem that the likelihood ratio scan method over estimates the change points in the time series with heavy tail. Theoretical results, simulation experiments and two sets of real data analysis example are conducted to illustrate the efficiency of the rank likelihood ratio scan method. It is a pity that the rank likelihood ratio scan method is not suitable for heavy tail time series with variance change point.