3 月 28 日 报到		
3 月 29 日 西 303 报告厅 主持人(谢小平教授、冯民富教授)		
时间	报告人	内容
8:50 - 9:00		开幕式
9:00 - 9:30	陈龙（加州大学欧文分校）	Accelerated gradient methods through variable and operator splitting
9:30 - 10:00	徐岩（中国科学技术大学）	Well-balanced path-conservative discontinuous Galerkin methods with equilibrium preserving space for two-layer shallow water equations
10:00 - 10:30	茶歇、合影	
10:30 - 11:00	黄秋梅（北京工业大学）	Maximum bound principle and non-negativity preserving ETD schemes for a phase field model of prostate cancer growth with treatment
11:00 - 11:30	高斌（中科院数学系统研究院）	Low-rank optimization on matrix and tensor varieties
11:30 - 12:00	龚世华（香港中文大学深圳）	Power contracticity for RAS-Imp and RAS-PML for the non-trapping Helmholtz problems
12:00 - 14:00	午餐、自由讨论	
3 月 29 日 西 303 报告厅 主持人(唐庆猕教授、郭汝驰研究员)		
14:25 - 14:55	龚伟（中科院数学系统研究院）	Analysis and approximation to parabolic optimal control problems with measure-valued controls in time
14:55 - 15:25	王飞（西安交通大学）	DeepONet augmented by randomized neural networks for efficient operator learning in PDEs
15:25 - 15:40	茶歇	
15:40 - 16:10	朱升峰（华东师范大学）	Shape and topology optimization of hemivariational inequalities in fluids and elasticity
16:10 -16:40	李晓丽（山东大学）	Several structure-preserving schemes for the Q-tensor flow
16:40 -17:10	王东（香港中文大学深圳）	Weak adversarial networks for constrained optimization problems
17:10 - 20:00	晚餐	

3 月 30 日 西 303 报告厅 主持人(陈刚副教授、杨凡意副教授)		
时间	报告人	内容
9:00 - 9:30	王海兵（东南大学）	The forward and inverse problems of the wave equation in three dimensions by layer potentials
9:30 - 10:00	焦雨领（武汉大学）	Deep PDE's solvers: error analysis and adaptive scheme
10:00 - 10:30	雷闻宇（电子科技大学）	A scalable solver for a class of variable-order fractional diffusion problems
10:30 - 10:45	茶歇	
10:45 - 11:15	翟剑（复旦大学）	Inverse problems in isotropic elastodynamics
11:15 - 11:45	刘争光（山东师范大学）	Linear, decoupled and positivity-preserving staggered mesh schemes for general dissipative systems with arbitrary energy distributions
11:45 - 12:15	熊云丰（北京师范大学）	Lifting up dimensionality is useful: Sum-of-exponential techniques in seismic wave modelling
12:15 - 14:00	午餐、自由讨论	
3 月 30 日下午 四川大学数学学院 自由讨论		
3 月 30 日下午 离会		

Accelerated Gradient Methods through Variable and Operator Splitting

陈龙（加州大学欧文分校）

摘要：In this talk, we present a unified framework for accelerated gradient methods through the variable and operator splitting. The operator splitting decouples the optimization process into simpler subproblems, and more importantly, the variable splitting leads to acceleration. The key contributions include the development of strong Lyapunov functions to analyze stability and convergence rates, as well as advanced discretization techniques like Accelerated Over-Relaxation (AOR) and extrapolation by the predictor-corrector (EPC) methods. The framework effectively handles a wide range of optimization problems, including convex problems, composite convex optimization, and saddle point systems with bilinear coupling.
This is a joint work with Dr. Hao Luo and Dr. Jingrong Wei.

报告人介绍：陈龙任职于加州大学欧文分校（UCI）数学系。 1997 年毕业于南京大学，2000 年获北京大学硕士学位，2005 年获宾夕法尼亚州立大学博士学位，博士生导师为许进超教授。 2005 年至 2007 年在加州大学圣地亚哥分校和马里兰大学帕克分校从事博士后研究。 2007 年起在 UCI 工作，2011 年获得终身教职，2015 年晋升为正教授。

陈教授的研究领域是偏微分方程的数值解，尤其是有限元方法的设计与分析。陈教授开发了 iFEM 有限元软件包，为有限元方法的教学和研究提供了极大的便利。陈教授在国际知名期刊发表学术论文 80 余篇，担任多个 SCI 期刊编委。从他开始工作到现在，陈教授一直得到美国国家科学基金会的持续支持。另外，他还创立了微信公众号《CAM 传习录》(CAMtips)，分享关于计算和应用数学的学习和研究方法。

Well-balanced path-conservative discontinuous Galerkin methods with equilibrium preserving space for two-layer shallow water equations

徐岩（中国科学技术大学）

摘要：This paper introduces well-balanced path-conservative discontinuous Galerkin (DG) methods for two-layer shallow water equations, ensuring exactness for both still water and moving water equilibrium steady states. The approach involves approximating the equilibrium variables within the DG piecewise polynomial space, while expressing the DG scheme in the form of path-conservative schemes. To robustly handle the nonconservative products governing momentum exchange between the layers, we incorporate the theory of Dal Maso, LeFloch, and Murat (DLM) within the DG method. Additionally, linear segment paths connecting the equilibrium functions are chosen to guarantee the well-balanced property of the resulting scheme. The simple ``lake-at-rest'' steady state is naturally satisfied without any modification, while a specialized treatment of the numerical flux is crucial for preserving the moving water steady state. Extensive numerical examples in one and two dimensions validate the exact equilibrium preservation of the steady state solutions and demonstrate its high-order accuracy. The performance of the method and high-resolution results further underscore its potential as a robust approach for nonconservative hyperbolic balance laws.

报告人介绍：徐岩，中国科学技术大学数学科学学院教授。2005 年于中国科学技术大学数学系获计算数学博士学位。2005-2007 年在荷兰 Twente 大学从事博士后研究工作。2009 年获得德国洪堡基金会的支持在德国 Freiburg 大学访问工作一年。主要研究领域为高精度数值计算方法。2008 年度获全国优秀博士学位论文奖，2017 年获国家自然科学基金委“优秀青年基金”，2017 年获中国数学会计算数学分会第二届“青年创新奖”。徐岩教授入选了教育部新世纪优秀人才计划，主持国家自然科学基金面上项目、德国洪堡基金会研究组合作计划(Research Group Linkage Programme)、霍英东青年教师基础研究课题等科研项目。徐岩教授担任中国数学会计算数学分会理事，担任 SIAM Journal on Scientific Computing, Journal of Scientific Computing, Advances in Applied Mathematics and Mechanics, Communication on Applied Mathematics and Computation、计算物理等杂志的编委。

Maximum Bound Principle and Non-negativity Preserving ETD Schemes for a phase field Model of Prostate Cancer Growth with Treatment

黄秋梅（北京工业大学）

摘要：Prostate cancer (PCa) is a significant global health concern that affects the male population. In this talk, we present the fast second-order exponential time differencing Runge--Kutta (ETDRK2) method with stabilizing terms to simulate the growth of PCa tumors and their response to drug therapy. This method is a decoupled linear numerical algorithm that preserves three crucial physical properties of the model: a maximum bound principle (MBP) on the order parameter and non-negativity of the two concentration variables. Our simulations allow us to predict tumor growth patterns and outcomes of drug therapy over extended periods, offering valuable insights for both basic research and clinical treatments.

报告人介绍：黄秋梅，教授，博士生导师。主要从事时滞微分方程和积分方程的高效数值方法研究，在 SIAM Numer. Anal., SIAM Sci. Compt., J. Differ. Equ., Comput. Methods Appl. Mech. Eng 等杂志发表 SCI 论文 50 余篇。主持国家自然科学基金 4 项，主持北京自然科学基金重点项目子课题、北京自然科学基金面上项目等，入选北京市科技新星计划，获北京市高校青年教学名师奖、贵州省科技进步二等奖等。

Low-rank optimization on matrix and tensor varieties

高斌（中国科学院数学与系统科学研究院）

摘要：In the realm of tensor optimization, the low-rank Tucker decomposition is crucial for reducing the number of parameters and for saving storage. We explore the geometry of Tucker tensor varieties---the set of tensors with bounded Tucker rank---which is notably more intricate than the well-explored matrix varieties. We give an explicit parametrization of the tangent cone of Tucker tensor varieties and leverage its geometry to develop provable gradient-related line-search methods for optimization on Tucker tensor varieties. In practice, low-rank tensor optimization suffers from the difficulty of choosing a reliable rank parameter. To this end, we incorporate the established geometry and propose a Tucker rank-adaptive method that aims to identify an appropriate rank with guaranteed convergence. Numerical experiments on tensor completion reveal that the proposed methods are in favor of recovering performance over other state-of-the-art methods. The rank-adaptive method performs the best across various rank parameter selections and is indeed able to find an appropriate rank.

报告人介绍：高斌，中国科学院数学与系统科学研究院计算数学所副研究员。2019 年毕业于中国科学院数学与系统科学研究院。其主要研究兴趣是矩阵和张量流形上的优化算法。曾获中国科学院院长特别奖、钟家庆数学奖。受到中国科协青年托举工程、中科院和国家海外高层次人才计划等项目资助。

Power contracticity for RAS-Imp and RAS-PML for the non-trapping Helmholtz problems

龚世华（香港中文大学（深圳））

摘要：We consider two variants of restricted overlapping Schwarz methods for the non-trapping Helmholtz problems, which allow the optic-rays leaving a bounded domain in a uniform time. The first method, known as RAS-Imp, incorporates impedance boundary condition to formulate the local problems. The second method, RAS-PML, employs local perfectly matched layers (PML). These methods combine the local solutions additively with a partition of unity. We have shown that RAS-Imp has power contractivity for strip domain decompositions. More recently, we shown that RAS-PML has super-algebraic convergence with respective to wavenumber after a specified number of iterations. This is the first theoretical result for the non-trapping Helmholtz problems with variable wave speed. In this talk we review these results and illustrate how the error of the Schwarz methods propagates as optic-rays. We also investigate situations not covered by the theory. In particular, the theory needs the overlap of the domains or the PML widths to be independent of k. We present numerical experiments where this distances decrease with k.

报告人介绍：Shihua Gong obtained his PhD degree in computational mathematics from Peking University in 2018. Before joining the Chinese University of Hong Kong (Shenzhen), he worked as a postdoctoral scholar at Pennsylvania State University and then as a research associate at the University of Bath. His research interests include scientific computing and numerical analysis, mainly focusing on finite element and preconditioning techniques for frequency-domain wave equations and coupled equations in multiphysics problems.

DeepONet Augmented by Randomized Neural Networks for Efficient Operator Learning in PDEs

王飞（西安交通大学）

摘要：Deep operator networks (DeepONets) represent a powerful class of data-driven methods for operator learning, demonstrating strong approximation capabilities for a wide range of linear and nonlinear operators. They have shown promising performance in learning operators that govern partial differential equations (PDEs), including diffusion-reaction systems and Burgers' equations. However, the accuracy of DeepONets is often constrained by computational limitations and optimization challenges inherent in training deep neural networks. Furthermore, the computational cost associated with training these networks is typically very high. To address these challenges, we leverage randomized neural networks (RaNNs), in which the parameters of the hidden layers remain fixed following random initialization. RaNNs compute the output layer parameters using the least-squares method, significantly reducing training time and mitigating optimization errors. In this work, we integrate DeepONets with RaNNs to propose RaNN-DeepONets, a hybrid architecture designed to balance accuracy and efficiency. Furthermore, to mitigate the need for extensive data preparation, we introduce the concept of physics-informed RaNN-DeepONets. Instead of relying on data generated through other time-consuming numerical methods, we incorporate PDE information directly into the training process. We evaluate the proposed model on three benchmark PDE problems: diffusion-reaction dynamics, Burgers' equation, and the Darcy flow problem. Through these tests, we assess its ability to learn nonlinear operators with varying input types. When compared to the standard DeepONet framework, RaNN-DeepONets achieves comparable accuracy while reducing computational costs by orders of magnitude. These results highlight the potential of RaNN-DeepONets as an efficient alternative for operator learning in PDE-based systems.

报告人介绍：王飞，西安交通大学数学与统计学院教授、博士生导师，Commun. Nonlinear Sci. Numer. Simul. 副主编。2010 年获浙江大学数学博士学位。2010 年—2012 年，在华中科技大学任教；2012 年－2013 年，为美国爱荷华大学客座助理教授；2013 年－2016 年，为美国宾州州立大学 Research Associate；2015 年入选西安交通大学青年拔尖人才 B 类（副教授），2017 年入选陕西省青年百人，2022 年入选西安交通大学青年拔尖人才 A 类（教授）。研究领域为数值分析与科学计算，主要研究兴趣包括：有限元分析及其应用，变分不等式的数值方法，求解偏微分方程的神经网络方法等。主持国家自然科学基金重大研究计划（培育项目）1 项、面上项目 2 项、青年基金 1 项。已在国际 SCI 期刊发表论文五十多篇，其中包括计算数学方向的顶级期刊：SIAM J Numer. Anal.，IMA J Numer. Anal.，Numer. Math.，Comput. Methods Appl. Mech. Eng. 等。

Analysis and approximation to parabolic optimal control problems with measure-valued controls in time

龚伟（中国科学院数学与系统科学研究院）

摘要：In this talk I will present our recent work on an optimal control problem governed by parabolic equations with measure-valued controls over time. We establish the well-posedness of the optimal control problem and derive the first-order optimality condition, revealing a sparsity structure in time for the optimal control. Consequently, these optimal control problems represent a generalization of impulse control for evolution equations. To discretize the optimal control problem, we employ the space-time finite element method. Here, the state equation is approximated using piecewise linear and continuous finite elements in space, alongside a Petrov-Galerkin method utilizing piecewise constant trial functions and piecewise linear and continuous test functions in time. The control variable is discretized using the variational discretization concept. For error estimation, we initially derive a priori error estimates and stabilities for the finite element discretizations of the state and adjoint equations. Subsequently, we establish weak-* convergence for the control and a convergence rate for the state.

报告人介绍：龚伟，中国科学院数学与系统科学研究院研究员，博士生导师，2009 年获中国科学院数学与系统科学研究院理学博士学位，2010 年获德国洪堡基金会资助赴德国汉堡大学做博士后研究，2017 年受“陈景润未来之星”计划资助。在偏微分方程约束最优控制、形状优化、数据同化等问题的数学理论及数值算法等方面取得一系列重要成果。承担及参与国家自然科学基金、国家重点研发计划项目及 973 计划项目等多个项目。

Shape and topology optimization of hemivariational inequalities in fluids and elasticity

朱升峰（华东师范大学）

摘要：We consider models of shape and topology optimization for hemivariational inequalities with contact and frictional conditions in fluids and structures. We study shape sensitivity analysis, numerical level set method and phase field method without/with topological derivatives. Numerical results have presented to show the effectiveness of shape and topology optimization algorithms.

报告人介绍：朱升峰，华东师范大学数学科学学院教授、博导。本科和博士毕业于浙江大学，2011 年来到华东师范大学工作,曾在洛桑联邦理工学院从事博士后研究。研究方向为偏微分方程数值解、形状与拓扑优化。主持基金委、上海市科委、重庆市科研项目，入选上海市东方英才计划拔尖项目，在 Numerische Mathematik, SINUM, SISC, CMAME, JCP 等权威期刊发表论文多篇。

Several structure-preserving schemes for the Q-tensor flow

李晓丽（山东大学）

摘要：In this paper, we propose two efficient fully-discrete schemes for Q-tensor flow by using the first- and second-order stabilized exponential scalar auxiliary variable approach in time and the finite difference method for spatial discretization. The modified discrete energy dissipation laws are unconditionally satisfied for both two constructed schemes. A particular feature is that, for two-dimensional (2D) and a kind of three-dimensional (3D) Q-tensor flows, the unconditional maximum-bound-principle (MBP) preservation of the constructed first-order scheme is successfully established, and the proposed second-order scheme preserves the discrete MBP property with a mild restriction on the time-step sizes. Furthermore, we rigorously derive the corresponding error estimates for the fully-discrete second-order schemes by using the built-in stability results.Finally, various numerical examples validating the theoretical results, such as the orientation of liquid crystal in 2D and 3D, are presented for the constructed schemes.

报告人介绍：李晓丽，山东大学教授，博士生导师，国家高层次青年人才入选者，山东省杰青，山东大学杰出中青年学者。担任中国数学会计算数学分会常务理事，CSIAM 油水资源专委会秘书长。主要研究领域为偏微分方程数值解与计算流体力学。在 SIAM J. Numer. Anal., SIAM J. Sci. Comput., Math. Comp., J. Fluid Mech., Math. Mod. Meth. Appl. Sci.及 J Comput. Phys.等计算数学高水平期刊上发表学术论文多篇。主持国家自然科学基金面上项目、重点项目子课题、青年项目等多个国家及省部级项目。

Weak Adversarial Networks for Constrained Optimization problems

王东（香港中文大学（深圳））

摘要：In this talk, we integrate the networks and adversarial training into constrained optimization problems to develop a framework algorithm for constrained optimization problems. For such problems, we first transform them into minimax problems using the augmented Lagrangian method and then use two (or several) deep neural networks(DNNs) to represent the primal and dual variables respectively. The parameters in the neural networks are then trained by an adversarial process. The proposed architecture is relatively insensitive to the scale of values of different constraints when compared to penalty based deep learning methods. Through this type of training, the constraints are imposed better based on the augmented Lagrangian multipliers. Extensive applications in solving partial differential equations, data driven system discovery, constrained optimization problems will be discussed.

报告人介绍：王东，香港中文大学（深圳）助理教授，于 2013 年在四川大学获得数学学士学位，于 2017 年在香港科技大学获得计算数学博士学位，主要从事材料、拓扑优化等自由界面相关问题的数学建模，高性能、深度学习算法设计及相关理论。

The forward and inverse problems of the wave equation in three dimensions by layer potentials

王海兵（东南大学）

摘要：In this talk, we show our recent works on numerical methods for solving the forward and inverse problems of the wave equation in three dimensions by time-domain boundary integral equation methods. First, we consider the time-domain acoustic scattering by a sound-soft or an impedance obstacle in three dimensions. We reformulate it as a time-domain boundary integral equation. Then we propose a full discretization scheme by combining the convolution splines with a Galerkin method. Second, we study the time-domain acoustic scattering problem by a cluster of small sound-soft obstacles. We derive an asymptotic expansion of the scattered field as the size of the obstacles goes to zero, and then a numerical algorithm for solving the scattering problem is proposed. Finally, we consider an inverse source problem for the wave equation. We derive a novel approach for reconstructing the space-time dependent source function from the measurement of the wave at a fixed point, by injecting high contrast droplets into the domain to image.

报告人介绍：王海兵，东南大学数学学院教授，博士研究生导师，主要从事数学物理反问题的研究。2012 年获得北海道大学和东南大学的理学博士学位。现任中国数学会计算数学分会常务理事。目前正主持一项国家自然科学基金面上项目，代表性研究成果发表于 SIAM 系列，IP, JDE, JCP 等学术刊物。

Deep PDE's solvers: error analysis and adaptive scheme

焦雨领（武汉大学）

摘要：The use of deep learning methods for solving high-dimensional PDEs has gained significant attention recently. In the first part of this talk, I will present some theoretical analysis from the perspective of deep non-parametric estimation for the main deep solvers in the literature, namely DRMs, PINNs and WANs. In the second part of the talk, I will introduce a novel method called Gaussian Mixture Distribution-based Adaptive Sampling (GAS) for PINNs, which aims to boost their accuracy.

报告人介绍：焦雨领，武汉大学人工智能学院，教授博导。入选国家高层次青年人才，主要研究机器学习、科学计算。近期关注深度学习数理基础，在计算数学、应用数学、统计学、电子工程、人工智能等领域的旗舰期刊和会议上发表论文三十多篇： SIAM 系列（5 篇）、Appl.Comput. Harmon. Anal.(2 篇)、Inverse Probl. (2 篇)；Ann. Stat. （3 篇）、J.Amer. Statist. Assoc.； IEEE Trans. Inf. Theory (3 篇)、IEEE Trans. Signal Process.（3 篇）；J. Mach. Learn. Res. (6 篇)、ICML (3 篇)、NeurIPS (3 篇，其中一篇 Oral、一篇 Spotlight)；Nat. Commun.。

A scalable solver for a class of variable-order fractional diffusion problems

雷闻宇（电子科技大学）

摘要：In this work, we propose a V-cycle multilevel preconditioner and demonstrate its scalability in general geometries and in the presence of discontinuities in the fractional order. At every level of the spatial hierarchy, the preconditioner represents the discrete system matrix as the sum of a sparse matrix related to the singular near-field interactions, a sparse ``weighted'' mass matrix related to nonlocal boundary (volume) conditions, and a hierarchical $\mathcal H^2$ representation of the dense matrix representing the smooth near-field and the far-field effects of the nonlocal setting. The overall storage requirements of the preconditioner scale linearly. Our numerical simulations show that the multilevel preconditioned CG solver exhibits h-independent convergence behavior and allows the solution to scale linearly with problem size as well.

报告人介绍：雷闻宇 2018 年于德克萨斯州农工大学获得数学博士学位。后前往意大利国际高等研究院从事博士后研究工作，在 2022 年 8 月至 2023 年 1 月于沙特阿卜杜拉国王科技大学进行访问研究。研究方向为非局部和界面问题的有限元算法分析。雷闻宇主要从事数值分析领域的研究工作，研究方向包括非局部问题和半导体相关方程有限元方法大规模并行计算的设计与分析。迄今共发表 SCI 论文十余篇，其中作为唯一通讯作者发表于 Numerische Mathematik、SIAM Journal on Numerical Analysis 等国际期刊

Inverse problems in isotropic elastodynamics

翟剑（复旦大学）

摘要：We study the inverse boundary value problems for the dynamical elastic wave equation in isotropic medium. We consider both the linear model and the nonlinear model. Under certain generic geometrical assumptions, we show that all the parameters in the equation can be uniquely recovered from the so-called Dirichlet-to-Neumann map.

报告人介绍：翟剑，复旦大学副教授。2018 年博士毕业于美国莱斯大学，之后在美国华盛顿大学以及香港科技大学从事博士后研究。2021 年起在复旦大学任职。2022 年入选国家海外高层次青年人才项目，上海市领军人才（海外）青年人才项目。2023 年获得第十二届全国反问题、成像及其应用年会“优秀青年学术奖”。主要研究方向为数学物理反问题。相关成果发表在 Math. Ann.，Trans. A.M.S.，JMPA，Comm. P.D.E.，SIAM 系列，Inverse Problems 等学术期刊上。

Linear, decoupled and positivity-preserving staggered mesh schemes for general dissipative systems with arbitrary energy distributions

刘争光（山东师范大学）

摘要：In this paper, we develop a novel staggered mesh (SM) approach for general nonlinear dissipative systems with arbitrary energy distributions (known or unknown energy lower bounds). Based on this, several second-order semi-discrete schemes are proposed to preserve linear, decoupled and unconditionally energy stable properties. Firstly, for a series of dissipative systems with known energy lower bounds, we introduce a positive auxiliary variable $V(t)$ to replace the total energy functional and subsequently discretize it on staggered meshes in time to ensure that the energy remains non-increasing regardless of the size of time step. The new constructed schemes can be fully decoupled in terms of the calculation, so its computational cost is essentially the same as the usual implicit-explicit schemes, but the accuracy is much higher than the implicit-explicit schemes. Furthermore, we can prove the positivity of the discrete variable $V^{n+1/2}$, which is very important to preserve the stability and accuracy and the proposed SM schemes are proved to be convergent with the second-order accuracy in time. Secondly, for those dissipative systems that do not have an energy lower bound or where the energy lower bound is not well defined, we introduce a different auxiliary variable and give an extended SM scheme to keep the unconditional energy stable, effective and accurate. Finally, several numerical examples including some benchmark problems have been presented to demonstrate the effectiveness of the constructed schemes.

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Lifting up dimensionality is useful: Sum-of-exponential techniques in seismic wave modelling

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摘要：The representation of functions by sums of exponentials provides a very efficient approximation to the power functions from, e.g., the Coulomb interaction and fractional calculus. In this talk, we discuss our recent developments in sum-of-exponential techniques and its applications in earth science. The time-fractional wave equation with very small fractional exponent, based on Kjartansson's constant-Q theory, is widely recognized by geophysics to model the strong attenuation and dispersion to propagating waves in real earth material. However, the numerical resolution of this equation poses considerable challenges due to the requirement of storing a complete time history of wavefields. To address this computational challenge, we present a novel approach: a nearly optimal sum-of-exponentials (SOE) approximation to the Caputo fractional derivative with very small fractional exponent. This method minimizes the number of memory variables needed to approximate the power attenuation law within a specified error tolerance. An improved SOE approximation error bound to thoroughly is proved to assess the ability of rheological models to replicate the power attenuation law. Similar idea can also be applied to the fractional Laplacian operator, which is embedded in our stochastic particle method for solving the linear fractional diffusion equation up to 1000000 dimension.

报告人介绍：熊云丰目前为北京师范大学数学科学学院讲师，他 2020 年毕业于北京大学获理学博士学位，主要研究方向为高维问题的数值方法，包括谱方法和随机粒子方法在高维偏微分方程、随机系统中的应用。目前在国际权威期刊 SIAM Journal on Numerical Analysis，SIAM Journal on Scientific Computing, Journal of Computational Physics，PLOS Computational Biology 上发表论文多篇。熊云丰博士获国家自然基金委青年科学基金项目、中国博士后科学基金会等资助。