

第十届 全国概率统计会议

程

序

册

山东大学
2014年10月17日-21日

第十届全国概率统计会议

(<http://rida.sdu.edu.cn/probstat2014/index.htm>)

主办单位：中国数学会概率统计学会

承办单位：山东大学数学学院

山东大学齐鲁证券金融研究院

赞助单位：国家自然科学基金委数学天元基金

教育部高校数学中心

中国数学会

山东大学组委会

主 任：彭实戈

副主任：吴臻、林路、栾贻会 **秘书长：**栾贻会

学术组：嵇少林、黄宗媛、李欣鹏、于志勇、胡明尚

会务组：郝鲁民、孟玉梅、史春梅、许振宇、杨淑振

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会议日程简表

10月17日

09:00 报到 地点：山东大学中心校区邵逸夫科学馆
17:00 - 19:30 晚餐 地点：齐园餐厅三楼大厅
19:30 - 21:30 第九届理事会和编委会会议 地点：知新楼 B 座 1238

10月18日

08:00 - 17:10 山东大学中心校区知新楼 A 座 312 报告厅
08:00 - 09:20 开幕式 地点：知新楼 A 座 312 报告厅
09:20 - 09:50 照相 地点：知新楼 A 座楼下广场
10:00 - 12:00 大会邀请报告 地点：知新楼 A 座 312 报告厅
12:00 - 14:00 午餐 地点：齐园餐厅三楼大厅
14:00 - 17:10 大会邀请报告 地点：知新楼 A 座 312 报告厅
17:20 - 18:20 各分地区代表（学会产生）酝酿新一届理事候选名单
地点：中心校区知新楼 B 座：B924, B936, B938, B1231, B1238, B1248
19:00 宴会 地点：法官培训中心青檀园餐厅

10月19日

08:30 - 11:50 邀请报告

	邵逸夫科学馆报告厅	知新楼 C 座 312 思源报告厅
08:30-10:00	概率邀请报告 I	统计邀请报告 I
10:00-10:20	休息	休息
10:20-11:50	概率邀请报告 II	统计邀请报告 II

10:00 - 12:00 投票选举新一届理事

地点：邵逸夫科学馆报告厅、知新楼 C 座 312 思源报告厅

12:00 - 14:00 午餐 地点：齐园餐厅三楼大厅

14:00 - 17:15 分组报告

知新楼 B 座	B924	B1032	B1044	B1223	B1230	B1231	B1234	B1248
14:00-15:30	概率(1)	概率(2)	概率(3)	统计(1)	统计(2)	统计(3)	统计(4)	统计(5)
15:30-16:00	休息							
16:00-17:15	概率(4)	概率(5)	概率(6)	统计(6)	统计(7)	统计(8)	统计(9)	统计(10)

14:00 主席团会议讨论 确认选举结果 地点：知新楼 B 座 1238

16:00 张贴公布理事会选举结果

17:30 - 19:00 晚餐 地点：齐园餐厅三楼大厅

19:30 - 21:00 新一届理事会开会 地点：知新楼 B 座 1238

21:00 - 22:00 编委会改选（召集人：汪荣明） 地点：知新楼 B 座 1238

10月20日

8:30 张贴宣布新一届理事会选举结果和编委会改选结果

08:30 - 11:40 邀请报告

	邵逸夫科学馆报告厅	知新楼 C 座 312 思源报告厅
8:30-10:00	概率邀请报告 III	统计邀请报告 III
10:00-10:10	休息	休息
10:10-11:40	概率邀请报告 IV	统计邀请报告 IV

11:50 - 12:00 新一届理事长讲话 地点：知新楼 C 座 312 思源报告厅

12:00 - 14:00 午餐 地点：齐园餐厅三楼大厅

14:00 - 17:15 分组报告

知新楼 B 座	B924	B1032	B1044	B1223	B1230	B1231	B1234	B1248
14:00-15:30	概率(7)	概率(8)	概率(9)	统计(11)	统计(12)	统计(13)	统计(14)	统计(15)
15:30-16:00	休息							
16:00-17:15	概率(10)	概率(11)	概率(12)	统计(16)	统计(17)	统计(18)	统计(19)	统计(20)

17:30 - 19:00 晚餐 地点：齐园餐厅三楼大厅

会议详细日程

十月十七日（星期五）

09:00 开始	报到	地点：山东大学中心校区邵逸夫科学馆
17:00 -19:30	晚餐	地点：齐园餐厅三楼大厅
19:30 - 21:30	第九届理事会和编委会会议	地点：知新楼 B 座 1238

十月十八日（星期六）

10月18日上午

8:00 - 9:20	开幕式 主持人：房祥忠	地点：知新楼A座三楼312报告厅
9:20 - 9:50	全体代表合影	地点：知新楼A座楼前广场
	大会邀请报告	地点：知新楼A座三楼312报告厅
10:00 -11:00	主持人：李增沪，北京师范大学 报告人：陈增敬，山东大学 题目：Limit Theorems for Capacities	
11:00-12:00	主持人：郭建华，东北师范大学 报告人：孙六全，中国科学院数学与系统科学研究院 题目：Joint Analysis of Longitudinal Data with Informative Observation and Terminal Event Times	
12:00-14:00	午餐	地点：齐园餐厅三楼大厅

10月18日下午

大会邀请报告		地点：知新楼A座三楼312报告厅
14:00-15:00	主持人：林华珍，西南财经大学 报告人：唐年胜，云南大学 题 目：缺失数据模型的统计推断	
15:00-16:00	主持人：吴 臻，山东大学 报告人：巩馥洲，中国科学院数学与系统科学研究院 题 目：TBA	
16:00-16:10	休息	
16:10-17:10	主持人：王启华，中国科学院数学与系统科学研究院 报告人：王兆军，南开大学 题 目：复杂数据的在线监控与诊断	

分地区推荐新一届理事候选人				地点：知新楼B座		
知 新 楼	B1238	B1248	B936	B938	B1231	B924
17:20-18:20	东北华北组	华东 1 组	华东 2 组	中南、西南、西北	北京 1 组	北京 2 组

地区分组如下：

1. 东北华北组（黑龙江，吉林，辽宁，河北，内蒙，天津，山西）
2. 华东 1 组（上海，浙江）
3. 华东 2 组（山东，安徽，江西，江苏，福建）
4. 中南、西南、西北组（河南，湖北，湖南，广东，广西，云南，贵州，四川，重庆，西藏，陕西，甘肃，宁夏，青海，新疆，海南）
5. 北京 1 组（中科院，北京工业大学、北京理工大学、人大，首经贸，中央财经，对外经贸）
6. 北京 2 组（北大，北师大，清华，首师大等以上各组都不包含的在京单位和其它地区）

19:00 宴会

地点：法官培训中心青檀园餐厅

十月十九日（星期日）

10月19日上午

概率组邀请报告

地点：邵逸夫科学馆报告厅

8:30-9:00	邀请报告I 主持人：高付清，武汉大学 陈大岳，北京大学 题 目：随机树上的随机游动
9:00-9:30	张余辉，北京师范大学 题 目：单生过程一些问题的统一处理
9:30-10:00	江 龙，中国矿业大学（徐州） 题 目：Backward stochastic viability property for multi-dimensional BSDEs and its applications
10:00-10:20	休息
10:20-10:50	邀请报告II 主持人：王永进，南开大学 李 娟，山东大学（威海校区） 题 目：Mean-field stochastic differential equations and associated PDEs
10:50-11:20	李向东，中国科学院数学与系统科学研究院 题 目：Entropy, Harnack inequalities, gradient flow and random matrices
11:20-11:50	梁志彬，南京师范大学 题 目：Optimal dynamic reinsurance for the risk model with n dependent classes of insurance business

10:00 - 12:00 投票选举新一届理事 地点：邵逸夫科学馆报告厅

12:00 - 14:00 午餐 地点：齐园餐厅三楼大厅

10月19日上午

统计组邀请报告

地点：知新楼C座312思源报告厅

8:30-9:00	邀请报告 I 主持人：朱仲义，复旦大学 邓 柯，清华大学 题 目：Association Pattern Discovery via Theme Dictionary Models
9:00-9:30	冯兴东，上海财经大学 题 目： Estimation and Testing of Varying Coefficients in Quantile Regression
9:30-10:00	李 勇，北京师范大学 题 目：基于大气 CO ₂ 浓度数据和生态碳通量模型的土壤碳库优化方法
10:00-10:20	休息
10:20-10:50	邀请报告 II 主持人：陈 敏，中国科学院数学与系统科学研究院 林金官，东南大学 题 目：Robust Orthogonality-Based Estimation and Jump-Preserving Fitting for Heteroscedastic Partially Linear Varying Coefficient Models
10:50-11:20	林 路，山东大学 题 目：Upper expectation parametric regression and adaptive estimation via penalized maximum-least-squares
11:20-11:50	刘卫东，上海交通大学 题 目：Incorporation of Sparsity Information in Large-scale Two-sample t Tests

10:00-12:00 投票选举新一届理事

地点：知新楼C座312思源报告厅

12:00 - 14:00 午餐

地点：齐园餐厅三楼大厅

10月19日下午

概率分组报告

地点：知新楼B座会场

(1) 随机矩阵渐近分布理论及其应用		地点: B924
14:00-14:15	主持人：苏中根，浙江大学 刘党政，中国科学技术大学 随机矩阵乘积特征值的普适性	
14:15-14:30	丁 雪，吉林大学 On Some Spectral Properties of Large Self Dual Dilute Quaternion Random	
14:30-14:45	Matrices 王 晨，新加坡国立大学	
14:45-15:00	Spectral Analysis of a Symmetrized Auto-cross Covariance Matrix 杨广宇，郑州大学	
15:00-15:15	Spectral distribution of random matrices with dependent entries 王励励，浙江大学	
15:15-15:30	线性过程样本自协方差矩阵的极限谱分布 解俊山，河南大学	
	Limit theorems for the counting function of eigenvalues up to edge in covariance matrices	
(2) 马尔可夫过程的拟平稳分布及相关问题		地点: B1032
14:00-14:15	主持人：张汉君，湘潭大学 王新宇，华中科技大学	
14:15-14:30	SUBEXPONENTIAL DECAY IN KINETIC FOKKER-PLANCK EQUATION : WEAK HYPOCOERCIVITY 张汉君，湘潭大学	
14:30-14:45	Quasi-stationary distributions and their applications 刘源远，中南大学	
14:45-15:00	Central limit theorems for Markov processes with applications to single birth processes 朱依霞，湘潭大学	
15:00-15:15	Quasi-stationary distributions for stochastically monotone Markov chains 董从造，西安电子科技大学	
15:15-15:30	Flow superprocesses with spatially dependent branching 李育强，华东师范大学	
	Exact Moduli of Continuity for Operator-Scaling Gaussian Random Fields	

	(3)复杂粒子系统和随机游动	地点:B1044
14:00-14:15	主持人: 姚强, 华东师范大学 方 明, 厦门大学 分支随机游动简介	
14:15-14:30	姚 强, 华东师范大学 The Critical Contact Process in a Random Environment on $Z^d \times Z^+$ Dies Out	
14:30-14:45	周 达, 厦门大学 集群结构及其上的演化博弈过程	
14:45-15:00	薛晓峰, 中国科学院大学 Critical infection rates for contact processes on open clusters of oriented percolation in Z^d	
15:00-15:15	陈新兴, 上海交通大学 Gaussian bounds on locally irregular graphs	
15:15-15:30	王学军, 安徽大学 Complete convergence for weighted sums of NSD random variables and its application in the EV regression model	
15:30-16:00	休息	
	(4) 随机过程在非平衡态统计物理中的应用	地点: B924
16:00-16:15	主持人: 蒋达权, 北京大学 柳 飞, 北京航空航天大学 Calculating work in quantum Markovian master equations: Characteristic function method	
16:15-16:30	蒋达权, 北京大学 Generalized Haldane equalities and circulation fluctuations of Markov chains	
16:30-16:45	陈 勇, 湖南科技大学 On the Fluctuation-Dissipation theorem for finite Markov chains with continuous time	
16:45-17:00	葛 颢, 北京大学 Nonequilibrium thermodynamics of second-order stochastic processes	
17:00-17:15	贾 晨, 北京大学 Quasi-time reversal invariance of Brownian motion, "coin-flipping" Bessel processes, and cycle symmetries for diffusion processes on circles	
	(5)倒向随机微分方程及相关领域	地点:B1032
16:00-16:15	主持人: 嵇少林, 山东大学 吴盼玉, 山东大学 Invariance principles for the law of the iterated logarithm under G-framework	

16:15-16:30	范胜君, 中国矿业大学(徐州) \$L^p\$ solutions of multidimensional BSDEs with weak monotonicity and general growth generators
16:30-16:45	王天啸, 四川大学 Risk-based prices with state dependence and related topics
16:45-17:00	胡明尚, 山东大学 Extended Conditional G-Expectations and Related Stopping Times
17:00-17:15	杨淑振, 山东大学 BSDE in discrete time
(6) 金融数学及其相关领域 地点: B1044	
16:00-16:15	主持人: 郭先平, 中山大学 尹传存, 曲阜师范大学 The optimal dividend problem for a spectrally positive Levy process
16:15-16:30	胡亦钧, 武汉大学 Coherent and convex risk measures for portfolio vectors with applications
16:30-16:45	翟建梁, 中国科学技术大学 Asymptotics of 2-D stochastic Navier-Stokes equations
16:45-17:00	程 雪, 北京大学 Optimal execution under noisy order fill in Almgren-Chriss framework
17:00-17:15	蔡 亮, 北京理工大学 First Passage Time for Regime-Switching Diffusion Processes with Hyper-Exponential Jumps

- 14:00** 主席团会议讨论, 确认选举结果 地点: 知新楼 B 座 1238
- 16:00** 张贴公布理事会选举结果, 通知新一届理事晚间开会
- 17:30 - 19:00** 晚餐 地点: 齐园餐厅三楼大厅
- 19:30-21:00** 新一届理事会开会 地点: 知新楼 B 座 1238
- 21:00-22:00** 编委会改选(召集人: 汪荣明) 地点 知新楼 B 座 1238

10月19日下午

统计分组报告

地点：知新楼B座会场

(1) 平面或相关数据建模、设计及应用		地点: B1223
14:00-14:15	主持人: 林华珍, 西南财经大学 马铁丰, 西南财经大学 Markov-switching projection autoregressive regression model for wind direction data	
14:15-14:30	张术林, 西南财经大学 In-and-out-of-sample Likelihood Ratio Test For Model Specification In Multivariate Jump Diffusion Processes	
14:30-14:45	杨宝莹, 西南交通大学 Empirical likelihood-based inferences for the Lorenz curve	
14:45-15:00	周永道, 四川大学 Definitive screening composite designs	
15:00-15:15	郑海涛, 西南交通大学 Feasible Algorithm for Linear Mixed Model for Large High Dimension Dataset	
15:15-15:30	刘永辉, 上海对外经贸大学 INFLUENCE DIAGNOSTICS IN A VECTOR AUTOREGRESSIVE MODEL	
(2) 试验设计新进展		地点: B1230
14:00-14:15	主持人: 李新民, 青岛大学 李新民, 青岛大学 Comparison of means for two lognormal populations with zeros	
14:15-14:30	张军舰, 广西师范大学 平衡增加的经验欧氏似然	
14:30-14:45	李启寨, 中国科学院数学与系统科学研究院 病例对照设计下有序回归的关联分析	
14:45-15:00	熊世峰, 中国科学院数学与系统科学研究院 Optimization-based hypothesis testing	
15:00-15:15	谢田法, 北京工业大学 统计方法在评价检出能力中的应用	
15:15-15:30	牟唯嫣, 北京建筑大学 Inference for MANOVA with equicorrelation error structure	

	(3)高维统计推断	地点: B1231
14:00-14:15	主持人: 陈松蹊, 北京大学 崔恒建, 首都师范大学 Partial Penalized Empirical Likelihood Ratio Test under Sparse case	
14:15-14:30	黄 辉, 北京大学 An Estimation Approach for Combining Epidemiological Data From Multiple Sources	
14:30-14:45	林 伟, 北京大学 Sparse Covariance Matrix Estimation for Compositional Data via Composition-Adjusted Thresholding	
14:45-15:00	邹长亮, 南开大学 Multivariate-sign-based high-dimensional location tests	
15:00-15:15	王凯平, 山东大学 Modeling Heavy-tailed Stock Index Returns Using Semiparametric Approach with Multiplicative Adjustment	
15:15-15:30	徐平峰, 长春工业大学 An efficient implement of the iterative proportional scaling procedure for graphical models	
	(4) 时间序列分析	地点: B1234
14:00-14:15	主持人: 李 雷, 中国科学院数学与系统科学研究院 黎德元, 复旦大学 Uniform Interval Estimation for an AR(1) Process with AR Errors	
14:15-14:30	杨立坚, 苏州大学 Oracally Efficient Estimation of Innovation Quantile and Prediction Bounds for Autoregressive Time Series	
14:30-14:45	吴鑑洪, 浙江工商大学 Least absolute deviation estimation for nonstationaryvector autoregressive models with pure unit roots	
14:45-15:00	朱复康, 吉林大学 Inference for Bilinear Time Series Models	
15:00-15:15	张庆国, 安徽农业大学 Applications of Non-parameter Statistical Approaches in Analyzing the Seasonal Change of Precipitation Time Series of Chizhou	
15:15-15:30	徐晓岭, 上海对外经贸大学 FDI 对我国汽车产业贸易结构的影响研究	

	(5) 生物医学中的统计方法	地点: B1248
14:00-14:15	主持人: 艾明要, 北京大学 耿 直, 北京大学 因果机制与其可识别性	
14:15-14:30	周晓华, 华盛顿大学 生物统计中一些新的统计方法	
14:30-14:45	薛付忠, 山东大学 系统流行病学研究中网络比较的统计推断方法	
14:45-15:00	王 彤 临床试验中多重性问题的统计学考虑	
15:00-15:15	黄 伟, 东北师范大学 A Time-Variant Clustering Model for Understanding Cell Fate Decisions	
15:30-16:00	休息	
	(6) 统计方法研究	地点: B1223
16:00-16:15	主持人: 崔文泉, 中国科学技术大学 王占峰, 中国科学技术大学 Change-point estimation with least product relative error	
16:15-16:30	张 洪, 复旦大学 MVMseq: a robust and extremely fast statistical method for differential expression analysis using RNA-seq count data from matched samples	
16:30-16:45	金百锁, 中国科学技术大学 Simultaneously Detecting Multiple Change-Points In Linear Models	
16:45-17:00	崔文泉, 中国科学技术大学 RKHS-based approach to nonlinear dimension reduction for survival data	
17:00-17:15	王 成, 上海交通大学 An improved eigenvalue ratio estimator for the number of factors in large factor model	
	(7) 试验设计新进展	地点: B1230
16:00-16:15	主持人: 杨建峰, 南开大学 赵胜利, 曲阜师范大学 Construction of Minimum Aberration Blocked Two-Level Regular Factorial Designs	
16:15-16:30	唐 煜, 苏州大学 Permuting regular fractional factorial designs for screening quantitative factors	
16:30-16:45	孙法省, 东北师范大学 On construction of marginally coupled designs	

16:45-17:00	何 煦, 中国科学院数学与系统科学研究院 Optimization of Computer Experiments with Tunable Accuracy
17:00-17:15	何元珍, 北京师范大学 A characterization of strong orthogonal arrays of strength three
(8) 商务与环境统计应用 地点: B1231	
16:00-16:15	主持人: 王汉生, 北京大学 陈松蹊, 北京大学 北京的 PM2.5 好转了吗?
16:15-16:30	涂云东, 北京大学 MODELING AND FORECASTING CHINESE CPI
16:30-16:45	王汉生, 北京大学 网络结构数据: 商业应用与理论挑战
16:45-17:00	张俊妮, 北京大学 Friends and Sales
17:00-17:15	肖志国, 复旦大学 加入 TPP 对我国经济影响的评估—基于全球贸易大数据和 CGE 模型的分析
(9) 统计方法及应用 地点: B1234	
16:00-16:15	主持人: 薛付忠, 山东大学 李国东, 新疆财经大学 基于细胞神经网络对冰雹预测研究
16:15-16:30	许永甲, 广东财经大学 Modified Principal Factor Method with Iteration
16:30-16:45	刘心声, 南京航空航天大学 Markov Blanket and Markov Boundary of Multiple Variables
16:45-17:00	杜宇静, 吉林农业科技学院 动态可靠性模型的参数估计
17:00-17:15	王炳兴, 浙江工商大学 Inference on the Weibull Distribution Based on Record Values
(10) 统计模型中的变量选择及应用 地点: B1248	
16:00-16:15	主持人: 张宝学, 东北师范大学 陈家鼎, 北京大学 关于多元回归中某些选择自变量的准则渐进性质
16:15-16:30	李东风, 北京大学 多元回归中选择自变量的一种简单方法
16:30-16:45	李高荣, 北京工业大学 Automatic Variable Selection for Longitudinal Generalized Linear Models

16:45-17:00	郭广报, 山东理工大学 Parallel Bootstrap and Optimal Subsample Lengths in Smooth Function Models
17:00-17:15	朱文圣, 东北师范大学 The Detection of Gene-Environment Interactions by Bayesian Variable Selection for Low-Rank Regression Model

14:00 主席团会议讨论, 确认选举结果 地点: 知新楼 B 座 1238

16:00 张贴公布理事会选举结果, 通知新一届理事晚间开会

17:30 - 19:00 晚餐 地点: 齐园餐厅三楼大厅

19:30-21:00 新一届理事会开会 地点: 知新楼 B 座 1238

21:00-22:00 编委会改选 (召集人: 汪荣明) 地点: 知新楼 B 座 1238

十月二十日（星期一）

10月20日上午

8:30 张贴宣布新一届理事会选举结果和编委会改选结果

概率组邀请报告

地点：邵逸夫科学馆报告厅

8:30-9:00	<p>邀请报告III</p> <p>主持人：郭军义，南开大学</p> <p>刘 伟，江苏师范大学</p> <p>题 目：Long Time Asymptotics of Stochastic PDEs in Variational Framework</p>
9:00-9:30	<p>刘玉婷，北京交通大学</p> <p>题 目：网络马氏骨架过程及其在网页排序中的应用</p>
9:30-10:00	<p>宋永生，中国科学院数学与系统科学研究院</p> <p>题 目：Gradient Estimates for Nonlinear Diffusion Semigroups by Coupling Methods</p>
10:00-10:10	休息
10:10-10:40	<p>邀请报告IV</p> <p>主持人：谢颖超，江苏师范大学</p> <p>苏中根，浙江大学</p> <p>题 目：ON LONGEST INCREASING SUBSEQUENCES</p>
10:40-11:10	<p>张新生，复旦大学</p> <p>题 目：Large U-statistic Based Matrix Comparison</p>
11:10-11:40	<p>洪文明，北京师范大学</p> <p>题 目：Intrinsic branching structure within the random walk with bounded jumps and its applications</p>

11:50-12:00 新一届理事长讲话

地点：知新楼 C 座 312 思源报告厅

12:00 - 14:00 午餐

地点：齐园餐厅三楼大厅

10月20日上午

8:30 张贴宣布新一届理事会选举结果和编委会改选结果

统计组邀请报告

地点：知新楼C座312思源报告厅

8:30-9:00	邀请报告III 主持人：栾贻会，山东大学 王学钦，中山大学
9:00-9:30	题目：多元非均衡数据的同分布检验(MIT,Multivariate Imbalance Test) 席瑞斌，北京大学
9:30-10:00	题目：Stochastic Search Variable Selection in Quantile Regression Based on Empirical likelihood 杨建峰，南开大学
10:00-10:10	题目：Computer Experiments With Both Qualitative and Quantitative Variables
10:00-10:10	休息
10:10-10:40	邀请报告IV 主持人：刘力平，北京大学 张忠占，北京工业大学
10:40-11:10	题目：有形状约束的曲线估计 郑术蓉，东北师范大学
11:10-11:40	题目：高维样本协方差矩阵理论及其在高维数据分析中的应用 邹国华，中国科学院数学与系统科学研究院
	题目：企业薪酬抽样调查方法与数据处理研究

11:50-12:00 新一届理事长讲话

地点：知新楼C座312思源报告厅

12:00 - 14:00 午餐

地点：齐园餐厅三楼大厅

10月20日下午

概率分组报告

地点: 知新楼B座会场

	(7) 马氏过程及相关SPDE新进展	地点: B924
14:00-14:15	主持人: 任艳霞, 北京大学 李增沪, 北京师范大学 Backward doubly stochastic equations and branching processes in random environments	
14:15-14:30	张金平, 华北电力大学(北京校部) On Set-Valued Stochastic Integrals and Differential Equations with Poisson Jump in a Banach Space	
14:30-14:45	杨 婷, 北京理工大学 Law of large numbers for branching symmetric Hunt processes with a measure-valued branching rate	
14:45-15:00	熊 捷, 澳门大学 Annealed asymptotics for Brownian motion of renormalized potential in mobile random medium	
15:00-15:15	兰光强, 北京化工大学 Polynomial and exponential stability of θ -EM approximations to SDEs with non globally Lipschitz continuous coefficients	
15:15-15:30	鲍建海, 中南大学 Hypercontractivity, Compactness, and Exponential Ergodicity for Functional Stochastic Differential Equations	
	(8) 随机微分方程	地点: B1032
14:00-14:15	主持人: 陈传钟, 海南师范大学 陈传钟, 海南师范大学 Probabilistic representations of solutions of elliptic boundary value problem and non-symmetric semigroups	
14:15-14:30	王才士, 西北师范大学 Generalized Functionals of Discrete-Time Normal Noises	
14:30-14:45	宋占杰, 天津大学 Average Sampling Theorems on Multidimensional stochastic processes	
14:45-15:00	刘敬真, 中央财经大学 Ergodic control for a mean reverting inventory model	
15:00-15:15	朱全新, 南京师范大学 The asymptotic behaviors of stochastic differential equations driven by Lévy processes	

15:15-15:30	柳向东, 暨南大学 Transform Analysis of Term Structure of Interest Rates under Regime Shifts and Levy Jumps
	(9) 最优化理论及相关应用 地点: B1044
14:00-14:15	主持人: 石玉峰, 山东大学 叶中行, 上海交通大学 网络上的超级博弈的若干新结果
14:15-14:30	尹居良, 暨南大学 Some Properties of Finite-time Stable Stochastic Nonlinear Systems
14:30-14:45	刘广应, 南京审计学院 Multipower variation from generalized difference for fractional integral processes
14:45-15:00	胡 锋, 曲阜师范大学 General laws of large numbers under sublinear expectations
15:00-15:15	胡 江, 东北师范大学 Test of independence for high-dimensional random vectors based on freeness in block correlation matrices
15:15-15:30	李欣鹏, 山东大学 Independence under uncertainty.
15:30-16:00	休息
	(10) Branching processes and related topic 地点: B924
16:00-16:15	主持人: 熊 捷, 澳门大学 任艳霞, 北京大学 Functional central limit theorems for supercritical superprocesses
16:15-16:30	何 辉, 北京师范大学 Pruning L\evy trees via an admissible family of branching mechanisms
16:30-16:45	褚为娟, 南京大学 Small value probabilities for supercritical multitype branching processes
16:45-17:00	杨 叙, 北方民族大学 The pathwise uniqueness of solution to a SPDE driven by α -stable noise
17:00-17:15	高庆武, 南京审计学院 Asymptotic ruin probabilities in a generalized bidimensional risk model perturbed by diffusion with constant force of interest

	(11) 概率极限理论及其应用	地点: B1032
16:00-16:15	主持人: 张立新, 浙江大学 杨卫国, 江苏大学	
16:15-16:30	隐马尔科夫树的定义、等价性、存在性及强大数定律 冯群强, 中国科技大学	
16:30-16:45	Random Fast Growth Models for Treelike Networks 王汉超, 浙江大学	
16:45-17:00	Weak Convergence to Stochastic Integrals 王文胜, 杭州师范大学	
17:00-17:15	Large Deviation Probabilities for Sums of Heavy-Tailed Random Vectors 李 波, 华中师范大学	
	From Feller's characterization of discrete ID to discrete quasi ID and integer-valued quasi ID	
	(12) 概率论与随机分析	地点: B1044
16:00-16:15	主持人: 贾广岩, 山东大学 刘再明, 中南大学	
16:15-16:30	Heavy-traffic Asymptotics of Priority Polling System with Threshold Service Policy 陈振龙, 浙江工商大学	
16:30-16:45	Hitting Probabilities and the Hausdorff Dimension of the Inverse Images of General Anisotropic Random Fields 戴万阳, 南京大学	
16:45-17:00	Well-Posedness and Numerics by Random-Field Based Malliavin Calculus for A Unified B-SPDE with Jumps and Applications 宇世航, 齐齐哈尔大学	
17:00-17:15	计数变量基于整值时间序列风险模型的精细大偏差 王艳清, 中南财经政法大学	
	Limit theorems for branching process with immigration in a random environment	

17:30 - 19:00 晚餐 地点: 齐园餐厅三楼大厅

10月20日下午

统计分组报告

地点：知新楼B座会场

(11) 金融和保险中的风险模型		地点: B1223
14:00-14:15	主持人: 杨静平, 北京大学 张志民, 重庆大学 Estimating Gerber-Shiu functions from discretely observed Levy driven surplus	
14:15-14:30	钱林义, 华东师范大学 Pricing dynamic fund protections with regime switching	
14:30-14:45	范 莹, 华东师范大学 Valuing commodity options and futures options with changing economic conditions	
14:45-15:00	王 彬, 北京工商大学 随机变量的加和	
15:00-15:15	林 锋, 北京大学 Semi-analytical formula for pricing bilateral counterparty risk for CDS under	
15:15-15:30	$C^{A,B}$ copula 杨静平, 北京大学 Composite Bernstein Copulas	
(12) 复杂数据分析的半参数方法		地点: B1230
14:00-14:15	主持人: 王学钦, 中山大学 蔡敬衡, 中山大学 Statistical analysis of transformation latent variable models with multivariate censored data	
14:15-14:30	蒋学军, 南方科技大学 Efficient and robust estimation of GARCH models	
14:30-14:45	郭小波, 中山大学 Rank-based association test for multiple phenotypes	
14:45-15:00	王国长, 暨南大学 Mixed data singular component analysis with applications	
15:00-15:15	何海金, 香港中文大学 Regression analysis of additive hazards model with latent variables	
15:15-15:30	刘鹏飞, 江苏师范大学 Transformation structural equation models with highly non-normal and incomplete data	

	(13) 因果推断和图模型学习	地点: B1231
	主持人: 何洋波, 北京大学	
14:00-14:15	何洋波, 北京大学 贝叶斯网络结构的后验分布	
14:15-14:30	王学丽, 北京邮电大学 控制变量选择下因果效应的方差估计	
14:30-14:45	赵 强, 山东师范大学 DAG 中目标节点的因果推断研究	
14:45-15:00	陈 华, 北京应用物理与计算数学研究所 Semiparametric Inference of Complier Average Causal Effect with Nonignorable Missing Outcomes	
15:00-15:15	张云俊, 北京大学 带度量误差的贝叶斯网络学习	
15:15-15:30	尹建鑫, 中国人民大学 Sparse Robust Conditional Graphical Model Selection via Quantile Regression	
	(14) 几类统计模型研究	地点: B1234
	主持人: 石 坚, 中国科学院数学与系统科学研究院	
14:00-14:15	凌能祥, 合肥工业大学 Error variance estimation in semi-functional partially linear regression models	
14:15-14:30	刘妍岩, 武汉大学 Structure estimation in cox models.	
14:30-14:45	唐炎林, 同济大学 Penalized Regression Across Multiple Quantiles Under Random Censoring.	
14:45-15:00	沈俊山, 北京大学 A semiparametric Bayesian model based on generalized moments equations with latent variables	
15:00-15:15	赵 慧, 华中师范大学 Regression Analysis of Mixed Recurrent-Event and Panel-Count Data with Additive Rate Models	
15:15-15:30	高 巍, 东北师范大学 Proposed Estimators for Dynamic and Static Probit Models with Panel Data	

	(15) 概率论与数理统计在经济领域中的应用 地点:B1248
14:00-14:15	主持人: 纪 宏, 首都经济贸易大学 崔翔宇, 上海财经大学 MEAN-VARIANCE POLICY FOR DISCRETE-TIME CONE CONSTRAINED MARKETS: TIME CONSISTENCY IN EFFICIENCY AND MINIMUM-VARIANCE SIGNED SUPERMARTINGALE MEASURE
14:15-14:30	胡淑兰, 中南财经政法大学 基于耦合 HMM 的交易策略分析
14:30-14:45	吴慧珊, 首都经济贸易大学 Credit Spread Index of Fixed Income Securities in China
14:45-15:00	叶 飞, 首都经济贸易大学 AFT 模型中的广义相对误差估计及变量选择
15:00-15:15	王会娟, 中央财经大学 对外贸易中虚拟劳动力的流动分析
15:15-15:30	李 丰, 中央财经大学 高效贝叶斯曲面最大化策略
15:30-16:00	休息
	(16) 生存分析中半参数模型 地点:B1223
16:00-16:15	主持人: 崔恒建, 首都师范大学 陈雪蓉, 西南财经大学 Kernel Smoothed Composite Likelihood of Accelerated Failure Time Model with Length-Biased and Right-Censored Data
16:15-16:30	马昀蓓, 西南财经大学 Nonparametric Independence Screening in Sparse Ultra-High Dimensional Varying Coefficient Models
16:30-16:45	刘玉涛, 中央财经大学 Joint modeling of quantile regression for longitudinal data with a dependent terminal event
16:45-17:00	张飞鹏, 湖南大学 Composite partial likelihood estimation for length-biased and right-censored data with competing risks
17:00-17:15	冯艳钦, 武汉大学 Empirical analysis of interval-censored failure time data with linear transformation models

	(17) 半参数模型	地点: B1230
16:00-16:15	主持人: 孙六全, 中国科学院数学与系统科学研究院 陈晓平, 上海财经大学 Semiparametric Approaches of Monotone Hazard Models with Complex Data	
16:15-16:30	马慧娟, 中国科学技术大学 Composite Estimating Equation Approach for Additive Risk Model with Length-biased and Right-censored Data	
16:30-16:45	施建华, 上海财经大学 The strong representation for the nonparametric estimation of length-biased and right-censored data	
16:45-17:00	邱志平, 华侨大学 Semiparametric Analysis for the Accelerated Failure Time Competing Risks Model with Missing Cause of Failure	
17:00-17:15	刘 鹏, 中国科学院数学与系统科学研究院 Statistical Inferences on the Linear Transformation Model based on the Rank Estimate	
	(18) 统计方法在经济医学上的应用	地点: B1231
16:00-16:15	主持人: 李 勇, 北京师范大学 何 剑, 新疆石河子大学 新疆对外贸易统计数据质量实证分析——基于 Benford 法则和趋势模拟评估法	
16:15-16:30	张海燕, 长春工业大学 基于尺度混合 SV 模型的我国股市信息贝叶斯分析	
16:30-16:45	崔 霞, 广州大学 Partial Consistency for Partially Linear Regression Model with Application to a Bank Data	
16:45-17:00	孔新兵, 苏州大学 Testing for pure-jump processes for high-frequency data	
17:00-17:15	周迎春, 华东师范大学 Disease classification and biomarker discovery for ECG data	
	(19) 高维假设检验与半参数统计	地点: B1234
16:00-16:15	主持人: 刘玉坤, 华东师范大学 胡 涛, 首都师范大学 Regression Analysis of Bivariate Current Status Data with the Proportional Hazards Model and Bernstein Polynomials	
16:15-16:30	周 洁, 首都师范大学 A Partially Linear Single Index Semiparametric Model of Longitudinal Data	

16:30-16:45	with Terminal Event 罗 珊, 上海交通大学
16:45-17:00	Hypothesis Testing for High-dimensional Regression Models 刘玉坤, 华东师范大学
17:00-17:15	Composite Hotelling's T-square Test for High-Dimensional Data 秦国友, 复旦大学
	Simultaneous Mean and Covariance Estimation of Partially Linear Models for Longitudinal Data with Covariate Measurement Errors and Missing Responses
(20) 空间统计方法 地点: B1248	
16:00-16:15	主持人: 杨 璞, 清华大学 张 朋, 浙江大学
16:15-16:30	Modeling measurement errors and excess zeros in temporal-spatial data 梅长林, 西安交通大学
16:30-16:45	基于局部统计量的时空数据自相关性的Bootstrap检验 褚挺进, 中国人民大学
16:45-17:00	Likelihood Approximation via Lanczos Algorithms for Large Geostatistical Data 张辉国, 新疆大学
17:00-17:15	Exploring Scale-dependent Spatial Regression Relationships in spatially varying coefficient models: a local and multiscale approach 田茂再, 中国人民大学
	复杂时空分层数据建模理论、方法及应用

17:30 - 19:00 晚餐 地点: 齐园餐厅三楼大厅

会议结束

邀请报告摘要

大会邀请报告

Limit Theorems for Capacities

陈增敬，山东大学

摘要: Motivated by Ellsberg-type models and problems in mathematical finance, we investigate limit behaviours of two different models: one is the very simple Bernoulli trials with ambiguity (or called Ellsberg-type model), and the other is sub-linear expectations arising from mathematical finance. With a new notion of ϕ -convolution for random variables, we show that empirical averages obtained from a large number of trials in both models have the same limit distribution. We also investigate the relation between this limit theorem and the weak law of large numbers for nonadditive probability, and show that they are equivalent under the assumption of ϕ -convolution on random variables. Our results generalize well-known laws of large numbers (LLNs), using the proofs that are completely different from those in the existing literature. Finally, we discuss four models which satisfy the assumptions of our main results.

关键词: Nonlinear expectation; Capacity; Central limit theorem.

Joint Analysis of Longitudinal Data with Informative

Observation and Terminal Event Times

孙六全，中国科学院数学与系统科学研究院

摘要: In many longitudinal studies, the response process is often correlated with observation times. Also, there may exist a dependent terminal event such as death that stops the follow-up. In this talk, we propose a new joint model for analysis of longitudinal data with informative observation times and a dependent terminal event via two latent variables. Estimating equation approaches are developed for parameter estimation, and asymptotic properties of the proposed estimators are derived. The

finite sample properties of the proposed estimators are examined through simulation studies. An application to a bladder cancer study is illustrated.

缺失数据模型的统计推断

唐年胜, 云南大学

摘要: 缺失数据在生物医学、经济学、社会学、教育心理学和行为学等领域是普遍存在的。缺失数据可分为三种机制: MCAR、MAR 和 NMAR。本论文主要讨论了缺失数据模型的参数估计, 包括: 极大似然估计和 Bayes 估计; 给出了缺失数据模型的基于 ICQ 和贝叶斯因子的变量选择准则; 研究了缺失数据模型的基于 EM 算法的局部影响分析和贝叶斯局部影响分析以及基于数据删除法的贝叶斯影响分析; 对带有 MAR 缺失数据的估计方程给出了识别数据集的影响点的数据删除法以及评价其模型假设微小扰动的局部影响分析法; 对带有 NMAR 缺失数据的估计方程基于经验似然方法讨论了其模型参数的估计问题和假设检验等问题。

TBA

巩馥洲, 中国科学院数学与系统科学研究院

摘要:

复杂数据的在线监控与诊断

王兆军, 南开大学

摘要: 传统的统计过程控制(Statistical Process Control, 简称 SPC)方法在工业工程及质量科学领域得到了广泛的应用和发展, 为世界工业产品质量的提升提供了非常有效的检测方法。但随着数据采集技术的快速发展, 许多高端制造业、现代服务业中产生了海量、复杂的在线观测数据, 业界迫切需要新的在线统计推断方法、统计计算技术, 以处理大数据时代中的在线监控、诊断和异常点识别等问题。本文将针对某些复杂数据(如健康保健数据、多数据流等), 提出几种在线监控、诊断以及异常点的检测方法和架构。

关键词: SPC, EWMA, CUSUM

概率组邀请报告

随机树上的随机游动

陈大岳，北京大学

摘要：取定由 Galton-Watson 分枝过程产生的随机树，考察其上带参数 λ 的随机游动。Lyons, Pemantle 与 Peres 证明了这样定义的随机游动具有某种几乎处处收敛的极限，称之为速度。人们确信这个速度是关于参数 λ 单调的，当 λ 非常接近临界值，或者非常接近 0，该猜想分别得到验证。单调性问题近期颇受关注。本着同样的精神，我们研究随机树上伯努利边渗流产生的随机树，考察三类分枝过程，我们确认随机树上简单随机游动的速度和渗流模型的参数概率之间的单调关系。随机树上随机游动的更多问题有待解决。

单生过程一些问题的统一处理

张余辉，北京师范大学

摘要：单生过程 (single birth processes)，作为最简单过程一生灭过程的自然推广，本身具有可靠的研究背景。由于单生过程至多有单个流出边界极点，因此是对经典问题可预期有显式判别准则的最大类过程。这些优点使得单生过程成为研究无穷维反应扩散过程的基本工具。单生过程通常是非对称的，因此被视为非对称过程的突出代表。而关于非对称过程的研究，至今所得结果并不完善。但对于单生过程，研究成果相对完整。在这个报告中，将介绍我们最近关于单生过程 Poisson 方程解的研究成果，以此作为工具，统一处理单生过程经典问题的判别准则，包括唯一性，常返性，遍历性和强遍历性，还包括回返时的多项式阶矩和指数阶矩，灭绝时的分布，灭绝概率以及平稳分布的表示等等。

Backward stochastic viability property for multi-dimensional BSDEs and its applications

江 龙，中国矿业大学

摘要：In this talk, we introduce the backward stochastic viability property for

backward stochastic differential equations in a more general case and explores their applications in other problems. It is worth noting to point out here that we make no any additional conditions on the generators of the BSDEs beyond the standard assumptions, square integrability and Lipschitz continuity. This is a joint work with SHI Xuejun.

关键词： Backward stochastic differential equation(BSDE); Backward stochastic viability property; Comparison theorem for multi-dimensional BSDEs.

Mean-field stochastic differential equations and associated PDEs

李 娟， 山东大学（威海校区）

摘 要： In this paper we consider a mean-field stochastic differential equation, also called McKean-Vlasov equation, with initial data $(t, x) \in [0, T] \times R^d$, which coefficients depend on both the solution $X_s^{t, m}$ but also its law. We characterize the function $V(t, x, P_\xi) = E[\Phi(X_T^{t, x, P_\xi}, P_{X_T^{t, \xi}})]$ under appropriate regularity conditions on the coefficients of the stochastic differential equation as the unique classical solution of a non local PDE of mean-field type, involving the first and second order derivatives of V with respect to its space variable and the probability law. The proof bases heavily on a preliminary study of the first and second order derivatives of the solution of the mean-field stochastic differential equation with respect to the probability law and a corresponding Itô formula. The talk is based on a joint work with Rainer Buckdahn (UBO, Brest, France), Shige Peng (SDU, Jinan, PRC) and Catherine Rainer (UBO, Brest, France).

Entropy, Harnack inequalities, gradient flow and random matrices

李向东， 中国科学院数学与系统科学研究院

摘 要： In this talk, we prove Li-Yau-Hamilton Harnack inequalities and derive the Perelman W-entropy formula for the heat equation of the Witten Laplacian on

Riemannian manifolds. We also prove a rigidity theorem for the W-entropy and a splitting theorem for the Kaimanovich entropy associated with the Witten Laplacian. Finally, if the time is enough, we will use the gradient flow of the Voiculescu entropy and the optimal transportation theory to derive the uniqueness of the McKean-Vlasov equation, and to prove the Law of Large Numbers for the Generalized Dyson Brownian motion in random matrices theory.

Optimal dynamic reinsurance for the risk model with n dependent classes of insurance business

梁志彬，南京师范大学

摘 要： In this paper, we consider the optimal proportional reinsurance strategy in a risk model with multiple dependent classes of insurance business, which extends the work of Liang and Yuen (2014) [Optimal dynamic reinsurance with dependent risks: variance premium principle. *Scandinavian Actuarial Journal*, DOI: 10.1080/03461238.2014.892899] to the case with the reinsurance premium calculated under the expected value principle and to the model with two or more classes of dependent risks. Under the criterion of maximizing the expected exponential utility, closed-form expressions for the optimal strategies and value function are derived not only for the compound Poisson risk model but also for the diffusion approximation risk model. In particular, we find that the optimal reinsurance strategies under the expected value premium principle are very different from those under the variance premium principle in the diffusion risk model. The former depends not only on the safety loading, time and interest rate, but also on the claim size distributions and the counting processes, while the latter depends only on the safety loading, time and interest rate. Finally, numerical examples are presented to show the impact of model parameters on the optimal strategies.

Long Time Asymptotics of Stochastic PDEs in Variational Framework

刘 伟, 江苏师范大学

摘 要: In this talk we will first review some recent well-posedness and asymptotics results for stochastic PDEs in variational framework. In particular, we will show some long time asymptotic result for a class of SPDE, which demonstrate some interesting stabilizing effect induced by random noise in SPDE models.

Web Markov Skeleton Processes and Applications in Web Page Ranking

刘玉婷, 北京交通大学

摘 要: In this talk, we want to introduce and discuss a new class of processes, web Markov skeleton processes (WMSP), arising from information retrieval on the Web. The framework of WMSP covers various known classes of processes, such as Markov chain and semi-Markov process; it contains also important new classes of processes, such as mirror semi-Markov processes. We mainly state some applications of WMSPs in computing page importance on the Web.

Gradient Estimates for Nonlinear Diffusion Semigroups by Coupling Methods

宋永生, 中国科学院数学与系统科学研究院

摘 要: Our purpose is to obtain gradient estimates for certain nonlinear partial differential equations by coupling methods. First we derive uniform gradient estimates for a certain semi-linear PDEs based on the coupling method introduced in Wang (2011) and the theory of backward SDEs. Then we generalize Wang's coupling to the G -expectation space and obtain gradient estimates for nonlinear diffusion semigroups, which correspond to the solutions of a certain fully nonlinear PDEs.

ON LONGEST INCREASING SUBSEQUENCES

苏中根, 浙江大学

摘要: Let S_n be a symmetric group of permutations of $\{1, 2, 3, \dots, n\}$. Given a permutation $\pi = \{\pi_1, \pi_2, \dots, \pi_n\}$, call $\pi = \pi_{i_1}, \pi_{i_2}, \dots, \pi_{i_k}$ an increasing subsequence if $i_1 < i_2 < \dots < i_k$ and $\pi_{i_1} < \pi_{i_2} < \dots < \pi_{i_k}$. Let $L_n(\pi)$ be the length of the longest increasing subsequences of π . The study of $L_n(\pi)$ dates back to Erdos and Szerekes as early as in 1930s and plays an important role in combinatorial optimization and algorithm analysis. In this talk we are mainly concerned with probabilistic properties of $L_n(\pi)$ under uniform probability distribution. It turns out that this is a surprisingly rich and colorful research field. There has been an intensive research activity around $L_n(\pi)$ in the past decades. We shall briefly review some remarkable results and recent advances in understanding how $L_n(\pi)$ varies as $n \rightarrow \infty$. It will cover Ulam's conjecture and its solution, Hammersley's subadditive theorem, Logan-Shepp-Vershik-Kerov limit shapes, Baik-Deift-Johansson's work on Tracy-Widom Law, Borodin-Okounkov-Olshanski's Airy ensemble, Bogachev-Su's work on CLT. Some links are also mentioned with random matrices and random partitions.

Large U-statistic Based Matrix Comparison

张新生, 复旦大学

摘要: In this talk we mainly consider the comparison of Kendall's tau Matrix from two independent samples under the high dimensional setting. We generalize the idea to compare the U-statistic based matrix. The test statistics is based on the maximum of corresponding estimate matrices, thus it is believed that it is sensitive to sparse difference. Under some proper sparsity of Kendall's tau Matrix (or the U-statistic based matrix), we get the limiting distribution of the test statistics, which is Gumbel extreme distribution and we also prove that it is rate-optimal under the sparse

alternative. In order to scale the Kendall's tau, we need to estimate its variance, and we propose three kinds of different variance estimators. Although they are all right to use under our theory, but their finite sample performance may be quite different, we discuss their performance in the simulation part.

This is joint work with Chen Zhou, Fang Han, and Han Liu.

Intrinsic branching structure within the random walk with bounded jumps and its applications

洪文明，北京师范大学

摘 要： How many steps from state 0 to state 1 by a random walk? It is a key step in the research for the random walk in random environment by Kesten et al (1975) and can be traced back to Harris (1952) for the nearest random walk. By decompose the trajectory of the random walk, the steps can be counted in terms of a Galton-Watson branching processes.

However, when the random walk is non-nearest the situation is essentially complicated. In this talk, I will review some progress on this topics by our group for the random walk with bounded jumps, where different multi-type branching structure within the random walk have been revealed. Some results on the random walk in random environment have been obtained based on the branching structure as a basic tool. And other applications such as explicit expression of the stationary distribution and criteria of the recurrence and transience, have been addressed as well. (The series work were jointly with Huaming Wang, Lin Zhang and Ke Zhou.)

统计组邀请报告

Association Pattern Discovery via Theme Dictionary Models

邓 柯, 清华大学

摘 要: Discovering patterns from a set of text or, more generally, categorical data is an important problem in many disciplines such as biomedical research, linguistics, artificial intelligence and sociology. We consider here the well-known ‘market basket’ problem that is often discussed in the data mining community, and is also quite ubiquitous in biomedical research. The data under consideration are a set of ‘baskets’, where each basket contains a list of ‘items’. Our goal is to discover ‘themes’, which are defined as subsets of items that tend to co-occur in a basket. We describe a generative model, i.e. the theme dictionary model, for such data structures and describe two likelihood-based methods to infer themes that are hidden in a collection of baskets. We also propose a novel sequential Monte Carlo method to overcome computational challenges. Using both simulation studies and real applications, we demonstrate that the new approach proposed is significantly more powerful than existing methods, such as association rule mining and topic modeling, in detecting weak and subtle interactions in the data.

Estimation and Testing of Varying Coefficients in Quantile Regression

冯兴东, 上海财经大学

摘 要: In this paper, we establish a novel connection between a commonly used null hypothesis and a rank-reducible varying coefficient model in quantile regression. We use B-spline to approximate the varying coefficients in the rank-reducible model, and reveal that the null hypothesis implies a unidimensional structure of a transformed coefficient matrix of B-spline bases. By evaluating the unidimensional structure, we alleviate the difficulty of testing such hypotheses commonly considered

in varying coefficient models. We demonstrate through comprehensive numerical studies that the new method is much more powerful than the rank score test which is widely used in quantile regression literature.

基于大气 CO_2 浓度数据和生态碳通量模型的土壤碳库优化方法

李 勇, 北京师范大学

摘 要: 在碳循环过程中, 土壤有机碳库分布对于基于过程的生态系统模型至关重要。由于全球地表土壤有机碳含量直接观测数据分辨率极为稀疏, 基于这些数据所得的区域土壤有机碳库分布存在极大的误差。大气 CO_2 浓度数据包含土壤碳库信息, 本文通过大气传输模型 MOZART 和生态碳通量模型 BEPS, 建立 CO_2 浓度和土壤有机碳库之间的关系, 利用双优化模型, 建立了地表 1° 网络有机碳库估计方法。结果表明: 该方法可以有效的调整基于 lnTEC 模型计算的土壤碳库, 明显改进 BEPS 模型模拟 NEP 的效果。

关键词: 土壤碳库, 二氧化碳浓度, 大气传输模型, 生态碳通量模型, DOM

Robust Orthogonality-Based Estimation and Jump-Preserving Fitting for Heteroscedastic Partially Linear Varying Coefficient Models

林金官, 东南大学

摘 要: In this talk we consider partially linear varying coefficient models. We provide the robust orthogonality-based estimator of the the parametric part as well as the jump-preserving (JP) estimator of the nonparametric part. Specifically, we first present an orthogonality-based estimation (OBE) method, a JP fitting procedure and a logarithm kernel smoothing technique for estimating the parametric part, nonparametric part and variance of the error term, respectively. The resulting estimators are proved to be asymptotic normal and consistent, respectively. Excitedly, the JP estimator not only gives smooth estimates of the continuity part of the coefficient functions, but also maintains the desirable properties of the local linear

estimator with regard to the bias and the boundary estimation while it estimates the jumps consistently, i.e., it preserves the jumps well. Then, by applying the local linear smoothing method and taking the estimated error heteroscedasticity into account, we suggest the reweighted estimations of the parametric and nonparametric parts. The resulting reweighted estimator of parametric part is shown to have smaller asymptotic variance than the OBE estimator that neglects the error heteroscedasticity while remaining the same bias, and the reweighted JP (RJP) estimator shares the same distribution and advantages with the JP estimator. Moreover, several simulation examples are presented to evaluate the finite sample performance of the proposed methodologies. Finally, an application with financial data illustrates the usefulness of the proposed techniques.

关键词: Heteroscedasticity; Jump-preserving fitting; Orthogonality; Partially linear varying coefficient models; QR decomposition.

Upper expectation parametric regression and adaptive estimation via penalized maximum-least-squares

林 路, 山东大学

摘 要: Distribution uncertainty causes the classical expectation not to be estimable in general. This is a fact acknowledged in some research fields such as maximum financial risk, meteorological disasters and catastrophic environmental accidents. In this paper, we propose an upper expectation regression that can describe the relationship between extreme events and relevant covariates. A penalized maximum-least-squares approach is proposed to estimate the mean function and the upper expectation of the error. The resulting estimators are consistent and asymptotically normally distributed. Simulation studies and a real data example are carried out to illustrate the new methodology.

Incorporation of Sparsity Information in Large-scale

Two-sample t Tests

刘卫东, 上海交通大学

摘要: Large-scale two-sample Student's t testing problems often arise from the statistical analysis of scientific data. To detect the positions of different values between two mean vectors, a famous procedure is applying the Benjamini and Hochberg(B-H) method together with two-sample Student's t statistics to control the false discovery rate (FDR). In many applications, the population mean vectors are often expected to be sparse or asymptotically sparse. For example, in genetics, a quantitative trait could be controlled by a few major genes and many polygenes, and it is typically assumed that the polygenes have vanishingly small effects. When dealing with this type of data, can we gain more power than the standard procedure such as the B-H method with Student's t statistics while keeping the FDR under control? The answer is YES! By exploring the sparsity information in mean vectors, we present an uncorrelated screening-based (USB) FDR control procedure, which is shown to be more powerful than the B-H method if the mean vectors are (asymptotically) sparse. On the other hand, our method can still be as powerful as the B-H method if the sparsity is absent. The USB method depends on a novel construction of test statistics which are asymptotically uncorrelated with the two-sample Student's t statistics and they can screen out nonzero components in the mean vectors. The USB method is different from the existing testing following screening methods (Reiner, et al., 2007; Yekutieli, 2008) in which the screening must be independent of the hypotheses testing, while the independence between screening and hypotheses testing often requires additional data. Instead, the uncorrelated screening in USB is based on the original data. Numerical studies are conducted and indicate that the proposed procedure works quite well.

关键词: false discovery rate, Student's t test, testing following screening, uncorrelated screening.

多元非均衡数据的同分布检验(MIT, Multivariate Imbalance Test)

王学钦, 中山大学

摘要: 多元非均衡数据是研究中常见的一种数据形态。尤其是在稀有疾病分析、质量监控等领域, 不同组别的样本量存在明显差别的情况时有发生, 而目前针对这种数据的统计方法较少, 且主要集中于分类问题。本文提出了一种应用于多元数据同分布检验的非参数方法, 该方法具有很多良好的性质, 如无需提前假设分布、有效性、相合性等。该方法不仅在一般情形下具有较高的功效, 针对非均衡数据尤其有效。文章证明了当较小的样本量固定时, 随着样本量比例的增加, 检验的功效呈上升趋势。蒙特卡洛模拟结果显示, 该方法在多种情形下均可在控制第一类错误的前提下, 检测出不同分布之间的差异, 即使两者之间差异极为微小。作为其他统计学习方法的基础, 上述良好性质和效果使得该方法易于被推广至广泛的应用领域。

Stochastic Search Variable Selection in Quantile Regression Based on Empirical likelihood

席瑞斌, 北京大学

摘要: Quantile regression provides a systematic and robust way of examining the dependence of the response variable on covariates. However, since quantile regression does not assume a parametric error distribution, Bayesian inference of quantile regression requires special treatment. In this paper, we propose a nonparametric hierarchical Bayesian quantile regression model based on empirical likelihood. The model uses the "spike-and-slab" prior to perform variable selection and parameter estimation simultaneously and an efficient Markov Chain Monte Carlo (MCMC) algorithm based on the Laplace approximation to the full conditional distribution is developed. We further prove that the variables selected by the model are asymptotically correct under certain regularity conditions. Simulation studies demonstrate that the proposed model outperforms the linear regression model in most simulation scenarios.

Computer Experiments With Both Qualitative and Quantitative Variables

杨建峰，南开大学

摘要： Computer experiments have received a great deal of attention in many fields of science and technology. Most literature assumes that all the input variables are quantitative. However, researchers often encounter computer experiments involving mixed input variables: both quantitative and qualitative variables. In this talk, a new design, called optimal clustered-sliced Latin hypercube design, is proposed. The proposed design is one kind of sliced Latin hypercube design with points clustered in the design region, and possesses good uniformity within each slice. For computer experiments, such designs help to measure the similarities between responses of different level-combinations in the qualitative variables. Furthermore, an adaptive analysis strategy intended for the proposed designs is developed. The proposed strategy allows us to automatically extract useful information from all auxiliary responses to increase the precision of prediction for the target response. The proposed designs, with the help of the proposed analysis strategy, are demonstrated to be effective via simulation examples. A real-life example from the food engineering literature is also studied to anticipate the improvements gained from using the proposed design and analysis strategy.

有形状约束的曲线估计

张忠占，北京工业大学

摘要： 本报告综述带有形状约束的曲线的估计以及发展现状.

利用观测到的样本来估计未知曲线是非参数统计的基本问题之一. 在许多应用问题中, 由于问题本身的背景或者实际工作者的经验, 对于曲线的形状有确定的信息. 比如, 在很多实际问题中, 一维自变量与因变量之间具有单调增 (或单调减) 的关系; 在有些经济问题中, 要求曲线是单调增且凹的. 如何把这些曲线的形状信息纳入曲线的估计过程, 产生具有所要求形状的曲线估计, 是统计界

长期研究和关心的问题，结合特定的问题，提出了各种各样的方法。本报告将从问题的提出、方法与发展现状概述以及发展展望几个方面做一个简要的汇报。

高维样本协方差矩阵理论及其在高维数据分析中的应用

郑术蓉，东北师范大学

摘要：本文首先探讨了在样本量和数据维数成比例增长条件下高维无偏样本协方差矩阵和高维有偏样本协方差矩阵的性质，发现在进行高维统计推断时无偏样本协方差矩阵和有偏样本协方差矩阵有着不可忽视的差异。

其次，本文在样本量和数据维数成比例增长条件下探讨了高维样本多重相关系数（回归中也称为 *coefficient of determination*）的性质，理论上证明了高维样本多重相关系数严重高估高维总体多重相关系数。本文利用大维随机矩阵理论建立了高维样本多重相关系数的中心极限定理，并做了大量模拟证明所获得的理论结果的可操作性。此外，本文还做了大量模拟表明 *bootstrap* 方法在高维样本多重相关系数的统计推断中是无效的并在文中给出了理论上的解释。

企业薪酬抽样调查方法与数据处理研究

邹国华，中国科学院数学与系统科学研究院

摘要：我国当前对企业员工的薪酬（工资）状况没有全面的统计报表，为了掌握全国分地区分行业企业各类人员的薪酬状况，采用抽样调查是一种节省时间和费用的方法。本报告主要介绍我们课题组设计的抽样调查方案以及相应的数据处理方法。为了与公务员工资水平进行比较，我们也提出了一种新的衡量指数，克服了拉斯佩尔指数的缺陷。