# NETS NEWS Etter

# Director's Message

National Center for Theoretical Sciences has provided the most important platform for the collaboration and interaction among Taiwanese mathematicians since its establishment in August, 1997, supported by Ministry of Science and Technology, Taiwan. After serving the Taiwanese mathematical community for nearly two decades, we are lunching our first Newsletter and expect a further promotion of mathematical research in Taiwan.

We in fact consider 2016 as a turning point of NCTS history, marked by strengthened research collaboration both domestically and globally. We worked with Institute of Mathematics of Academia Sinica, Taiwan, and organized 2016 Taipei mathematical Seminar for postdocs and young researchers. Thanks to the cooperative programs with our neighboring research institutes, such as RIMS in Japan and KIAS in Korea, we sent young researchers to Japan and Korea for international academic exchange. NCTS scientific members are all trying our best to make NCTS more internationally wellknown as a contribution to the advancement of mathematical knowledge in Taiwan and the world. We are initiating cooperative programs and joint activities with MSRI, PIMS, and other institutes around the world. Our efforts are expected to bring in further research opportunities for both Taiwanese and visiting scholars.

Youth training and youth empowerment have been the major goal of NCTS since its foundation. Many of our new generations, both math majors and nonmath majors; both Taiwanese and international students, have benefited from our large variety of summer courses and boot-camps, whose topics have covered, for example, geometry, elliptic curves, probability, mathematical biology, optimization, etc. in 2016. Students are highly encouraged to attend the intensive research-oriented lectures given by both Taiwanese local and visiting schol-

### Inside:

NCTS Research/Event Spotlights Chat with Professor Richard Schoen Chat with Researcher Inspired by NCTS Postdocs All Over the World Review from NCTS International Scholars



ars, which are unique and different from their usual curriculum.

We are bearing the missions to build a bridge between real-world challenges and academic achievements. Data science has been a very hot topic that theoretical mathematical research could and should play the fundamental and pivotal role. With the assistance of Prof. Hau-Tieng Wu (University of Toronto) and Weichung Wang (National Taiwan University), we have enlarged the existing Big and Complex Data Analysis Program into a Laboratory of Data Science at NCTS. The main goal of LDS at NCTS is to study the mathematical models for data processing in medical research. Forum of Data Science is organized every month as a platform for mathematicians, statisticians, physicians and other experts to gather for idea exchange and problem solving.

NCTS is dedicated to providing a pleasant environment for researchers to conduct cutting-edge research, while I think the key factor to turn a research center successful is to bring people together. By bringing people together, ideas get generated, insights get emerged, innovations get driven, and amazing adventures get started. Welcome to NCTS! Wherever you are, come and enjoy our collaboration.





NCTS Director Prof. Jungkai Chen



# **Highlights of Events**

# **Conferences & Workshops**

21-23 May	Mathematical Biology
24-26 May	Geometric Analysis and Subelliptic PDFs
30 May-3 Jun	AS-NCTS Workshop on Shi-
	Topics
6-8 Jun	PMI-NCTS Workshop in
	Number Theory
11-15 Jul	Pan Asia Number Theory
	Conference
15-18 Aug	China, Hong Kong, Taiwan
	Joint Conference on Dynam-
	ical Systems
22-26 Aug	Finite Groups and Vertex Al-
	gebras

# **Upcoming Events**

8-13 Sep	Japan-Taiwan Joint Confer-
	ence on Number Theory
5-6 Nov	2nd East Asia Section of IP-
	IA-Young Scholars Symposi-
	um
18-19 Nov	Nonlinear Differential Equa-
	tions: Theory and Applica-
	tion
13-17 Dec	The First Japan-Taiwan Joint
	Conference on Differential
	Geometry

# **Summer Schools**

4-7 Jul 4-8 Jul	Geometric Analysis Mathematical Modeling and Analysis of Infectious Dis- eases
14 Jul-1 Sep	Modeling for Stochastic Pro- cess in Cell Biology
25 Jul-12 Aug	Elliptic Curves and Complex Manifolds
25 Jul-5 Aug	Probability
1-24 Aug	Mathematical Biology
2-5 Aug	Fractional Sobolev Spaces in Geometric Knot Theory
2-11 Aug	Number Theory
5 Aug-16 Sep	Dynamical Systems: Topo- logical and Arithmetic Dy- namics
15-19 Aug	Optimization: Theory and Mathematical Models



# NCTS Event/Research Spotlights Data Science in Health Analytics

An Interdisciplinary Team Sets-off for Mathematical Foundations of Data Science with Applications in Healthcare

Prof. Weichung Wang (Institute of Applied Mathematical Science, National Taiwan University)

A long the path to promote data science at NCTS, nine researchers have formed an interdisciplinary team to tackle some of the most demanding big data challenges. This interdisciplinary team includes experts from ecosystem, medicine, mathematic, statistic, high-performance computing, engineering, and data visualization. They are working together to develop fundamental tools to extend the frontier analytic capabilities of big data and to apply the developed tools to solve healthcare problems arising from the real world.

The team concentrates their efforts on a project entitled as **Mathematical Founda-tions of Data Science with Applications inHealthcare**. This ambitious project is appreciated by The Ministry of Science and Technology, Taiwan, and has received a budget of \$14,2000 USD per year.

The project aims to develop several fundamental analytical and computational tools based on mathematics, statistics, high-performance computing and visualization technologies. The key technologies under development include time-space big data analysis, matrix visualization, GPU high-performance numerical computations, low-rank matrices analysis, mixed data type visualization, and time-frequency analysis of physiology signals.

These tools can not only advance big data analytics but also benefit several essential healthcare issues. The team plans to apply



# NCTS Research/Event Spotlights

the developed key technologies to analyze government collected and clinical big data in air quality, climate, healthcare, and medical advice. Accordingly, we can build the prediction models, detecting method, data matrices visualization of PM2.5, along with heterogeneous data mix visualization between PM2.5 and health cloud, instant monitor, interpretation, medical treatment of anesthesia, and critical care medicine.

To deliver innovative and practical analytical tools and to improve the quality of healthcare from the developed tools, the team focuses on the following six sub-projects.

- 1. Space-Time Dynamics of Ambient Air Pollutants
- 2. Applications with System Development for Matrix Visualization on Healthcare Data
- 3. High-performance Matrix Computations on GPU for Big Data
- 4. Low-Rank Matrix Analysis and Data Feature Extractions
- 5. Big Data Visualization for Hybrid Data in Air Pollution and Healthcare
- 6. Realtime Frequency-Time Analysis and Its Application in Clinical Signals

The team is dedicated to the advancement and communication of fundamental knowledge in data science by supporting NCTS seminars and forums on data science. Prof. Wang arranged a course entitled as NCTS 2016 Short Courses on High-Performance Linear System Solvers for spring semester at National Taiwan University. This course is designed for fundamentals of iterative linear system solvers, fast multipole methods, and high-performance numerical solvers with applications. He also coordinated NCTS Workshop on Recent Development of Matrix Computations in May, with international speakers invited from Georgia Institute of Technology, Monash University, and Temple University.

### Courses

23 Feb-7 Jun	High-Performance Linear
	System Solvers
15 Feb-21 Jun	Abelian Varieties and Relat-
	ed Topic
1 Feb-31 Jul	Arithmetic Geometry and
	Representation Theory

# **Distinguished Lectures**

9,14,21 Mar	Luc Illusie (Université Paris-Sud) Nearby Cycles Over Gener- al Bases and Thom-Sebas- tioni Theorem
5.7 Jul	
3,7 001	(University of Cambridge)
	On the Conjecture if Birch
	and Swinnerton-Dyer for
	Quadratic Twists of X_0(49)
11 Jul	Horng-Tzer Yau
	(Harvard University)
	Spectral Statistics of Ran-
	dom Graphs
3 Aug	Richard Schoen
	(Stanford University)
	Steklov Eigenvalues and
	Free Boundary Minimal Sur-
	faces

### NCTS and PIMS Forge an Agreement to Advance Taiwanese-Canadian Mathematical Sciences

National Center for Theoretical Sciences (NCTS) and Pacific Institute for the Mathematical Sciences (PIMS) have announced the formation of a fiveyear partnership to promote discovery in mathematical sciences through collaborative research activities.

PIMS, a distributed institute supporting 10 universities, has 20 year experiences of promoting research, facilitating education outreach and enriching the public's awareness of mathematics. The member universities of PIMS include Universities of Alberta, British Columbia, Calgary, Lethbridge, Manitoba, Regina, Saskatchewan, Simon Fraser University, Universities of Victoria and Washington.

"This partnership instantly leverages current activities at NCTS and PIMS in differential geometry and the mathematics of information," said James Colliander, Director of PIMS. "Our agreement widens the opening collaboration for researchers in North America and Taiwan."





## NCTS Research Highlights Prof. Hau-Tieng Wu (University of Toronto)

As a coordinator of the above mentioned interdisciplinary team directed by Prof. Weichung Wang, Hau-Tieng Wu shares his experiences in supporting the project, **Realtime Frequency-Time Analysis and Its Application in Clinical Signals.** 

As Newton's laws of motion were established to model the real world, we are writing the same story in data analysis – collected data is nothing but an observation of the world, so what is the underlying rule as a guideline for these observations?

As an applied mathematician, Hau-Tieng Wu dedicates himself to building up mathematical foundations of massive data analysis, and its application to medicine. His goal is use sophisticated methods to extract medically related information based on the data collected from the standard medical environment. He attempts to figure out mathematical solutions to completely understand the analysis procedure, accurately model the scientific observations, and quantify the analysis reports. He supports our team to gain essential knowledge by co-organizing **NCTS Forum in Data Science** once a month regularly to make sure our analysis reports getting well interpreted and applied, and this event gets globalized by welcoming people to join personally or via skype. He works on striking a balance among various fields, including mathematics, computer science, electrical engineering and medicine. He in particular has applied his background knowledge in medicine to the interdisciplinary collaboration between the two extreme fields, mathematics and medicine.

The gap between medicine and mathematics is getting widening throughout the past few decades. By realizing the need of interdisciplinary research with the development of explosives technology, NCTS is trying its best to dynamically reunite these two fields. Hau-Tieng contributes to extract suitable features reflecting physiological dynamics from diverse datasets, including electrocardiogram, respiration, contact/non-contact photophlethemogram, electroencephalogram, clinical questionnaire and charts, medical images, etc., and his exceptional approach to obtaining these features is the application of nonlinear time-frequency analysis. With these extracted features, he is developing high dimensional data analysis techniques with focuses on the nonlinear low dimensional structure, with manifold and metric measure space involved. He also conducts research on the statistical behavior of the proposed algorithms, which is combined with other applications to mathematically predict the outcomes, and contributes to the classification and clustering algorithms for multiple purposes. The research topics he is supporting NCTS are multidisciplinary, but the key focus is always on extracting intrinsic features from the massive dataset to observe our real-world-problems, expected to advance our medical technology.

Our every effort is made for solving real-world-issues based on mathematical solutions. We bear two missions in the long journey – theoretically understand the features we and Taiwan are concerned, while make sure the proposed model and analysis reports are practical solutions to our clinical problems.



NCTS Course on Light Performance Linear System Solvers





Professor Richard Schoen is an American mathematician who has supported the development of NCTS more than 10 years. We are honored to have him as our 2016 NCTS Distinguished Scholar who will conduct his research at our center for 3-6 months starting from December 2016. He has considered himself as a regular visiting scholar at NCTS, and he plans to spend Christmas with his family here in our lovely Taipei this year.

rofessor Schoen is a world-leading figure in differential geometry, geometric analysis, and mathematical relativity. He is Anne T. and Robert M. Bass Professor in the School of Humanities and Sciences at Stanford University, Distinguished Professor at University of California, Irvine. Schoen was awarded The MacArthur Fellowship in 1983, and The Bôcher Memorial Prize for his contribution on Yamabe problem in 1989. He joined American Academy of Arts and Sciences in 1988 and National Academy of Sciences in 1991, winning the Guggenheim Fellowship in 1996. He became a fellow of American Mathematical Society in 2012, and a Senior Scholar at NCTS in 2013. He serves as the vice president of American Mathematical Society between 2016 and 2019.



He has participated in the improvement of our center by joining our executive committee for developing a framework of our scientific programs. We are sincerely grateful for his kind support for our advancement and communication of mathematical sciences in Taiwan and abroad by sharing his precious experi-

ences at MSRI and Stanford University. During his long-term visit, Schoen plans to give lectures of geometry once or twice a week. He also plans to support our long-term scientific programs in core fields to connect theoretical and applied prospects. He appreciates the opportunity we provide for him to interact with other scientists and the quiet office for him to concentrate on his work. We also sincerely appreciate his great passion and inspiration to NCTS and we look forward to meeting more world-leading scholars like him at NCTS.

"High-level research activities organized by NCTS are the key factors to attract people all over the world to come. Regular workshops on the same topics with eminent scholars involved are important, so active researchers from the backgrounds visit constantly."

On July 28, 2016, in a precious networking entitled Meet with **Professor Huisken & Professor** Schoen, Schoen shared his experiences with our NCTS scholars about his perspectives and solutions for geometric analysis. All the seats in the conference room were occupied, and all of our senior and junior scholars enjoyed the networking led by Professor Huisken and Professor Schoen, the two world-leading mathematicians visiting NCTS. On August 3, 2016, Schoen gave a distinguished lecture entitled Steklov Eigenvalues and **Free Boundary Minimal Surfaces**, enlightening our researchers deeply as usual.

"Once visitors enjoy their collaboration here, they are happy to visit again for the same topics. This helps establish powerful connection between NCTS and active scholars around the world. A key idea is to repeat the same topics. Then the same group of people repeat coming back every one or two years, like in Oberwolfach."

Despite of his busy schedule, Schoen has always been kind to spend time with us discussing our strategies to promote scientific research in Taiwan. Schoen appreciates all NCTS scientists' dedications to the collaboration and networking of mathematical research all over Taiwan, and he will join our mission by organizing an international workshop in December, 2016. He appreciates the tight connection we build for scientists with various disciplines from different culture backgrounds to meet up and discuss their research works.

"To run a mathematical center successfully, it's important to have right people running good programs ... You have a very active director to run scientific programs."

"The library at NCTS is amazingly nice, even comparable with Oberwolfach (the famous visiting math center in Germany)."





Schoen has visited Taiwan for several times since 1991 for research programs organized by NCTS, and he has supported the development of NCTS for more than 10 years. By coming here from time to time over the 20 years, Schoen has experienced the change of Taipei – more modernized, more artistic, more populated, more international, and more attractive.

"Taipei is naturally an attractive city... for a while, I visited Taipei twice per year ... (laugh!) May is a good time for people in US to visit. Late September, a break between two quarters, is also a good time to visit for people in universities of California."

Schoen especially has actively joined us to bear the missions for building a bridge between academic and professional achievements in Taiwan. He is supporting us to set up a platform for cooperation between industries and research in which people from industries present their difficulties and our scholars figure out mathematical solutions.

"Compared with industries in the States, those in Taiwan might not be so research-oriented. But there should be some Taiwanese industries needing mathematicians for their development. Networking with industries would be good. It may eventually create connection between mathematical community and industries. Invite people from industries to present their problems, regardless of their mathematics level, and then we try to see how our mathematicians could support

# them, either based on MA or Ph.D. level ..."

Schoen has also taken part in our mission for young-researcher-training program. He is supporting us to arrange a platform for our Ph.D. and postdocs to consult and explore their career after finishing their research at NCTS. We all want to make sure our NCTS young researchers to gain advanced and interdisciplinary knowledge in sciences and documented experiences in any specific fields with recommendations for future as well as a wide network of contacts.

"Without visible future careers, it would be hard to convince students to math Ph.D. programs. It's important to find and create jobs for Ph.D. candidates, and that's a responsibility of research institutes. Platforms for job market trends and news are very useful for information exchange."

"In the past, if you don't go to ac-

ademia after Ph.D., you seem to miss your goal. The atmosphere has changed nowadays. There are many other options, like financial industry, and software companies."

In the end of interview, Schoen shared his view on the research topics in differential geometry and geometric analysis, which young scholars could devote into in the future.

"... various geometric flows, e.g. mean curvature flows. Ricci flows in 4-manifolds, differential geometry around physics (e.g. general relativity, string theory, special Lagrangian submanifolds), basic directions in Riemannian geometry (e.g. we know very little about positively curved manifolds of dimension greater than three, besides the isolated example of pinching theorem), submanifold geometry, geometric variational problems, minimal submanifolds and related mean curvature flows ..."







# Chat with Researcher Inspired by NCTS

Katsuhisa Furukawa was one of the most active participants of NCTS academic events. He received his Ph.D at Waseda University, and then worked as a research associate there. He is now a postdoc at Japan Society for the Promotion of Science, The University of Tokyo.

worked as a research fellow at National Taiwan University (NTU) from August 2014 to May 2016. I enjoyed the academic community NCTS had built with NTU, and I appreciated that NTU and NCTS's support to me once I started to stay in Taiwan.

I had opportunities to give talks at international conferences organized by NCTS and benefited from its research atmosphere. The participants of the conferences came from all over the world, and each of them was a specialist in an important research field of algebraic geometry. I got many comments from people all over the world, which was helpful to improve my research. NCTS periodically invited international excellent speakers, such as Yujiro Kawamata (University of Tokyo) and Caucher Birkar (University of Cambridge), from whom I gained valuable suggestions. I worked as one of the organizers for international workshops supported by NCTS, and I felt that NCTS created a friendly environment for people from multicultural backgrounds to communicate very excitedly and got inspired greatly for their further research. Remarkably, NCTS was dedicated to creating opportunities for scholars to study in new subjects outside of their own specialties.

The benefits I gained from NCTS are still significant for me even I'm already back in Japan. I'm now working on my publications *Family of Rational Curves on Hypersurfaces*, and *Gauss Maps and Dual Defects of Projective Varieties* (a joint work with Atsushi Ito, Kyoto University). The projects got started when I was in NCTS. I met Ito at NCTS, where we began our discussion about our joint work. (By the way, Ito and I went to NCTS workshops together, and deeply fell in love with Taiwanese tea together, and then we visited many tea shops and got good tea leaves!)







Let's read the stories of 2015-2017 NCTS Postdocs about how they think NCTS has supported their career development and training. They play a vital role of our intellectuals and research strength.

### **Chi-Kwong Fok**

got his Ph.D. at Cornell University. While working as a NCTS postdoc, he is an assistant professor at National Tsing Hua University, Taiwan.

am given complete freedom at NCTS to independently pursue research topics I am interested in. The senior researchers here care about the juniors' research development, and they generously offer advice and help. The seminars NCTS organizes regularly on geometry and topology have helped me explore and expand my research interests, and I am grateful for the generosity of NCTS to support me to attend various research events internationally. I would say NCTS has offered more than I had expected for a research institute.

# **Tsz On Mario Chan**

completed his Ph.D. at The University of Bayreuth. He was a research fellow at Korea Institute for Advanced Study (KIAS-CMC).

am grateful that the NCTS doesn't evaluate my research simply by the number of my publications, and I will have sufficient time to turn my current work perfect, which is particularly helpful to a new postdoc working on a new topic after they have just finished their Ph.D.



# Postdocs All Over the World

NCTS supported my visits to many cities in Taiwan and Japan for academic events, and I was permitted for an academic visit at Institute Fourier in Grenoble, France, for 2 months. I am confident that my research of the past few years is going to turn fruitful soon, with NCTS as an important contribution to my success.

# Zhengyu Hu

was once a research associate at University of Cambridge, and a visiting scholar at the Center of Mathematical Sciences, Zhejiang University.

s a young postdoc, I am so lucky to receive many supports from the experienced professors at NCTS, such as Yujiro Kawamata. NCTS has arranged regular events on a variety of topics and opened stimulating conversations for scholars, which is the *collaboration* needed by young scholars. Guidance and help from professors are extremely important and necessary for early researchers, and NCTS has created a platform for meeting friendly professors.

#### **Gyeongha Hwang**

graduated from Pohang University of Science and Technology. He was a visiting assistant professor at Ulsan National Institute of Science and Technology.

CTS postdocs come from all over the world and they have various majors, which is different from any institute I have worked at, without such diversity as NCTS. I had had encountered frustrations about the physical meanings of partial differential equation, and I never had any chance to talk about them before I came to NCTS. Now, at NCTS, with so many experts in mathematical physics, I have finally figured out some physical meanings of each equation by making conversation with them, which has motivated me to solve the equation.







# **Catalin Carstea**

graduated from The University of Chicago. He was a visiting assistant professor at University of Rochester, a lecturer at The University of Chicago, and a lecturer in physics at Brockenhurst College.

or other research institutes, postdocs may have more teaching duties than tenured professors. I'm fortunate to work at a research institute like NCTS, so I'm allowed to return to **research** without interruption of a two-course-per-semester teaching load. I appreciate NCTS's financial







support for me to attend conferences in both Taiwan and abroad. As a foreigner, I've experienced the life at the tropics and got acquainted with new cultures, which gives me energy for my research.

### Đặng Tuấn Hiệp

graduated from University of Kaiserslautern, Germany. He was a lecturer at University of Dalat, Vietnam, and a visiting scholar at University of Kaiserslautern.

met NCTS Director, Prof. Jungkai Chen at a conference in Vietnam, and that was a great opportunity to discuss with him about a postdoc position in Taiwan.

In NCTS, I work for a research group on algebraic geometry led by Director Chen, and we have visitors to join us from time to time. I was selected for an exchange program signed by NCTS and KIAS, which has created a great opportunity for me to discuss with Prof. Bumsig Kim at KIAS for my publications.

# **Rulin Kuan**

was a junior specialist at University of California, Irvine. She was awarded as an Outstanding Postdoc by Ministry of Science and Technology, Taiwan. She is now an assistant professor at National Cheng Kung University, Taiwan.

CTS is located at National Taiwan University, with the richest academic resources in Taiwan. NCTS has successfully created cooperation opportunities with three other research institutes located at NTU, including Department of Mathematics, Taida Institute for Mathematical Sciences, and The Institute of Mathematics, Academia Sinica. I have often attended various activities co-organized by NTU, NCTS, TIMS and AS, and the community shares the most academic resources in Taiwan. I appreciate NCTS as a good place for me to concentrate on my learning and research; besides, NCTS has supported me to attend international conferences abroad.



# **Yunchang Seol**

graduated from Chung-Ang University, South Korea. He was an instructor in calculus at Chung-Ang University.

very time I visit universities in my home, Korea, I suggest students to apply for a postdoc position at NCTS, the freest research environment. NCTS doesn't ask postdocs for extra works, so we can always focus on our own research. I hope and recommend that people desiring an amazing environment for research to take such a golden opportunity at NCTS.

# **Postdoc Alumni**

His memories at NCTS are still vivid even he had already left NCTS for 4 years, and let's read how deeply he misses his life here!

# Tatsuki Hayama

got his Ph.D. at Osaka University. He was a postdoc at Universite Paris 13, invited researcher at The Japan-U.S. Mathematics Institute (JAMI), and a visiting assistant professor at Tsinghua University. He is now a lecturer at Department of Business Administration, Senshu University.

was a postdoc at National Taiwan University from 2010 to 2012. My mentor at that time was the current NCTS Director, Prof. Jungkai Chen, who provided me a nice environment for research. I had enough time to discuss with my mentor and his students, by which I could concentrate on my own research interests and broaden my knowledge about all the related subjects.

It was my first visit to Taiwan and I didn't know Mandarin at all; I however didn't encounter any trouble getting used to living in Taiwan, thanks to NCTS's genuine hospitality. They arranged a dorm room for me close to the campus, and the service was great for foreigners. There were various amazing restaurants around NCTS, including Chinese, Japanese and other international cuisines, which were definitely significant for my research!

I really appreciate the kindness of the Taiwanese researchers at NCTS, who had become my lifelong friends. They helped me a lot, and that made my research memories in Taiwan even more valuable.













Prof. Yunping Jiang is a Distinguished Professor at The City University of New York, and he has worked at many mathematical institutes around the world, including Institut des Hautes Études Scientifiques (IHES), Institute for Mathematical Research (FIM)-ETHZ, Academy of Mathematics and Systems Science (AMSS), and Chinese Academy of Sciences (CAS). He has served as an editor of Transactions and Memoirs of American Mathematical Society.

CTS has made workshops and conferences in dynamical systems successful – the friendly director and the best staff support and form a professional team. I have visited many research centers for mathematical sciences around the world, and NCTS is a very established one from the service point of view. NCTS arranges airport pick-up and accommodation for every single visitor, which is a significant factor to evaluate such a center. NCTS has done very well to promote the research of dynamical systems in Asia, and it's a great place to communicate with my colleagues. I could name a lot of active researchers in dynamical systems who have visited and conducted re-



2016 China, Hong Kong, Taiwan Joint Conference on Dynamical Systems

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search at NCTS. As I work at NCTS longer, I have experienced deeper how well-structured the center is. This good structure is represented by the committee who governs NCTS's research programs, including scientific members, center scientists, NCTS scholars, and distinguished scholars. Rotation policies are applied, which keeps the center refreshed and strengthened. I am planning to organize several workshops in 2017 and 2018 for dynamical systems and the related topics, which will create chances for my collaborators to visit NCTS, the international research center.



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