



THE 19th (2011) WORKSHOP ON DIFFERENTIAL EQUATIONS

Jan. 14-17, 2011

成功大學光復校區國際會議廳

Proceedings

Sponsor

National Science Council (DIC and MRPC)
National Cheng Kung University
National Center for Theoretical Sciences

The 19th Workshop on Differential Equations and Its Applications

January 14 ~ 17, 2011

Purpose:

The purpose of this workshop is to provide a platform for exchanging ideas, experiences, and current results, as well as on-going problems among researchers in the field of differential equations, dynamical systems, and their applications. Based on consideration of the geographical environment and according to a number of collaborations with the Japanese, Korean, German, and US researchers in past years, such as Professor Rainer Kress from Goettingen University, Professor Yoshio Tsutsumi from Kyoto University, and Professor Gen Nakamura from Hokkaido University who support the idea of hosting a workshop as an opportunity of communication. We hope this will enhance the original collaboration and create new relationships between the attendees can be expected in the near future.

Venue:

International Conference Hall, National Cheng Kung University

Organizer:

Min-Hung Chen, National Cheng Kung University
Yung-Fu Fang, National Cheng Kung University
Jong-Sheng Guo, Tamkang University
Suchung Hou, National Cheng Kung University
Kuo-Ming Lee, National Cheng Kung University
Wen-Ching Lien, National Cheng Kung University
Ching-Lung Lin, National Cheng Kung University
Yoshio Tsutsumi, Kyoto University
Chern-Shuh Wang, National Cheng Kung University

Sponsors:

NSC Math Research Promotion Center,
NSC Department of International Cooperation,
National Center for Theoretical Science (South), and
National Cheng Kung University.

Plenary Speakers:

Rainer Kress, University Goettingen
Tai-ping Liu, Academia Sinica
Gen Nakamura, Hokkaido University
Yoshio Tsutsumi, Kyoto University

Invited Speakers:

Differential Equations:

Chao-Nien Chen, National Changhua University of Education

Yi-Chiuan Chen, Academia Sinica

Jann-Long Chern, National Central University

John M. Hong, National Central University

Jin-Cheng Jiang, Academia Sinica

Nobu Kishimoto, Kyoto University

Hideo Kozono, Tohoku University

Sanghyuk Lee, Seoul National University

Ming-Chia Li, National Chiao Tung University

Tai-chia Lin, National Taiwan University

Kenji Nakanishi, Kyoto University

Takayoshi Ogawa, Tohoku University

Tohru Ozawa, Waseda University

Hideo Takaoka, Hokkaido University

Kotaro Tsugawa, Nagoya University

Jenn-Nan Wang, National Taiwan University

Applications:

Jeng-Tzong Chen, National Taiwan Ocean University

Jong-Sheng Guo, Tamkang University

Sze-Bi Hsu, National Tsing Hua University

Chien-Sen Huang, National Sun Yat-sen University

Chi-Chuan Hwang, National Cheng Kung University

Hideo Ikeda, Toyama University

Yuusuke Iso, Kyoto University

Li-Ren Lin, National Taiwan University

Cheng-Chien Liu, National Cheng Kung University

Chin-Yueh Liu, National University of Kaohsiung

Masayasu Mimura, Meiji University

Hirokazu Ninomiya, Meiji University

Tsorngh-Whay Pan, University of Houston

Chun-Hao Teng, National Chiao Tung University

Chin-Tien Wu, National Chiao Tung University

Jonathan Wylie, City University of Hong Kong

Shoji Yotsutani, Ryukoku University

Jan. 14			
Time	Chairman	Speaker	Title
15:00~16:00	Registration		
16:10~16:30	Open Ceremony(Vice President: Hwung-Hweng Hwung)		
16:40~17:30	G. Nakamura	Tai-ping Liu	Invariant Manifolds for Stationary Boltzmann Equation
18:00~	Reception		

Jan. 15			
Time	Chairman	Speaker	Title
08:55~09:45	Hwaichiuan Wang	Gen Nakamura	Inverse boundary value problem for anisotropic heat operators (Dynamical probe method for anisotropic heat conductors)
09:50~10:30	Hwaichiuan Wang	Hideo Takaoka	A priori estimates and weak solutions for the derivative nonlinear Schrödinger equations on torus
	Sze-Bi Hsu	Masayasu Mimura	Segregation property in a tumor growth PDE model with contact inhibition
10:30~11:00	Coffee Break		
11:00~11:40	Hideo Takaoka	Jenn-Nan Wang	Quantitative uniqueness for Maxwell's equations with Lipschitz anisotropic media and asymptotic behaviors of nontrivial solutions
	Shin-H. Wang	Sze-Bi Hsu	A Lotka-Volterra Competition Model with Seasonal Succession
11:40~12:20	H. Takaoka	T. Ogawa	Singular limit problem for a quantum drift-diffusion system
	Shin-H. Wang	H. Ninomiya	Non-planar traveling waves of reaction-diffusion equations
12:20~14:00	Lunch		
14:00~14:40	Jen-H. Chang	Tai-chia Lin	Ground state of two-component Gross-Pitaevskii functionals
	Masayasu Mimura	Hideo Ikeda	Dynamics of traveling fronts in some heterogeneous diffusive media
14:40~15:20	Jen-H. Chang	Sanghyuk Lee	On pointwise convergence of the Schrödinger equations
	M. Mimura	Jong-S. Guo	Motion by curvature of planar curves with two free end points
15:20~16:00	Coffee Break		
16:00~16:40	Chiun-Chuan Chen	Chao-Nien Chen	Turing patterns and standing waves of FitzHugh-Nagumo type systems
	Ming-Chih Lai	T.W. Pan	Rotating suspensions of balls in a fully filled cylinder

16:40~17:20	Chiun-Chuan Chen	Kotaro Tsugawa	Local well-posedness of the KdV equations with almost periodic initial data
	Ming-Chih Lai	Jonathan Wylie	Drawing of viscous threads with temperature-dependent viscosity
18:00~	Banquet		

Jan. 16			
Time	Chairman	Speaker	Title
08:55~09:45	Tai-ping Liu	R. Kress	Huygens' principle and iterative methods in inverse obstacle scattering
09:50~10:30	M.C. Li	T. Ozawa	Life span of positive solutions to semilinear heat equations
	Cheng-Chien Liu	Jeng-Tzong Chen	Focusing of seismic wave and harbor resonance by using null-field integral equations
10:30~11:00	Coffee Break		
11:00~11:40	H. Kozono	Ming-C. Li	Chaos for multidimensional perturbations of dynamical systems
	Chung Kwong Law	Shoji Yotsutani	Multiplicity of solutions to a limiting system in the Lotka-Volterra competition with cross-diffusion
11:40~12:20	Hideo Kozono	Kenji Nakanishi	Global dynamics beyond the ground energy for the focusing nonlinear Klein-Gordon equation
	C. K. Law	C.-C. Liu	Solving the radiative transfer equation for remote sensing of ocean color
12:20~14:00	Lunch		
14:00~14:40	Jyh-Hao Lee	Jann-Long Chern	Uniqueness of Topological Solutions and the Structure of Solutions for the Chern-Simons System with Two Higgs Particles
	Chi-Tien Lin	Chien-Sen Huang	A LOCALLY CONSERVATIVE EULERIAN-LAGRANGIAN FINITE DIFFERENCE WENO METHOD FOR ADVECTION EQUATION
14:40~15:20	Jyh-Hao Lee	Yi-C. Chen	Family of Julia Sets as Orbits of Differential Equations
	Chi-Tien Lin	C.-H. Teng	Pseudospectral penalty method for optical waveguide mode analysis
15:20~16:00	Coffee Break		
16:00~16:40	Chien-Sen Huang	Chin-Tien Wu	A numerical study on Monge-Ampere equation arising from geometric optical design
16:40~17:20		Chin-Y. Liu	Toward A Second Order Description of Neuronal Networks
16:00~16:30	Tsung-fang Wu	Kishimoto	Local well-posedness for the Zakharov system on torus
16:30~17:00		Jin-C. Jiang	Smoothing property of gain term of Boltzmann collision kernel

17:00~17:30		Li-Ren Lin	Elementary proofs of two properties of ground states of spin-1 Bose-Einstein condensates

Jan. 17			
Time	Chairman	Speaker	Title
09:00~9:50	Y. Tsutsumi	H. Kozono	Leray's inequality in general multi-connected domains in \mathbb{R}^n
	Chin-Tien Wu	Yuusuke Iso	Analysis of the transport equation as a mathematical model of the optical tomography
09:50~10:40	Yoshio Tsutsumi	John M. Hong	Generalized Glimm method and geometric singular perturbations to nonlinear balance laws
10:40~11:10	Coffee Break		
11:10~12:00	Rainer Kress	Y. Tsutsumi	Stability of stationary solution for the Lugiato-Lefever equation
12:00~	City Tour		

The 19th Workshop on Differential Equations and Its Applications

Hwung-Hweng Hwung
Senior Executive Vice President
National Cheng Kung University

Good Afternoon and welcome to the National Cheng Kung University. I was asked by my colleague Professor Yung-Fu Fang, the chairman of the organizing committee, to make opening remarks at this very exciting Workshop.

First of all, let me mention that this Workshop is co-sponsored by the National Science Council, the National Cheng Kung University, and the National Center for Theoretical Sciences, and co-organized by Professor Jong-Shenq Guo at the Department of Mathematics, Tamkang University, Professor Yoshio Tsutsumi at the Department of Mathematics, Kyoto University and our colleagues at the Department of Mathematics, and the chairman of the department Ruey-Lin Sheu. Let us thank their hard work.

I am a Professor of Hydraulics and Ocean Engineering at the National Cheng Kung University. Obviously I am not a mathematician, but you may count me as an applied mathematician since I have used a lot of mathematics in my research, for example, wave modulation and wave dynamics. Real world problems contain comprehensive issues that require thorough understanding of the underlining principles of physics, mathematical modeling, theoretical analysis and numerical simulations, which is exactly what you are doing and is made abundantly clear in the range of topics covered in this Workshop.

I believe that the Workshops on differential equations and its applications in the past 18 years did provide an excellent platform for exchanging ideas, experiences and results among researchers. I hope that this year's Workshop will not only play the same role, but also enhance existing collaborations and create new relationships and collaborations among the attendees in the near future.

I also strongly believe that National Cheng Kung University can achieve prominence as a comprehensive university, and have an intellectually robust mathematics and applied mathematics program matters. For this reason, I am very pleased to see this Workshop is held here on campus.

To our distinguished participants from abroad and domestic, I would like to welcome all of you to sunny Tainan. Besides our domestic participants, there are attendees and speakers from Germany, Japan, Korea and United States. We thank you for your participation. Especially we would like to thank Professor Rainer Kress from Goettingen University, Professor Yoshio Tsutsumi from Kyoto University, Professor Gen Nakamura from Hokkaido University and Professor Tai-ping Liu from the Institute of Mathematics, Academia Sinica. Thank you for your support.

I hope you reach your goal in this Workshop. For the foreign guests, I hope you have an enjoyable time in Tainan.

Thank you.