2025 TYMRC Workshop on Stochastic Optimization



天元數學國際交流中心

Tianyuan Mathematics Research Center

July 6-11, 2025

KUNMING, CHINA

Contents

Organizing Committee

Huifu Xu, The Chinese University of Hong Kong

Xiaojiao Tong, Xiangtan University

Hailin Sun, Nanjing Normal University

Contact Information

If you need any help, please feel free to contact:

Qiong Wu, Nanjing Normal University, qwu@nnu.edu.cn, 18098836585

Manlan Li, Hunan First Normal University, mill@hnfnu.edu.cn, 18390998635

Organization of the Program

The program is divided into eight sessions, with each session comprising:

- A one-hour talk (approximately 40–50 minutes for the presentation, followed by time for questions).
- A half-hour break.
- A one-hour panel discussion.

Each participant will be expected to participate in at least one panel discussion as a panel member.

The chair of each panel will coordinate with the speaker of the corresponding talk to facilitate a discussion centered around the talk's main theme.

Agenda

	July 7, Monday		July 8, Tuesday		July 9, Wednesday		July 10, Thursday		July 11, Friday	
09:00-10:00	Topic 1		Topic 3		Topic 4		Topic 6		Topic 7	
	Chair: Xiaojiao Tong	Talk: Guanghui Lan	Chair: Huifu Xu	Talk: Enlu Zhou	Chair: Zhiping Chen	Talk: Yunhe Hou	Chair: Yunhe Hou	Talk: Jiani Wang	Chair: Zheng Peng	Talk: Caihua Chen
10:00-10:30	Break									
10:30-11:30	Chair: Hailin Sun	Panel discussion 1	Chair: Shaoyan Guo	Panel discussion 3	Chair: Dali Zhang	Panel discussion 4	Chair: Zheng Peng	Panel discussion 6	Chair: Lei Yang	Talk: Xiao Wang
12:00-14:00	Lunch									
14:00-15:00	Topic 2		Free discussion 1		Topic 5		Free discussion 2		Topic 8	
	Chair: Guanghui Lan	Talk: Huifu Xu			Chair: Enlu Zhou	Talk: Zhiping Chen			Chair: Qi Deng	Talk: Jia Liu
15:00-15:30	Break				Break				Break	
15:30-16:30	Chair: Zhaolin Hu	Panel discussion 2			Chair: Chao Zhang	Panel discussion 5			Free discussion 3	
17:00-19:00	Dinner				Dinner				Dinner	

Workshop Schedule

Date	Time	Workshop Information
July 6, Sunday	All day	Register
July 7, Monday	09:00-10:00	Chair: Xiaojiao Tong
		Talk: Guanghui Lan Algorithmic Foundations of Risk-Averse Optimization for Trustworthy AI
	10:00-10:30	Break
	10:30-11:30	Chair: Hailin Sun
		Panel 1: Guanghui Lan, Xiao Wang, Qi Deng, Siqi Zhang, Bin Zhou
	12:00-14:00	Lunch
	14:00-15:00	Chair: Guanghui Lan
		Talk: Huifu Xu Statistical Robustness in Machine Learning and Matrix Optimization
	15:00-15:30	Break
	15:30-16:30	Chair: Zhaolin Hu
		Panel 2: Huifu Xu, Dali Zhang, Shaoyan Guo, Jia Liu, Qiong Wu
	17:00-19:00	Dinner
July 8, Tuesday	09:00-10:00	Chair: Huifu Xu
		Talk: Enlu Zhou Bayesian Approaches to Stochastic Optimal Control under Distributional Uncertainty
	10:00-10:30	Break
	10:30-11:30	Chair: Shaoyan Guo
		Panel 3: Enlu Zhou, Chao Zhang, Caihua Chen, Zhaolin Hu, Lin Chen
	12:00-14:00	Lunch
	14:00-17:00	Free discussion 1
July 9, Wednesday	09:00-10:00	Chair: Zhiping Chen
		Talk: Yunhe Hou Navigating Uncertainty in the New Energy Paradigm: From Classical Models to Endogenous and Contextual Decision-Making Methods
	10:00-10:30	Break
	10:30-11:30	Chair: Dali Zhang
		Panel 4: Yunhe Hou, Xiaojiao Tong, Zheng Peng, Wei Wang, Qi Wang

	12:00-14:00	Lunch
	14:00-15:00	Chair: Enlu Zhou
		Talk: Zhiping Chen A Bayesian Composite Risk Approach for Stochastic Optimal Control and Markov
	15:00-15:30	Break
	15:30-16:30	Chair: Chao Zhang
		Panel 5: Zhiping Chen, Hailin Sun, Jie Jiang, Liu Yang, Manlan Li
	17:00-19:00	Dinner
July 10, Thursday	09:00-10:00	Chair: Yunhe Hou
		Talk: Jiani Wang Stochastic gradient methods for solving a class of composite stochastic minimax problems
	10:00-10:30	Break
	10:30-11:30	Chair: Zheng Peng
		Panel 6: Jiani Wang, Shen Peng, Lei Yang, Yong Zhao, Shuang Wang
	12:00-14:00	Lunch
	14:00-17:00	Free discussion 2
July 11, Friday	09:00-10:00	Chair: Zheng Peng
		Talk: Caihua Chen Robust Solutions to Two Stage Stochastic Programming
	10:00-10:30	Break
	10:30-11:30	Chair: Lei Yang
		Talk: Xiao Wang Stochastic augmented Lagrangian methods for nonconvex constrained optimization
	12:00-14:00	Lunch
	14:00-15:00	Chair: Qi Deng
		Talk: Jia Liu Stochastic Dominance Constrained MDPs: Tractable Sample Approximations and Convergence Guarantees
	15:00-15:30	Break
	15:30-16:30	Free Discussion 3
	17:00-19:00	Dinner

Titles and Abstracts

09:00-10:00, July 7, Monday.
Speaker: Guanghui Lan
Title: Algorithmic Foundations of Risk-Averse Optimization for Trustworthy AI

Abstract: Over the past two decades, stochastic optimization has made remarkable strides, driving its widespread adoption in machine learning (ML) and artificial intelligence (AI). However, most existing models prioritize minimizing expected loss, often leaving AI-driven decisions vulnerable to costly or catastrophic failures and raising concerns about their trustworthiness in high-stakes applications. Risk-averse optimization provides a principled approach to mitigating such vulnerabilities, yet its adoption remains limited due to the lack of scalable and efficient solution methods. In this talk, I will present the algorithmic foundations of risk-averse optimization, focusing on an important class of L_P risk measures. I will introduce novel lifted reformulations that enhance tractability, develop stochastic approximation algorithms with provable convergence guarantees, and establish fundamental complexity limits. These advances provide a deeper theoretical understanding of risk-aware decision-making, laying the groundwork for more robust and trustworthy AI systems.

Biography: Guanghui (George) Lan is an A. Russell Chandler III Chair and professor in the H. Milton Stewart School of Industrial and Systems Engineering at the Georgia Institute of Technology. Prior to returning to Georgia Tech, where he earned his Ph.D. in August 2009, Dr. Lan served on the faculty of the Department of Industrial and Systems Engineering at the University of Florida from 2009 to 2015. His primary research interests lie in optimization, machine learning, and reinforcement learning, with applications in sustainability and healthcare. His academic honors include the INFORMS Frederick W. Lanchester Prize (2023), the INFORMS Computing Society Prize (2022), the National Science Foundation CAREER Award (2013), First Place in the INFORMS Junior Faculty Interest Group Paper Competition (2012), and recognition as a finalist for the Mathematical Optimization Society Tucker Prize (2012). Dr. Lan serves as an associate editor for Mathematical Programming, SIAM Journal on Optimization, Operations Research, and Computational Optimization and Applications. He is also an associate director of the Center for Machine Learning at Georgia Tech.

14:00-15:00, July 7, Monday.
Speaker: Huifu Xu
Title: Statistical Robustness in Machine Learning and Matrix Optimization

Abstract: In data-driven problems, perceived sample data are often contaminated due to errors in measurement, recording or occurrence of unexpected events. This raises a question as to whether statistical estimators based on the perceived data are statistically robust in the sense that their empirical distributions are stable against sample data perturbation. In the first part of this talk, we discuss statistical robustness of kernel learning estimator when the training data are potentially perturbed or even corrupted. We begin by deriving qualitative statistical robustness of the estimator for a broad class of convex cost functions when all of the training data are potentially perturbed under some topological structures, and then move on to consider the quantitative statistical robustness of the estimator for a specific case that the cost function is twice continuously differentiable and convex. Differing from Steinwart and Christmann (2008), we concentrate on constrained expected risk minimization problems. The second part of the talk is on statistical robustness of sample covariance matrix and sparse estimator of sample precision matrix (the inverse of the covariance matrix). Finding sparse approximation of precision matrix of a random vector with empirical data is widely discussed in finance and engineering. In data-driven problems, empirical data may be contaminated. This raises the question as to whether the approximate precision matrix is reliable from a statistical point of view. We demonstrate the sparse estimator obtained from solving an L1-norm regularized minimization problem is statistically robust. The first part of the talk is extracted from a recent paper with Sainan Zhang and Hailin Sun and the second part of the talk is based on a recent work with Renjie Chen and Henryk Zhaehle.

Biography: Huifu Xu is a Professor of the Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong. Prior to joining CUHK in 2019, he was a professor of operational research in the School of Mathematical Sciences, University of Southampton. He received a PhD degree from University of Ballarat (Federation University Australia) in 1999 and worked as a postdoctoral research fellow in the Australian Graduate School of Management (1999-2002). Huifu Xu's research is mainly on optimal decision making under uncertainty including stochastic mathematical programs with equilibrium constraints (SMPEC), stochastic generalized equations and distributionally robust optimization with applications in energy markets. More recently, he focuses on preference learning and optimization, statistical robustness in data-driven problems and Bayesian equilibrium problems.

09:00-10:00, July 8, Tuesday
Speaker: Enlu Zhou
Title: Bayesian Approaches to Stochastic Optimal Control under Distributional Uncertainty

Abstract: We consider stochastic optimal control (SOC) problems where the distribution of randomness is unknown but can be estimated from streaming data. Assuming a parametric form of the randomness distribution, we take a Bayesian approach to estimate the unknown distribution parameter. The Bayesian posterior distribution can be treated as a state augmented to the original state, leading to a higher-dimensional continuous-state SOC problem. While this approach theoretically provides the optimal control policy, it can be challenging to solve numerically. Therefore, we propose an episodic approach that only updates the posterior periodically and solves a Bayesian counterpart problem under the fixed posterior in each period. Theoretical convergence results and computational methods will be discussed.

Biography: Enlu Zhou is a Fouts Family Professor in the H. Milton Stewart School of Industrial and Systems Engineering at Georgia Tech. She received the B.S. degree with highest honors in electrical engineering from Zhejiang University, China, and the Ph.D. degree in electrical engineering from the University of Maryland, College Park. Prior to joining Georgia Tech, she was an assistant professor in the Industrial & Enterprise Systems Engineering Department at the University of Illinois Urbana-Champaign. She is a recipient of the Best Theoretical Paper award at the Winter Simulation Conference, AFOSR Young Investigator award, NSF CAREER award, and INFORMS Outstanding Simulation Publication Award. She has been on the editorial board of Journal of Simulation, IEEE Transactions on Automatic Control, Operations Research, and SIAM Journal on Optimization. She is currently a co-Editor-in-Chief for Journal of Simulation. She is the President of the INFORMS Simulation Society from 2024 to 2026. Her research interests lie in theory, methods, and applications of simulation, stochastic optimization, and stochastic control.

09:00-10:00, July 9, Wednesday
Speaker: Yunhe Hou
Title: Navigating Uncertainty in the New Energy Paradigm: From Classical Models to Endogenous and Contextual Decision-Making Methods

Abstract: The global shift toward renewable energy and the growing need for resilience against extreme events have introduced new forms of uncertainty that challenge traditional models. This talk provides a concise overview of the evolution of decision-making frameworks under uncertainty in power systems, with emphasis on renewable planning, operational scheduling, and resilience enhancement. Classical approaches such as stochastic programming and robust optimization have long managed exogenous uncertainties like load and generation forecasts. However, these methods typically assume that uncertainty is independent of decisions. Two emerging paradigms address this limitation. (1) The first focal point is Decision-Dependent Uncertainty (DDU). In this class of problems, the probability distribution of future uncertainties is endogenously shaped by current decisions. This is particularly critical in long-term strategic problems, such as renewable capacity expansion, where investment choices alter future power flow patterns and market prices, or proactive maintenance scheduling, where maintenance actions directly influence the failure probability of system components. While modelling DDU significantly increases the dimensionality and often introduces non-convexity into the optimization problems, it offers a powerful new lever: the ability to proactively control and mitigate future uncertainty, rather than merely reacting to it. (2) The second focus is on Contextual Optimization, which customizes forecasting to specific decision tasks. Rather than aiming for universally accurate predictions, this approach leverages contextual features to produce decisions optimized for system performance, even under high-dimensional and heterogeneous uncertainties. For complex energy systems influenced by diverse uncertainties (e.g., weather, market behavior, equipment health), contextual optimization is becoming a foundational methodology for making tailored, data-driven operational decisions. Together, these frameworks mark a shift from reactive to anticipatory planning, offering new tools for building resilient and sustainable energy systems.

Biography: Prof. Yunhe Hou is the Deputy Head of the Department of Electrical and Electronic Engineering at the University of Hong Kong. He received his B.E. and Ph.D. in Electrical Engineering from Huazhong University of Science and Technology, China, in 1999 and 2005, respectively. From 2006 to 2009, he was a Postdoctoral Research Fellow at Tsinghua University, Iowa State University, and University College Dublin. In 2010, Dr. Hou was a Visiting Scientist at the Laboratory for Information and Decision Systems at MIT. Since 2017, he has been an Honorary Professor at Huazhong University of Science and Technology, China, and since 2019, an Academic Adviser at the China Electric Power Research Institute. He joined the faculty of the University of Hong Kong in 2009. Dr. Hou has supervised over 20 Ph.D. graduates and authored more than 150 peer-reviewed papers in top-tier journals, along with six monographs and over 30 consulting reports. He has been recognized as a Top 1% Scholar worldwide by Clarivate Analytics and a Career-Long World's Top 2% Scientist by Stanford University. Dr. Hou chairs the IEEE PES Task Forces on Power System Restoration with Renewables and serves as an expert in the IEC SC8A Working Group. Previously an Associate Editor for IEEE Transactions on Smart Grid from 2016 to 2021, he is currently an Associate Editor for IEEE Transactions on Power Systems and five other leading journals.

14:00-15:00, July 9, Wednesday
Speaker：Zhiping Chen
Title：A Bayesian Composite Risk Approach for Stochastic Optimal Control and Markov Decision Processes

Abstract: We consider a stochastic optimal control (SOC) and Markov decision process (MDP) where the risks arising from epistemic and aleatoric uncertainties are assessed using Bayesian composite risk (BCR) measures. The time dependence of the risk measures allows us to capture the decision maker's (DM) dynamic risk preferences opportunely as increasing information about both uncertainties is obtained. This makes the new BCR-SOC/MDP model more flexible than conventional risk-averse SOC/MDP models. The new model allows the control to depend on the probability distribution of the epistemic uncertainty, which reflects the fact that in many practical instances the cumulative information about epistemic uncertainty often affects the DM's belief about the future aleatoric uncertainty and hence the DM's action. The new modeling paradigm incorporates several existing SOC/MDP models including distributionally robust SOC/MDP models and Bayes-adaptive MDP models and generates so-called preference robust SOC/MDP models. Moreover, we derive conditions under which the BCR-SOC/MDP model is well-defined, demonstrate that finite-horizon BCR-SOC/MDP models can be solved using dynamic programming technique, and extend the discussion to the infinite-horizon case. By using Bellman equations, we show that under some standard conditions, asymptotic convergence of the optimal values and optimal actions as the episodic variable goes to infinity is achieved. To ensure the tractability and efficiency of the proposed algorithms, we propose a hyper–parameter approach for discretization of posterior distribution space by integrating techniques like expansion, weighted clustering, and projection. The resulting hyper–parameter algorithm makes it practical for solving BCR minimization problems in the above algorithms. Finally, we carry out numerical tests on a finite horizon spread betting problem and an inventory control problem and show the effectiveness of the proposed model and numerical schemes.

Biography: Dr. Zhiping Chen is a Professor of Operations Research and Finance at School of Mathematics and Statistics, Xi'an Jiaotong University, and the vice director of Tianyuan Mathematical Center in Northwest China. His research interests include multistage stochastic programming, distributionally robust optimization, reinforcement learning, risk measure and insurance. He serves as an Editorial Board Member of OR Spectrum, Journal of Xi'an Jiaotong University and Chinese Journal of Engineering Mathematics, and as standing committee members of a few academic societies like the Operations Research Society of China. He has chaired five projects from the National Natural Science Foundation of China, one project from the National Key R\&D Program of China and quite a few industrial projects. He has published more than 120 papers in journals such as SIAM Journal on Optimization, Mathematical Programming, Mathematics of Operations Research, Journal of Optimization Theory and Applications, Journal of Global Optimization, European Journal of Operational Research, Annals of Operations Research, Journal of Banking & Finance, Journal of Economic Dynamics and Control, Insurance: Mathematics and Economics, Scandinavian Actuarial Journal.

09:00-10:00, July 10, Thursday

Speaker: Jiani Wang

Title: Stochastic gradient methods for solving a class of composite stochastic minimax problems

Abstract: We consider a class of composite stochastic convex-concave minimax optimization problems, which are arising in many applications from statistics, operations research and machine learning. For the minimax optimization problem with nonsmooth composite stochastic function, we propose a stochastic composite gradient descent (SCGD) method. We prove that the sequence generated by the SCGD method converges almost surely to a saddle point of the composite stochastic minimax problem. The rate of the averaging point of the first k iterations generalized by the SCGD method is analyzed for nonsmooth convex problems; it achieves a convergence rate of $O(k^{-1/4})$ in the general case and $O(k^{-2/3})$ in the strongly convex-concave case after k iterations. To the best of our knowledge, the SCGD method is the first stochastic method for solving the stochastic nonsmooth composite minimax optimization. Moreover, if the composite stochastic function is smooth, an accelerated stochastic composite gradient descent (ASCGD) method is proposed and the iteration sequence can be proven to converge almost surely to a saddle point of the composite stochastic minimax problem. The rate of the averaging point of the first k iterations is analyzed for the ASCGD method; it achieves a convergence rate of $O(k^{-2/7})$ in the general case and $O(k^{-4/5})$ in the strongly convex case after k iterations. Some preliminary numerical results demonstrate the performance of the proposed methods.

Biography: Janni Wang, associate professor at Beijing University of Posts and Telecommunications. She is mainly engaged in the research of stochastic algorithms for nonlinear optimization problems and the optimality theory and algorithms of minimax optimization problems with constraint structures. She has published articles in SIAM J. Optim., JCM, JSC etc., and chaired the National Youth Foundation.

09:00-10:00, July 11, Friday
Speaker: Caihua Chen
Title: Robust Solutions to Two Stage Stochastic Programming

Abstract: In this talk, we focus on obtaining robust solutions for two-stage stochastic optimization problems. First, we investigate a general Wasserstein-based chance constrained two-stage distributionally robust optimization (DRO) problem. In this problem, the first-stage decisions are binary, whereas the second-stage decisions are continuous and possess a polyhedral feasible domain. The objective is to minimize the sum of the first-stage cost and an estimate of the second-stage cost. A chance constraint ensures that the joint probability of the solution being feasible and the second-stage cost being lower than the estimation must not be less than a given threshold. We propose a Benders decomposition with several sets of valid inequalities to solve the problem exactly. Computational results on instances from literature and practice demonstrate the efficiency of our algorithm. Second, we incorporate randomized smoothing techniques to analyze smooth and even weakly smooth problems. By introducing appropriate noise, we can derive a high-probability upper bound for the true problem under convex conditions. In this setting, first-stage decisions can be both continuous and integer, while second-stage decisions are continuous, and uncertainty appears solely on the right-hand side. The second-stage objective function is convex with respect to the uncertain parameter. We provide an analysis of finite sample guarantees and the selection of hyperparameters. Experimental results showcase the strong performance of our method.

Biography: Chen Caihua is currently a professor and doctoral supervisor at Nanjing University, and the associate dean of the School of Engineering Management. His research focuses on data-driven decision-making, theories and algorithms for uncertain decision-making, and the design and application of optimization algorithms. The projects he has led include major projects of the National Natural Science Foundation of China, outstanding youth projects, general projects, youth projects, and joint laboratory projects with enterprises. His representative works have been published in internationally renowned academic journals and conferences such as Mathematical Programming, Management Science, SIAM Journal on Optimization/Imaging Sciences, Informs Journal on Computing, NeurIPS, and CVPR. He has received the Best Paper Award of the International Congress of Chinese Mathematicians (2017, 2018), the Youth Science and Technology Award of the Operations Research Society of China (2018), the May 4th Medal of Nanjing University (individual 2019, team leader 2024), and the Jiangsu Science and Technology Award (2024).

14:00-15:00, July 11, Friday
Speaker: Xiao Wang
Title: Stochastic augmented Lagrangian methods for nonconvex constrained optimization

Abstract: Nonconvex constrained optimization (NCO) is a vital research area within the optimization community, encompassing a wide range of applications across various fields. However, addressing NCO problems presents significant challenges due to the large-scale data and inherent uncertainties as well as potentially nonconvex functional constraints in optimization models. In this talk, I will report our recent progress in stochastic augmented Lagrangian methods for NCO that include established complexity bounds and/or convergence properties.

Biography: Dr. Xiao Wang is currently a professor in the School of Computer Science and Engineering at Sun Yat-sen University. Before joining SYSU, she served as an associate professor at University of Chinese Academy of Sciences and Pengcheng National Laboratory. She received her PhD in Computational Mathematics from Academy of Mathematics and System Science, Chinese Academy of Sciences. Her current research interests mainly lie in theory and algorithms for nonlinear optimization. Part of her research has been published in SIAM J. Optim., SIAM J. Numer. Anal., Math. Oper. Res., J. Mach. Learn. Res., Math. Comp., etc.

10:30-11:30, July 11, Friday
Speaker: Jia Liu
Title: Stochastic Dominance Constrained MDPs: Tractable Sample Approximations and Convergence Guarantees

Abstract: We introduce an infinite-horizon constrained Markov decision process (MDP) problem with multiple random rewards under ambiguous risk aversion. The MDP problem maximizes the expected cumulative discounted reward satisfying multivariate second-order stochastic dominance (SSD) constraints. By leveraging occupation measures, we reformulate the SSD-constrained MDP as a semi-infinite programming problem. A novel two-level approximation scheme is developed, combining discrete approximation with sample average approximation techniques. We provide theoretical guarantees for approximation convergence, including quantitative error estimations and qualitative convergence results.

Biography: Jia Liu is an Associate Professor in the School of Mathematics and Statistics at Xi'an Jiaotong University. He earned his Bachelor's, Master's, and PhD degrees all from Xi’an Jiaotong University. He was a visiting scholar at University of Paris Saclay and The Chinese University of Hong Kong. His research interests include stochastic optimization, robust optimization, financial modeling, and financial optimization. He has achieved notable results in multi-stage distributionally robust portfolio selection and chance-constrained optimization with applications in finance. He has published over 40 papers in operations research and finance journals, including Mathematical Programming, Mathematics of Operations Research, SIAM Journal on Optimization, European Journal of Operational Research, and Quantitative Finance. He has led two projects of National Natural Science Foundation of China, a sub-project of the National Key R&D Program of China, and several industry collaborative projects.

List of Participants

姓名	单位
徐慧福	香港中文大学
蓝光辉	佐治亚理工学院
周恩露	佐治亚理工学院
童小娇	湘潭大学/湖南第一师范学院
陈志平	西安交通大学
侯云鹤	香港大学
彭　拯	湘潭大学
张　超	北京交通大学
邓　琪	上海交通大学
郭少艳	大连理工大学
刘　嘉	西安交通大学
蒋　杰	重庆大学
陈彩华	南京大学
王　晓	中山大学
胡照林	同济大学
张大力	上海交通大学
王嘉妮	北京邮电大学
彭深	西安电子科技大学
李满兰	湖南第一师范学院
吴　琼	南京师范大学
王　琪	香港理工大学
杨　磊	中山大学
王　伟	上海财经大学
陈　林	重庆师范大学
赵　勇	重庆交通大学
周　斌	南京邮电大学
杨　柳	湘潭大学
孙海琳	南京师范大学
王爽	内蒙古大学
张思奇	南京大学

Access Guide

· 地理位置

中心位于云南省昆明市宜良县柴石滩水库库区内国家一级公益林中；三面环山，一面向水，环境优美，风景秀丽、气候宜人；海拔为 1700 米，距离昆明长水国际机场约 90 公里，乘车时间约 1.5 小时。距离石林风景区 25 公里，距离九乡风景区 17 公里。

· 专车服务

中心周日全天接机、接站，周五下午、周六全天安排车辆送机、送站。其他时间需自行解决交通问题，中心可协助联系车辆，但费用需自理。

由于中心外部道路尚未完善，建议参会人员尽量不要选择夜间行车。

· 出租车网约车

昆明长水国际机场或昆明南站，乘坐出租车网约车到柴石滩水库风景区天元数学国际研究交流中心下车。中途经过宜良县城，宜良县城至天元数学国际研究交流中心，有两条线路可供选择：

（一）宜良县城上汕昆高速，往石林方向，石林风景区下高速，走九石阿公路到达柴石滩水库风景区天元数学国际研究交流中心。这条线路，**路面宽，急弯道少，路况相对较好。**

昆明长水国际机场至天元数学国际研究交流中心全程 **99 公里**，一般需要 **1 小时 30 分钟**；

昆明南站至天元数学国际研究交流中心全程 **92 公里**，一般需要 **1 小时 20 分钟**。

（二）走古柴段线路到达柴石滩水库风景区天元数学国际研究交流中心。这条线路，需要经过村镇，路面窄，急弯道多，路况相对较差。

昆明长水国际机场至天元数学国际研究交流中心全程 **74 公里**，需要 **1 小时 25 分钟**；

昆明南站至天元数学国际研究交流中心全程 **78 公里**，需要 **1 小时 35 分钟**。

· 公共交通

1、昆明长水国际机场乘坐地铁 **6 号线**到昆明东部客运站下车，乘坐昆明至宜良大巴车到宜良客运站下车，或昆明南站乘坐昆明高铁南客运中心至宜良大巴车到宜良客运站下车，乘坐 **20 路**公交车到北古城镇下车，乘坐 **5 路**公交车到柴石滩水库下车。下车终点站距离天元数学国际研究交流中心约 **4 公里**，联系工作人员接送。

2、公共交通工具运营时间

地铁 **6 号线**首班时间 **6：20**，末班时间 **23：00**，运营间隔为 **25 分钟**。

昆明至宜良大巴车首班时间 **7：00**，末班时间 **21：00**，运营间隔为 **1 小时**。

宜良 20 路公交车首班时间 **7：00**，末班时间 **19：00**，运营间隔为 **30 分钟**。

宜良 5 路公交车首班时间 **8：00**，末班时间 **18：00**，运营间隔为 **2 小时**。

注：宜良 5 路、20 路，逢日期尾号 3、6、9 才有班车

· 自驾

自驾可使用导航搜索“天元数学国际研究交流中心”定位，依据导航指引可到达天元数学国际研究交流中心。

Tianyuan Mathematics Research Center

天元数学国际交流中心由中国科学院、国家自然科学基金委员会、中国数学会、中国科学院数学与系统科学研究院，以及昆明市有关部门共同支持建设的数学与交叉科学交流机构。旨在搭建数学及其跨学科应用领域的学术交流平台，提升我国数学整体研究水平，成为国际一流的数学交流与合作研究中心。

该中心位于云南省昆明市宜良市柴石滩水库库区的国家级公益林内，三面环山，一面环水。该中心总用地面积约2.7万平方米，有研究楼、专家楼和后勤楼三栋两层主楼，可容纳近200人进行学术活动，并配有图书馆和阅览室、餐厅以及一定数量的办公和住宿用房。

该中心将聚焦数学科学的重大前沿方向和重大问题，组织开展形式多样的国内外优秀专家学术交流与合作研究活动，推动实质性合作研究形成优势方向，促进数学学科发展。同时，该中心将重点培养青年人才，普及数学科学，增强公众对数学科学的认识，提高我国数学的整体研究水平，努力建设国际一流的数学交流与合作研究中心。

该中心将支持数学科学的主要方向。在基础数学领域，应该布局对未来数学有重大领导作用的方向，包括数论和代数、几何和拓扑学、现代分析和数学物理、概率论和随机分析。在应用数学领域，应布局国家战略急需的应用数学关键通用方法领域，包括数据科学与人工智能数学理论、科学与工程计算方法、复杂系统优化与控制理论、计算机数学与密码学等。该中心还支持多样化的学术研究，不仅在数学学科，而且在与数学交叉的领域，如物理、医学、生物学和信息等。该中心将邀请相关领域的顶尖专家，特别是活跃在其领域前沿的杰出年轻研究人员，进行合作和交流，从而通过多学科的交叉融合，产生新的思想，推动重大问题的解决。

中心将借鉴国际顶尖学术交流机构的成功经验，建立合理的机构运作和活动组织机制。该中心不会设立常设研究职位，工作人员的流动性将与学术活动的多样性相匹配。中心将组织学术活动，包括研讨会、著名学者系列讲座和青年研讨会、暑期研究生课程等。中心学术委员会将负责规划和验证中

心的学术主题和活动。所有活动都向国内数学界开放。在中心成立初期，学术活动主要以每周一次的研讨会为基础。