Time	15 Dec 2013 (Sunday)
16:30 - 17:30	Registration [Cover Wing outside TU201]
17:30 - 19:30	Welcome Reception [Cover Wing outside TU201]

Time	16 Dec 2013 (Monday)								
08:30 - 09:00		Registration [Cover Wing outside TU201]							
09:00 -				Opening Cere	mony & Group p	ohoto [TU201]			
09:30 09:30 -					ony Chan [TU20				
10:10			A Perso		cal View of Comp		ematics		
10:10 -			Com		<b>H. Sloan</b> [TU2 in Many Dimens	-	lew?		
10:50 -					ıi Kau & Chan L				
11:10	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5	Stream 6	Workshop 1	Workshop 2	Workshop 3
11.10	[ <u>M11</u> 0]	[N001]	[ <u>M108]</u>	[ <u>N003]</u>	[ <u>M107]</u>	[ <u>N002</u> ]	[ <u>M10</u> 6]	[ <u>M103</u> ]	[ <u>M104]</u>
12:30	2 Invited Talks	2 Invited Talks	2 Invited Talks	2 Invited Talks	2 Invited Talks	2 Invited Talks	2 Invited Talks	2 Invited Talks	2 Invited Talks
12:40 - 13:40			Lun	ch [Chan Shui K	au & Chan Lam	Moon Chun Squ	are]		
13:40 -	Stream 1 [M110]	Stream 2 [N001]	Stream 3 [M108]	Stream 4 [N003]	Stream 5 [M107]	Stream 6 [N002]	Workshop 1 [M106]	Workshop 2 [M103]	Workshop 3 [M104]
15:40	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks
15:40 - 16:00	Coffee Break [Chan Shui Kau & Chan Lam Moon Chun Square]								
	Stream 1 [M110]	Stream 2 [N001]	Stream 3 [M108]	Stream 4 [N003]	Stream 5 [M107]	Stream 6 [N002]	Workshop 1 [M106]	Workshop 2 [M103]	Workshop 3 [M104]
16:00 - 18:05	5 Contributed	1 Invited Talk		2 Invited Talks				1 Invited Talk	1 Invited Talk
	Talks	3 Contributed Talks	2 Invited Talks	3 Contributed Talks	3 Invited Talks	3 Invited Talks	3 Talks	4 Contributed Talks	4 Contributed Talks
18:10 - 20:00	Dinner [4/F, Communal Building]								

Time	17 Dec 2013 (Tuesday)								
09:00 -		Mung Chiang [TU201]							
09:40					g about Online L				
09:40 -			. ~		ching Chang [T	_			
10:20			A Si	urvey on the Spe	ctral Theory of N	lonnegative Tens	sors		
10:20 - 10:40			Coffee	Break [Chan Shu	ıi Kau & Chan L	am Moon Chun	Square]		
10:40 -	Stream 1 [M110]	Stream 2 [N001]	Stream 3 [M108]	Stream 4 [N003]	Stream 5 [M107]	Stream 6 [N002]	Workshop 1 [M106]	Workshop 2 [M103]	Workshop 3 [M104]
12:40	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks
12:40 - 13:40			Lun	ch [Chan Shui K	au & Chan Lam	Moon Chun Squ	iare]		
13:40 -	Stream 1 [M110]	Stream 2 [N001]	Stream 3 [M108]	Stream 4 [N003]	Stream 5 [M107]	Stream 6 [N002]	Workshop 1 [M106]	Workshop 2 [M103]	Workshop 3 [M104]
15:40	8 Contributed Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks
15:40 - 16:00			Coffee	Break [Chan Shu	ıi Kau & Chan L	am Moon Chun	Square]		
	Stream 1 [ <u>M110]</u>	Stream 2 [N001]	Stream 3 [M108]	Stream 4 [N003]	Stream 5 [M107]	Stream 6 [N002]	Workshop 1 [M106]	Workshop 2 [M103]	Workshop 3 [M104]
16:00 - 18:10	6 Contributed	1 Invited Talk	1 Invited Talk	1 Invited Talk	2 Invited Talks	2 Invited Talks	2 Invited Talles	Free	3 Invited Talks
	Talks	3 Contributed	2 Contributed	6 Contributed	2 Invited Talks	3 Contributed	3 Invited Talks	Discussion	3 invited Talks
18:30 - 21:30		Talks	Talks Banque	Talks t [Colour Crystal	Restaurant, 2/F	<u>Talks</u> Harbour Crystal	Centre]	<u> </u>	

Time	18 Dec 2013 (Wednesday)							
09:00 -	Zhiming Ma [TU201]							
09:40			A New	Model for Coales	cent with Recomb	ination		
09:40 -				Raytcho Laz				
10:20			Numerical Simula	tion of Flows in H	lighly Heterogene	ous Porous Media		
10:20 -			Coffee Break	[Chan Shui Kau &	Chan Lam Moon	Chun Square]		
10:40	G. 4	G. A		-				
10:40 -	Stream 1 [M110]	Stream 2 [N001]	Stream 3 [M108]	Stream 4 [N003]	Stream 5 [M107]	Stream 6 [N002]	Workshop 1 [M106]	Workshop 3 [M104]
12:40	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks
12:40 -			Lunch [Ch	an Shui Kau & Cl	nan Lam Moon Ch	un Squarel		
13:40			Lunch [Ch			un Squarej		
13:40 -	Stream 1 [M110]	Stream 2 [N001]		Stream 4 [N003]	Stream 5 [M107]	Stream 6 [N002]	Workshop 1 [M106]	Workshop 3 [M104]
15:40	Free Discussion	3 Invited Talks		3 Invited Talks	3 Invited Talks	3 Invited Talks	3 Invited Talks	Free Discussion
15:40 - 16:00				Ti	me			
		Stream 2 [N001]		Stream 4 [N003]	Stream 5 [M107]	Stream 6 [N002]	Workshop 1 [M106]	
16:00 - 18:05		1 Invited Talk				2 Invited Talks		
		3 Contributed Talks		2 Invited Talks	2 Invited Talks	3 Contributed Talks	3 Talks	
18:15 - 19:30	Dinner [4/F, Communal Building]							
19:30								
20:30	Bus to Tsim Sha Tsui Star Ferry Pier							
20:45 - 22:45				Excursion (Ha	arbour Cruise)			

Plenary T	Plenary Talks:					
16 Dec 201	3, Monday					
Chair: Liqun	ı Qi	TU201				
09:30-10:10	<b>Tony Chan</b> (The Hong Kong University of Science and Technology, Hong Kong)  A Personal and Historical View of Computational Mathematics	g				
10:10-10:50	<b>Ian H. Sloan</b> (The University of New South Wales, Australia)  Computing Integrals in Many Dimensions What's New?					
17 Dec 201	3, Tuesday					
Chair: Man-	kam Kwong [	TU201				
09:00-09:40	Mung Chiang (Princeton University, United States) Learning about Online Learning					
09:40-10:20	<b>Kungching Chang</b> (Peking University, China)  A Survey on the Spectral Theory of Nonnegative Tensors					
18 Dec 201	3, Wednesday					
Chair: Shige	e Peng [	TU201				
09:00-09:40	Zhiming Ma (The Chinese Academy of Sciences, China)					

A New Model for Coalescent with Recombination

Numerical Simulation of Flows in Highly Heterogeneous Porous Media

09:40-10:20 Raytcho Lazarov (Texas A&M University, United States)

# **Stream 1: Applications of Engineering Mathematics**

Organizers:	C.K. Chan (PolyU), Kaibin Huang (PolyU)
16 Dec 201	3, Monday
C <b>hair:</b> Cheor	ng-ki Chan [M110]
11:10-11:50	Valeri Ougrinovski (The Chuang, Australia) Consensus-Based Robust Distributed Estimation
11:50-12:30	<b>Huiqiang Zhang</b> (Tsinghua University, China)  Combustion Instability in Liquid Rocket Engine, Scramjet Engine and SI Engine
C <b>hair:</b> Guofe	eng Zhang [M110]
13:40-14:20	Matthew R. James (Australian National University, Australia) Linear Systems Model for Quantum Memories
14:20-15:00	Ian R. Petersen (The University of New South Wales, Australia) Guaranteed Non-Quadratic Performance for Quantum Systems with Nonlinear Uncertainties
15:00-15:40	San Ling (Nanyang Technological University, Singapore) On Some Recent Constructions of Quantum Error-Correcting Codes
Chair: C.K. (	Chan [ <b>M110</b> ]
16:00-16:15	Jiancheng Zheng (Tsinghua University, China) The Interaction between Flame and Aerodynamic Waves in One-Dimensional Confined Space
16:15-16:30	<b>Bing Wang</b> (Tsinghua University, China)  Applications of Stochastic Separation Flow Model in Numerical Simulation of Supersonic Boundary Layer Flows
16:30-16:45	Jianxiu Qin (Tsinghua University, China)  Effects of Mixture Ratio on Combustion Instability in a RP-1/Lox Rocket Engine
16:45-17:00	Yunlong Zhang (Tsinghua University, China) The Effect of Convective Mach Number on The Scalar Dissipation Rate in Supersonic Mixing Layers

	Numerical Simulation of Unsteady Magneto-Hydrodynamic Micropolar Squeeze Film Flow between Parallel Plates
17 Dec 201	3, Tuesday
Chair: Haido	ong Yuan [M110]
10:40-11:20	Carola-Bibiane Schöenlieb (University of Cambridge, United Kingdom)  Learning the Optimal Image Denoising Model Using Bilevel Optimization
11:20-12:00	<b>Jr-shin Li</b> (Washington University at St Louis, United States) <i>Iterative SVD Algorithm for Optimal Control Synthesis of Bilinear Ensemble Systems</i>
12:00-12:40	Naoki Yamamoto (Keio University, Japan) Decoherence-free linear quantum subsystems
Chair: Wei Z	Zhao [M110
13:40-13:55	Yana Di (Chinese Academy of Sciences, China)  Moment Methods for the Vlasov-Maxwell Equations
13:55-14:10	<b>Jinzhi Wang</b> (Dalian Nationalities University, China; Dalian University of Technology, China)  Painlevé Test of the Generalized Variable Coefficient KdV Equation
14:10-14:25	Wenjun Ying (Shanghai Jiaotong University, China) A Structured Grid Method for the Singularly Perturbed Reaction-Diffusion Equation from Computational Cardiology
14:25-14:40	<b>Na Lv</b> (Dalian Nationalities University, China) Symmetry Transformations and New Explicit Solutions of Two (2+1)- Dimensional Differential-Difference Equations
Chair: Na Lv	[ <b>M110</b> ]
14:40-14:55	Filipe S. Cal (CAMSGD, Portugal) Trapped Modes around Freely Floating Bodies in Two Layer Fluids
14:55-15:10	<b>Wei Zhao</b> (Dalian Nationalities University, China)  Qualitative Analysis for Boundary Value Problem of a Class of Second-Order  Ordinary Differential Equations
15:10-15:25	<b>Datian Niu</b> (Dalian Nationalities University, China)  Improving Approximate Singular Triplets in Lanczos Bidiagonalization Method

17:00-17:15 Sonam Singh (Indian Institute of Technology, India)

	Properties of the Parameter Space for a Chemotaxis Model	
Chair: Bing	Wang [N	<b>/110</b>
16:00-16:15	<b>Yincheng Guo</b> (Tsinghua University, China)  Large Eddy Simulation of Natural Gas Leakage in Urban Street Canyons	
16:15-16:30	Manish Vashishtha (Malaviya National Institute of Technology, India) Modeling of Non Catalytic Tubular Reactor: Flow of Non-Newtonian Fluids under Non-Isothermal Conditions	
16:30-16:45	Haixu Liu (Tsinghua University, China)  An Eulerian Approach of Particle Phase Based on Jordan Decomposition for Compressible Multiphase Flow	r
Chair: Carol	a-Bibiane Schöenlieb [N	<b>/1110</b> ]
16:45-17:00	Özlem Esen (Anadolu University, Turkey) On Diagonal Stability Analysis of Switched Systems	
17:00-17:15	Nirmal Yadav (Indian Institute of Technology, India) Tomographic Image Reconstruction with Contourlet Transform	
17:15-17:30	Muhammad Asif Farooq (National Univ. of Sciences & Technology, Pakist Cartesian Grid Method for the Compressible Navier-Stokes Equations Using Simplified Ghost Point Treatment at Embedded Boundaries	
18 Dec 201	3, Wednesday	
Chair: Kaibi	n Huang [N	<b>/110</b>
10:40-11:20	<b>Seong-Lyun Kim</b> (Yonsei University, Korea)  Game-Theoretic Understanding of Resource Pricing in Cellular Radios	
11:20-12:00	Radhakrishna Ganti (Indian Institute of Technology, India) Modelling and Analysis of Heterogeneous Network: A Stochastic Geometric Approach	
12:00-12:40	Seok-hee Hong (University of Sydney, Australia) Network Analysis and Visualisation	
Chair: Kaibi	n Huang [N	<b>/1110</b> ]
13:40-15:40	Free Discussion	

15:25-15:40 **Evan Curcio** (The City University of New York, United States)

[N001]

# Stream 2: Computational Optimization Organizers: Xiaojun Chen (PolyU) 16 Dec 2013, Monday Chair: Shuzhong Zhang 11:10-11:50 Roger J-B Wets (University of California, United States) Solving Stochastic VI via Expected Residual Minimization 11:50-12:30 Defeng Sun (National University of Singapore, Singapore)

Chair: Defeng Sun [N001]

Multi-Stage Convex Relaxation Approach for Low-Rank Structured PSD

13:40-14:20 **Michael Overton** (New York University, United States) *Stability Optimization for Polynomials and Matrices* 

**Optimization Problems** 

- 14:20-15:00 **Yuhong Dai** (Chinese Academy of Sciences, China)

  Unconstrained Optimization Models for Computing Several Extreme Eigenpairs of Real Symmetric Matrices
- 15:00-15:40 **Zhaosong Lu** (Simon Fraser University, Canada)

  Randomized Block Coordinate Gradient Methods for a Class of Nonlinear Programming

Chair: Jane Ye [N001]

- 16:00-16:40 **Xiaoming Yuan** (Hong Kong Baptist University, Hong Kong)

  On the Extension of ADMM for Separable Convex Programming and Beyond:

  From Variational Inequality Perspective
- 16:40-17:00 **Fengmin Xu** (Xi'an Jiaotong University, China) Sparse Index Tracking Based On L1/2 Model and Algorithm
- 17:00-17:20 **Divyesh Patel** (Indian Institute of Technology, India)

  Reconstruction of Periodic Binary Matrices from Row and Column Projections by Simulated Annealing
- 17:20-17:40 **Samir Kumar Neogy** (Indian Statistical Institute, India)

  On Solving a Quadratic Programming Problem Involving Distances in Trees in Polynomial Time

### 17 Dec 2013, Tuesday

Chair: Micha	Chair: Michael Overton		
10:40-11:20	Yinyu Ye (Stanford University, United States) Complexity Analysis beyond Convex Optimization		
11:20-12:00	<b>Shuzhong Zhang</b> (University of Minnesota, United States) New Results in Tensor and Polynomial Optimization		
12:00-12:40	Che-Lin Su (The University of Chicago, United States) Estimating Dynamic Discrete-Choice Games of Incomplete Information		
Chair: Xiaoqi	Yang	[N001]	
13:40-14:20	Yaxiang Yuan (Chinese Academy of Sciences, China) On the Convergence and Worst-Case Complexity of Trust-Region and Regularization Methods for Unconstrained Optimization		
14:20-15:00	<b>Sven Leyffer</b> (Argonne National Laboratory, United States) <i>Exploiting Nonlinear Structure in Mixed-Integer Nonlinear Optimization</i>		
15:00-15:40	Jane Ye (University of Victoria, Canada) Smoothing SQP Methods for Solving Nonsmooth and Nonconvex Constrain Optimization Problems	ned	
Chair: Andrea	as Fischer	[N001]	
16:00-16:40	<b>Qi Qi</b> (The Hong Kong University of Science & Technology, Hong Kong) Social Welfare Maximization in Social Media Advertising	)	
16:40-17:00	<b>Zhengyu Wang</b> (Nanjing University, China) Regularization and Smoothing of Differential Variational Inequality with Application to Dynamic Games		
17:00-17:20	Wei Bian (Harbin Institute of Technology, China) Complexity Analysis of Interior Point Algorithms for Non-Lipschitz and Nonconvex Minimization		
17:20-17:40	<b>Yang Zhou</b> (The Hong Kong Polytechnic University, Hong Kong) Optimization Methods for Finding Spherical $t_{\varepsilon}$ -design on the Sphere		

### 18 Dec 2013, Wednesday

C <b>hair:</b> Yaxia	ng Yuan [N001]	
10:40-11:20	<b>Tim Kelley</b> (North Carolina State University, United States)  Calibration of a New Density-Dependent Flow Model with Implicit Filtering	
11:20-12:00	Shin'ichi Oishi (Waseda University, Japan) Numerical Verification of Hyperbolicity for 3-Manifolds	
12:00-12:40	Andreas Fischer (TU Dresden, Germany) Beamforming for Problems with Discrete Antenna Weights	
C <b>hair:</b> Sven l	Leyffer [N001]	]
13:40-14:20	Raymond Chan (The Chinese University of Hong Kong, Hong Kong) A Two-Stage Image Segmentation Method Using a Convex Variant of The Mumford-Shah Model and Thresholding	
14:20-15:00	<b>Xiaoqi Yang</b> (The Hong Kong Polytechnic University, Hong Kong) First- And Second-Order Necessary Conditions via Exact Penalty Functions	
15:00-15:40	<b>Chuangyin Dang</b> (City University of Hong Kong, Hong Kong)  A Smooth Path-Following Approach to the Determination of a Perfect and d-proper Equilibrium	
C <b>hair:</b> Roger	J-B Wets [ <b>N001</b> ]	J
16:00-16:40	<b>Shiqian Ma</b> (The Chinese University of Hong Kong, Hong Kong)  Penalty Methods with Stochastic Approximation for Stochastic Nonlinear  Programming	
16:40-17:00	<b>Hailin Sun</b> (Nanjing University of Science and Technology, China)  Regularized Mathematical Programs with Stochastic Equilibrium Constraints:  Estimating Structural Demand Models	
17:00-17:20	Yanfang Zhang (Chinese Academy of Sciences, China) Gradient Consistency of Smoothing Functions for the Integrable Functions and Applications	
17:20-17:40	<b>Xin Liu</b> (Chinese Academy of Sciences, China)  On the Convergence of the Self-Consistent Field Iteration for Solving the Kohn-Sham Equation	

# **Stream 3: Statistical Modeling and Computational Statistics**

Organizers: Chunling Liu (PolyU), Heung Wong (PolyU) and Xingqiu Zhao (PolyU)

16 Dec 2013, Monday

Chair: Gang Li
[M108]

11:10-11:50 **Mei-Cheng Wang** (Johns Hopkins University, United States)

Modeling and Estimating the Terminal Behavior of a Recurrent Marker Process

11:50-12:30 **Kani Chen** (The Hong Kong University of Science and Technology, Hong Kong) *Modeling Clustering Effects of Recurrent Events Using Self-Exciting Processes* 

Chair: Mei-Cheng Wang [M108]

13:40-14:20 **Cun-Hui Zhang** (Rutgers University, United States)

Estimation and Selection via Lasso and its Multistage Adaptive Applications

14:20-15:00 **Shuangge Ma** (Yale University, United States) *Contrasted Penalized Integrative Analysis* 

15:00-15:40 **Jian Huang** (University of Iowa, United States)

A Constructive Approach to High-Dimensional Linear Regression

Chair: Cun-Hui Zhang [M108]

16:00-16:40 **Ngai-Hang Chan** (The Chinese University of Hong Kong, Hong Kong)

On the Bartlett Correction of Empirical Likelihood of Gaussian Long Memory

Time Series

16:40-17:20 **Shiqing Ling** (The Hong Kong University of Science and Technology, Hong Kong)

Inference for ARMA Models with Unknown-Form and Heavy-Tailed ARCH-Type Noises

### 17 Dec 2013, Tuesday

Chair: Shuangge Ma [M108]

10:40-11:20 **Gang Li** (University of California, Los Angeles, United States) *Joint Inference for Competing Risk Data* 

11:20-12:00	<b>Huazhen Lin</b> (Southwestern University of Finance and Economics, China) Estimating a Unitary Effect Summary Based on Combined Survival and Quantitative Outcomes
12:00-12:40	<b>Xinyuan Song</b> (The Chinese University of Hong Kong, Hong Kong)  Hidden Markov Latent Variable Models with Multivariate Longitudinal Data
Chair: Heung	[ <b>M108</b> ]
13:40-14:20	<b>Zudi Lu</b> (The University of Adelaide, Australia)  Nonparametric Estimation of Probability Density Functions for Irregularly  Observed Spatial Data
14:20-15:00	<b>Bin Nan</b> (University of Michigan, United States)  A Computationally Fast and Asymptotically Efficient Estimating Approach for Change-Points
15:00-15:40	<b>Bing-Yi Jing</b> (The Hong Kong University of Science and Technology, Hong Kong)  On the SURE-Type Shrinkage Estimation
Chair: Xingo	qiu Zhao [M108]
16:00-16:40	<b>Yuanshan Wu</b> (Wuhan University, China) Sieve Maximum Likelihood Estimation for a General Class of Accelerated Hazards Models
16:40-17:10	Chun Yin Yip (The Hong Kong Polytechnic University, Hong Kong) Real-time spatial forecasting system for multiple air pollutants
17:10-17:40	<b>Zhisheng Ye</b> (The Hong Kong Polytechnic University, Hong Kong) On Analysis of Warranty Data with Unobserved Sales Date
18 Dec 201	3, Wednesday
Chair: Chun	ling Liu [M108]
10:40-11:20	<b>Hua Liang</b> (George Washington University, United States)  AIC-Type Model Selection Criterion for Longitudinal Data Incorporating GEE Approach
11:20-12:00	Annie Qu (University of Illinois at Urbana-Champaign, United States) Personalized Treatment for Longitudinal Data
12:00-12:40	Peter Song (University of Michigan, United States)  Analysis of Merged Longitudinal Data from Multiple Studies

# **Stream 4: Mathematical Modeling and Computational Mathematics**

Organizers: Man-Kam Kwong (PolyU), Zhonghua Qiao (PolyU)						
16 Dec 201	3, Monday					
<b>Chair:</b> Ian H	Chair: Ian H. Sloan [N003]					
11:10-11:50	<b>Pingwen Zhang</b> (Peking University, China)  The Small Deborah Number Limit of the Doi-Onsager Equation to the Ericksen-Leslie Equation					
11:50-12:30	<b>Xiaobing H. Feng</b> (The University of Tennessee, United States)  An Efficient Numerical Approach for High Frequency Wave Scattering in Random Media					
Chair: Pingw	ven Zhang [N003]					
13:40-14:20	Jialin Hong (Chinese Academy of Sciences, China) Fundamental Convergence Theorems of Numerical Methods for SDEs					
14:20-15:00	<b>Hector Gomez</b> (University of A Coruña, Spain)  Phase-Field Modeling, Isogeometric Analysis and Unconditionally Stable Time Integration: Application to Biological Interfaces					
15:00-15:40	Chuanju Xu (Xiamen University, China) Some New Developments of Spectral and Spectral Element Methods and Their Applications					
<b>Chair:</b> Xiaob	oing H. Feng					
16:00-16:40	<b>Cheng Wang</b> (University of Massachusetts Dartmouth, United States)  Numerical Schemes for the Modified Phase Field Crystal (MPFC) Equation with Unconditional Pseudo-Energy Stability					
16:40-17:20	<b>Hui Zhang</b> (Beijing Normal University, China)  The Phase Transition and Large Deformation Theory of Macromolecular Microsphere Composite Hydrogel					
17:20-17:35	Hehu Xie (Chinese Academy of Sciences, China)  A Multilevel Correction Method for Transmission Eigenvalue					
17:35-17:50	En-bing Lin (Central Michigan University, United States)					

Numerical Solutions of One and Two Dimensional Integral Equations

17:50-18:05 **Sigram Schindler** (Technical University of Berlin, Germany)

Mathematically Modeling Patent Precedents and Inventions Disclosed by Patents,-First Steps of a "Mathematical Theory of Innovation"

### **17 Dec 2013,** Tuesday

[N003] **Chair:** Xiaobing H. Feng 10:40-11:20 **Jie Shen** (Purdue University, United States and Xiamen University, China) Efficient Energy Stable Schemes for Phase-Field Models of Two-Phase-Flows with Variable Density 11:20-12:00 **Ping Lin** (University of Dundee, United Kingdom) Energy Law and Its Numerical Preservation for Quasi-Incompressible Navier-Stokes Cahn-Hilliard (NSCH) System with Variable Density **Zhilin Li** (North Carolina State University, United States) 12:00-12:40 Augmented IFEM for Interface and Irregular Domain Problems [N003] Chair: Jie Shen **Tao Tang** (Hong Kong Baptist University, Hong Kong) 13:40-14:20 Numerical Stability on the Allen-Cahn equation 14:20-15:00 **Hyung-Chun Lee** (Ajou University, Korea) Partial Differential Equations Using Reduced-Order Modeling 15:00-15:40 **Jianguo Huang** (Shanghai Jiao Tong University, China) An Adaptive Time Stepping Method with Efficient Error Control for Second-Order Evolution Problems [N003] Chair: Ping Lin 16:00-16:40 **Yanping Chen** (South China Normal University, China) Error Estimates and Superconvergence of Mixed Finite Element Methods for Bilinear Optimal Control Problems 16:40-16:55 **Jun Bo Cheng** (Inst. of Apply Physics and Computational Mathematics, China) A Sub-cell Real 2D WENO Reconstruction Method for Spatial Derivatives in the ADER Scheme 16:55-17:10 **Zhengru Zhang** (Beijing Normal University, China)

An Energy-stable Finite-Difference Scheme for the Binary Fluid-Surfacant System

	Strip-Saturation Model for Piezoelectric Strip Cut along Two Collinear Cracks under Mode-III Deformation
17:25-17:40	Lazhar Bougoffa (Al Imam University, Saudi Arabia)
	A New Modified Adomian Decomposition Method for Solving Robin Boundary
	Value Problems for Second-Order Differential Equations
17:40-17:55	Isha Dhiman (Indian Institute of Technology Ropar, India)
	Effects of a Static Bottleneck in a Continuum Traffic Flow Model
17:55-18:10	Kamlesh Jangid (Indian Institute of Technology Roorkee, India)
	A Study on Influence of Changing Poling Direction on Piezoelectric Plate Cut
	along Two Unequal Cracks
18 Dec 201	3, Wednesday
Chair: Hyung	g-Chun Lee [N003]
10:40-11:20	Xiaoming Wang (Florida State University, United States)
	Numerical Schemes for Long Time Statistical Properties of Dissipative Chaotic
	Dynamical Systems
11:20-12:00	Kazufumi Ito (North Carolina State University, United States)
	Fluid-Structure Interaction Model and Levelset Method
12:00-12:40	Lili Ju (University of South Carolina, United States)
	Fast Explicit Integration Factor Methods for Semilinear Parabolic Equations
Chair: Xiaon	ning Wang [N003]
13:40-14:20	Sou-Cheng Choi (University of Chicago, United States)
	Minimal Residual Methods for Solving Singular Unsymmetric or Non-Hermitian Linear Equations
14:20-15:00	<b>Dexuan Xie</b> (University of Wisconsin-Milwaukee, United States)
	New Nonlocal Continuum Electrostatic Models and Fast Finite Element Solvers
	for Biomolecule in Ionic Solvent
15:00-15:40	Xiaofan Li (Illinois Institute of Technology, United States)
	A Conservative Scheme for Poisson-Nernst-Planck Equations

17:10-17:25 **Pooja Raj Verma** (Indian Institute of Technology Roorkee, India)

Chair: Lili Ju [N003]

16:00-16:40 **Qiang Du** (Penn State University, United States)

Nonlocal Calculus, Nonlocal Balance Laws and Asymptotically Compatible Discretizations

16:40-17:20 **Xuecheng Tai** (University of Bergen, Norway)

Four Color Theorem and Convex Relaxation for Image Segmentation with Any Number of Regions

### **Numerical Multi-Linear Algebra and Tensor Computation** Organizers: Liqun Qi (PolyU) **16 Dec 2013** , **Monday** Chair: Liqun Qi [M107] 11:10-11:50 **Shmuel Friedland** (University of Illinois at Chicago, United States) Compressive Sensing of Sparse Tensors 11:50-12:30 Guoyin Li (The University of New South Wales, Australia) The Maximum Eigenvalue of a Symmetric Tensor: a Polynomial Optimization *Approach* [M107] **Chair:** Michael Ng 13:40-14:20 **Vlado Nikiforov** (University of Memphis, United States) Spectral Extremal Problems for Hypergraphs 14:20-15:00 Jiayu Shao (Tongji University, China) Some New Trace Formulas of Tensors with Applications in Spectral Hypergraph **Theory** 15:00-15:40 **An Chang** (Fuzhou University, China) Z-Eigenvalues of the Adjacency Tensors for Uniform Hypergraphs Chair: Yimin Wei [M107] **Lek-Heng Lim** (University of Chicago, United States) 16:00-16:40 Tensors in Optimization Theory 16:40-17:20 Wen Li (South China Normal University, China) On Extreme Points of the Set of Multi-Stochastic Tensors **Yisheng Song** (Henan Normal University, China) 17:20-18:00

Spectral Properties of Positively Homogeneous Operators Induced by Higher

Order Tensors

Stream 5:

### 17 Dec 2013, Tuesday

Chair: Lek-Heng Lim		[M107]
10:40-11:20	<b>Liqun Qi</b> (The Hong Kong Polytechnic University, Hong Kong)  Hankel Tensors: Associated Hankel Matrices and Vandermonde Decomposition	osition
11:20-12:00	Otto Debals (KU Leuven, Belgium) Hankel-based Signal Separation of Exponential Polynomials	
12:00-12:40	Yimin Wei (Fudan University, China) M-Tensors and Nonsingular M-Tensors	
C <b>hair:</b> Giorg	io Ottaviani	[M107]
13:40-14:20	Michael Ng (Hong Kong Baptist University, Hong Kong) Nonnegative Tensors: Theory and Applications	
14:20-15:00	Guanglu Zhou (Curtin University, Australia) On the Largest Eigenvalue of a Symmetric Nonnegative Tensor	
15:00-15:40	Qingzhi Yang (Nankai University, China) The Methods for Solving the Spectral Radius of the Square Nonnegative T	Sensor -
C <b>hair:</b> Jiayu	Shao	[M107]
16:00-16:40	<b>Lixing Han</b> (University of Michigan at Flint, United States)  An Improved ANLS Algorithm for Nonnegative Tensor Factorization	
16:40-17:20	<b>Deren Han</b> (Nanjing Normal University, China)  A Trust Region Based Alternating Least-Squares Algorithm for Tensor Decompositions	
18 Dec 201	3, Wednesday	
C <b>hair:</b> Shmu	el Friedland	[M107]
10:40-11:20	Giorgio Ottaviani (University of Florence, Italy) Best Rank One Approximations	
11:20-12:00	<b>Jiawang Nie</b> (University of California at San Diego, United States) Semidefinite Relaxations for Best Rank-1 Tensor Approximations	
12:00-12:40	<b>Xinzhen Zhang</b> (Tianjin University, China)  The Rank Decomposition and the Symmetric Rank Decomposition of a Syn  Tensor	mmetric

Chair: Qingzhi Yang [M10	
13:40-14:20	<b>Guyan Ni</b> (National University of Defense Technology, China)  Quantum Entanglement and US-Eigenvalues of Symmetric Complex Tensors
14:20-15:00	Yaokun Wu (Shanghai Jiao Tong University, China) Algebraic Connectivity of an Even Uniform Hypergraph
15:00-15:40	<b>Jinshan Xie</b> (Longyan University, China)  The Clique and Coclique Numbers' Bounds based on the H-Eigenvalues of Uniform Hypergraphs
Chair: Guanglu Zhou	
16:00-16:40	<b>Andrzej Cichocki</b> (Riken Brain Science Institute, Japan) Tensor Networks and Multilinear Low-Rank Approximations for Big Data Analysis
16:40-17:20	Guoxu Zhou (Riken Brain Science Institute, Japan) Nonnegative Tensor Decompositions: An Algorithmic Perspective

### Stream 6: **Numerical Ordinary and Partial Differential Equations**

Organizers: Xiaoming He (Missouri University of Science & Technology), Yanping Lin (PolyU) \_\_\_\_\_\_

### **16 Dec 2013**, **Monday**

**Chair:** Yanping Lin [N002] 11:10-11:50 **Zhiming Chen** (Chinese Academy of Sciences, China) Reverse Time Migration for Reconstructing Extended Obstacles in Planar Acoustic Waveguides **Graeme Fairweather** (Mathematical Reviews, United States) 11:50-12:30 An ADI Orthogonal Spline Collocation Method for the Two-Dimensional Fractional Diffusion-Wave Equation [N002] **Chair:** Xiaoming He 13:40-14:20 Martin J. Gander (University of Geneva, Switzerland) Parallelizing the Time Direction: an Overview 14:20-15:00 **Xuejun Xu** (Chinese Academy of Sciences, China) On a Robin-type Nonoverlapping Domain Decomposition Preconditioner 15:00-15:40 Clayton Webster (Oak Ridge National Lab, United States) A Hyper-Spherical Sparse Grid Approach for High-Dimensional Discontinuity Detection [N002] **Chair:** Zhiming Chen 16:00-16:40 **Zhimin Zhang** (Wayne State University, United States) Polynomial Preserving Recovery for Gradient and Hessian including boundary 16:40-17:20 **Li-Yeng Sung** (Louisiana State University, United States) Multigrid Methods for Saddle Point Problems 17:20-18:00 **Xiu Ye** (University of Arkansas at Little Rock, United States)

A New Class of Finite Element Methods: Weak Galerkin Methods

### 17 Dec 2013, Tuesday

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### 18 Dec 2013, Wednesday

<b>Chair:</b> Jiang Z	Zhu [ <b>N002</b> ]
10:40-11:20	Yanzhao Cao (Auburn University, United States) Steady and Quasi-Static Flow in A Deformable Poroelasticitic Medium
11:20-12:00	<b>Xiaoping Xie</b> (Sichuan University, China)  Hybrid Stress Finite Element Analysis: Theory and Applications
12:00-12:40	Michael Neilan (University of Pittsburgh, United States) Conforming and Divergence-Free Stokes Finite Elements
Chair: Micha	nel Neilan [N002]
13:40-14:20	<b>Jin Huang</b> (University of Electronic Science and Technology of China, China) Mechanical Quadrature Methods and Their Extrapolations for Solving the First Kind Boundary Integral Equations of Stokes Equation
15:00-15:40	<b>Dong Liang</b> (York University, Canada)  The Efficient Splitting Characteristic Method for Aerosol Transport Problems in Environment
14:20-15:00	Ju Ming (Beijing Computational Science Research Center, China)  Optimal Control of Stochastic Flow Using Reduced Order Modeling
Chair: Dong	Liang [N002]
16:00-16:40	<b>Jiang Zhu</b> (National Laboratory for Scientific Computing, Brazil)  A Mixed Hybrid Discontinuous Galerkin Method for Convection-Diffusion  Interface Problem
16:40-17:20	Yingxiang Xu (Northeast Normal University, China) Optimized Schwarz Methods with Unsymmetric Domain Decomposition
17:20-17:35	<b>Chuanjun Chen</b> (Yantai University, China)  A Two-Grid Finite Volume Element Method for a Nonlinear Parabolic Problem
17:35-17:50	Samir Karaa (Sultan Qaboos University, Oman) Numerical Approximation of Second Order Wave Equations by Newmark Scheme

# **Workshop 1 Computational and Mathematical Finance**

Organizers:	Xun Li (PolyU), Cedric Yiu (PolyU)
16 Dec 201	3, Monday
Chair: Qihor	ing Chen [M106]
11:10-11:50	<b>Xi-Ren Cao</b> (Shanghai Jiao Tong University China; The Hong Kong University of Science and Technology, Hong Kong) <i>Local Properties of Behavioral Analysis in Finance</i>
11:50-12:30	Nan Chen (The Chinese University of Hong Kong, Hong Kong) Interconnected Balance Sheets, Market Liquidity, and the Amplification Effects in a Financial System
Chair: Xi-Re	en Cao
13:40-14:20	<b>Qihong Chen</b> (Shanghai University of Finance and Economics, China) <i>A New Kind of Low-Risk Option</i>
14:20-15:00	Wai-Ki Ching (The University of Hong Kong, Hong Kong) On Modeling Economic Default Time: A Reduced-Form Model Approach
15:00-15:40	Chi Man Leung (Hong Kong Baptist University, Hong Kong) Numerical Algorithms for R&D Stochastic Control Models
Chair: Rober	t S Womersley [M106]
16:00-16:40	<b>Hideo Nagai</b> (Kansai University and Osaka University, Japan)  H-J-B Equations of Optimal Consumption-Investment and Verification Theorems
16:40-17:20	Chi Tim Ng (Chonnam National University, South Korea) "True Identification Properties" of Change-point Estimators
17:20-18:00	Yuan-Hua Ni (Chinese Academy of Sciences, China) Indefinite Mean-Field Stochastic Linear-Quadratic Optimal Control with Application to Dynamic Mean-Variance Portfolio Selection

### 17 Dec 2013, Tuesday

Chair: Song Wang	[M106]
	rt S Womersley (The University of New South Wales, Australia) ration of Financial Models
	gmin Yong (University of Central Florida Orlando, United States) Recent Results on Time-Inconsistent Optimal Control Problems
	<b>Wu</b> (The Hong Kong University of Science and Technology, China) and Insights on Funding Valuation Adjustment
Chair: Lixin Wu	[M106]
13:40-14:20 <b>Shige</b> <i>TBA</i>	e Peng (Shandong University, China)
	shuo Song (City University of Hong Kong, Hong Kong)  Convergence Methods for Approximation of Path-Dependent Functional
States	iong (University of Macau, Macau and University of Tennessee, United s) astic Filtering and Optimal Control
Chair: Jiongmin Yo	[ <b>M106</b> ]
	ang Yang (The University of Hong Kong, Hong Kong) ng Contingent Options
•	<b>'u</b> (The Chinese University of Hong Kong, Hong Kong) ard and Future Implied Volatility
	Chang (Sichuan University, China)  Perical Solutions of BSDEs, a Finite Transposition Method

### 18 Dec 2013, Wednesday

Chair: Chi T	im Ng [M106]
10:40-11:20	Alain Bensoussan (The University of Texas at Dallas, United States) Mean Field Games and Mean Field Type Control
11:20-12:00	<b>Song Wang</b> (The University of Western Australia, Australia)  Numerical Solution of Fractional Black-Scholes Equations and Inequalities  Arising in Pricing European and American Options Under a Levy Process
12:00-12:40	Javad Abdalkhani (The Ohio State University-Lima, United States)  Modified Neumann Series for Some Classes of Integral Equations
Chair: Javad	Abdalkhani [M106]
13:40-14:20	<b>Wenting Chen</b> (University of Wollongong, Australia)  Predictor-Corrector Approach for Pricing American Options under the Finite  Moment Log-Stable Model
14:20-15:00	<b>Vipul R. Shah</b> (Sardar Patel University, India) Fractal Dimensional Analysis of Financial Time Series
15:00-15:40	Junfeng Yin (Tongji University, China) Projected Triangular Decomposition Methods for Pricing American Options
Chair: Junfe	ng Yin [ <b>M106</b> ]
16:00-16:40	Haixiang Zhang (Central South University, China) Orthogonal Spline Collocation Methods for Space Fractional Diffusion Equation
16:40-17:20	Jia-Wen Gu (The University of Hong Kong, Hong Kong) On Reduced Form Intensity-based Model with Trigger Events
17:20-18:00	Hanqing Jin (University of Oxford, United Kingdom) Investment Decision without Time Consistency

### Workshop 2:

# Computational Mathematics for Oil and Gas applications (A workshop in Honor of Prof. Mary F. Wheeler's 75<sup>th</sup> Birthday)

Organizer: Shuyu Sun (King Abdullah University of Science and Technology) 16 Dec 2013, Monday Chair: Ivan Yotov [M103] Mary F. Wheeler (The University of Texas at Austin, United States) 11:10-11:50 Modeling Hydraulic Fracturing in Porous Media Abbas Firoozaabdi (Yale University and Reservoir Engineering Research 11:50-12:30 Institute, United States) Modeling Three-Phase Compositional Flow on Complex 3D Unstructured Grids with Higher-Order Finite Element Methods Chair: Abbas Firoozaabdi [M103] 13:40-14:20 **Zhangxing John Chen** (University of Calgary, Canada) An Integrated Solution Program in Shale Gas Play Development and Production 14:20-15:00 **Ivan Yotov** (University of Pittsburgh, United States) Multiscale Mortar Methods for Multiphysics Applications 15:00-15:40 **Steve Liu** (University of Kent, United Kingdom) Optimal Control Problem of System Governed by Immiscible Displacement Problem in Porous Media Chair: Amgad Salama [M103] Xiao-Ping Wang (The Hong Kong University of Science and Technology, Hong 16:00-16:40 Kong) A New Approach to Multi-Phase Field Modeling and Simulation 16:40-16:55 **Zhijun Tan** (Sun Yat-sen University, China) An Immersed Interface Method for Solving Two-phase Interfacial Flows 16:55-17:10 **Xiuwen Li** (Dalian Nationalities University, China)

The Immersed Boundary-Lattice Boltzmann Method for the Simulation of the

Flow around Hydrofoils

**Heyu Wang** (Zhejiang University, China) An Adaptive NRxx Method for 2D Simulation

17:10-17:25

17:25-17:40 **Xuehua Yang** (Hunan Normal University, China)

The Compact Difference Method for a Class of Integro-Differential Equations with Completely Monotonic Kernels

### **17 Dec 2013,** Tuesday

Chair: Xiao-Ping Wang [M103]

- 10:40-11:20 **Tiezheng Qian** (The Hong Kong University of Science and Technology, Hong Kong)

  Droplet Motion with Evaporation and Condensation in One-Component Fluids
- 11:20-12:00 **Jie Chen** (Xi'an Jiaotong University, China)

  An Adaptive Finite Element Method of Two-Phase Flow in Heterogeneous

  Permeable Media with Different Capillarity Pressures
- 12:00-12:40 **Amgad Salama** (King Abdullah University of Science and Technology, Saudi Arabia)

  An Experimenting Fields Approach to the Numerical Solution of the Navier-Stokes Equations

Chair: Jie Chen [M103]

- 13:40-14:20 **Shuyu Sun** (King Abdullah University of Science and Technology, Saudi Arabia)

  \*Pore-Scale Simulation of Two-Phase Fluid Systems Consisting of Hydrocarbon Components
- 14:20-15:00 **Jisheng Kou** (Hubei Engineering University, China)
  Numerical Methods for Simulating Surface Tension with the Gradient Theory of
  Fluid Interfaces
- 15:00-15:40 **Yi Wang** (China University of Petroleum at Beijing, China)

  Numerical Investigations on Turbulent Fluctuations of Additive-Induced DragReducing Flow by Using the Wavelet Decomposition Method

Chair: Shuyu Sun [M103]

16:00-18:05 Free Discussion

# **Workshop 3: Numerical Methods for Wave Propagation**

Organizers: Peijun Li (Purdue University), Weiying Zheng (Chinese Academy of Sciences) **16 Dec 2013,** Monday Chair: Peijun Li [M104] 11:10-11:50 Ya Yan Lu (City University of Hong Kong, Hong Kong) Vertical Mode Expansion Method for Some Three-Dimensional Scattering **Problems** 11:50-12:30 **Faouzi Triki** (University of Grenoble, France) Stability Estimates for Multi-wave Inverse Problems Chair: Weiying Zheng [M104] **Jijun Liu** (Southeast University, China) 13:40-14:20 Inverse Scattering Problems: the Effect of Boundary Impedance 14:20-15:00 **Hongyu Liu** (University of North Carolina, United States) Inverse Elastic Scattering for Multiscale Rigid Bodies with a Single Far-field Measurement 15:00-15:40 **Jingzhi Li** (South University of Science and Technology of China, China) Locating Multiscale Ground Objects by a Single Electromagnetic Measurement Chair: Jijun Liu [M104] 16:00-16:40 **Huoyuan Duan** (Nankai University, China) Fortin Interpolation of Piecewise Non-H1 Space Solution, Edge Element and Adaptive Algorithm of Double Curl Problem with Divergence Free Constraint 16:40-16:55 Changhui Yao (Zhengzhou University, China) Nonconforming Finite Element Methods for Maxwell's Equations Meiling Zhao (North China Electric Power University, China) 16:55-17:10 A Study of Meshless Local Petrov-Galerkin Methods for Scattering by Open **Cavities** 17:10-17:25 **Jinfeng Jiang** (University of Science and Technology of China, China) A Dissipation-rate Reserving DG Method for Wave Catching-up Phenomena in a Nonlinearly Elastic Composite Bar

	Hyperbolic Telegraph Equation
17 Dec 201	3, Tuesday
Chair: Hong	yu Liu [ <b>M104</b> ]
10:40-11:20	<b>Bo Zhang</b> (Chinese Academy of Sciences, China)  An FFT-based Algorithm for Efficient Computation of Quasi-periodic Green's Functions for the Helmholtz and Maxwell's Equations
11:20-12:00	Lilian Wang (Nanyang Tecnological University, Singapore) Fast and Accurate High-order Methods for Wave Scattering Problems
12:00-12:40	<b>Chunxiong Zheng</b> (Tsinghua University, China)  Optimal Error Estimates for Gaussian Beam Approximation to the Schrodinger Equation
Chair: Bo Zh	[ <b>M104</b> ]
13:40-14:20	Haijun Wu (Nanjing University, China) Pre-asymptotic Error Analysis of Higher Order FEM and CIP-FEM for the Helmholtz Equation with High Wave Number
14:20-15:00	Weiying Zheng (Chinese Academy of Sciences, China) Discontinuous Galerkin Method for Ideal MHD Equations on Tetrahedral Meshes
15:00-15:40	<b>Shipeng Mao</b> (Chinese Academy of Sciences, China)  A Posteriori Error Estimates of Finite Element Approximations of the Incompressible Magnetohydrodynamic Equations
Chair: Lilian	Wang [M104]
16:00-16:40	<b>Jiguang Sun</b> (Michigan Technological University, United States)  A GPU-based Recursive Eigen-solver for Transmission Eigenvalues
16:40-17:20	<b>Xia Ji</b> (Chinese Academy of Sciences, China)  A Multi-level Method for Transmission Eigenvalues of Anisotropic Media
17:20-18:00	Guanghui Hu (University of Macau, Macau) Real-Time Finite Element Solution of Time-Dependent Kohn-Sham Equation

Tao Min (Xi'an University of Technology, China)

Numerical Simulation and Parameter Identification of One-Dimensional

17:25-17:40

### 18 Dec 2013, Wednesday

Chair: Jiguang Sun		[M104]
10:40-11:20	<b>Aihua Wood</b> (Air Force Institute of Technology, United States)  A Distributional Monte Carlo Method for the Boltzmann Equation	
11:20-12:00	<b>Liwei Xu</b> (Chongqing University, China)  Variational Methods for the Fluid-Structure Interaction Problem	
12:00-12:40	<b>Peijun Li</b> (Purdue University, United States)  Near-Field Imaging of Rough Surfaces	
Chair: Peijun	Li & Weiying Zheng	[M104]
13:40-15:40	Free Discussion	