

**THE TENTH INTERNATIONAL CONFERENCE  
ON RECENT ADVANCES IN  
APPLIED DYNAMICAL SYSTEMS**

June 9---12, 2016,  
Jiangsu Normal University  
Xuzhou, Jiangsu, China

**PROGRAMS**

## **Organizers:**

Zhejiang Normal University  
Guangzhou University  
Shanghai Normal University  
Jiangsu Normal University

## **Financial support:**

National Natural Science Foundation of China  
Jiangsu Normal University

## **Scientific Committee:**

Co-Chairs: Shui-Nee Chow (Georgia Institute of Technology, USA)  
Peter Bates (Michigan State University, USA)  
John Mallet-Paret (Co-Chair)

Members:

Nicholas Alikakos, Peter Bates(Co-Chair), Yongluo Cao, Guanrong Chen, Sui Sun Cheng, Shui-Nee Chow(Co-chair), L.O. Chua, Zhaosheng Feng, Xilin Fu, Giorgio Fusco, Shaobo Gan, Weigao Ge, Boling Guo, Lihong Huang, Wen Huang, Wenzhang Huang, Christopher Jones, Tibor Krisztin, Yang Kuang, Chengzhi Li, Jia Li, Wantong Li, Weigu Li, Yong Li, Xiao-Biao Lin, Zhiwu Lin, Bin Liu, Weishi Liu, Kening Lu, Zhien Ma, John Mallet-Paret (Co-Chair), Dingbian Qian, Shigui Ruan, Wenxian Shen, Junping Shi, Yuefei Wang, Junjie Wei, Lan Wen, Jianhong Wu, Zhihong Xia, Dongmei Xiao, Daoyi Xu, Yuantong Xu, Jun Yan, Xiangdong Ye, Yingfei Yi, Jiangong You, Rong Yuan, Xiaoping Yuan, Chongchun Zeng, Meirong Zhang, Weinian Zhang, Xiang Zhang, Xiaoqiang Zhao, Shengfan Zhou, Deming Zhu, Huaiping Zhu, Xingfu Zou

## **Organizing Committee:**

Honored Chair: Ruguang Zhou (Vice President, Jiangsu Normal University, China)  
Chair: Jibin Li (Zhejiang Normal University and KUST, China)  
Co-Chairs: Jianshe Yu (Guangzhou University, China)  
Maoan Han (Shanghai Normal University, China)

Members:

Junping Shi (College of William and Mary, USA)  
Zengji Du, Rui Peng, Xiaojie Lin, Jiang Liu (all from Jiangsu Normal University)

## **Conference Venue:**

- On June 9--12, the conference will be held in Jinchen Jiari Hotel near Jiangsu Normal University, Fenghua South Road (风华南路, 风华园对面). Hotel rooms are available to conference participants for RMB 238 or 268 per day per room.

## Meals:

- Welcome Reception: June 9 at 19:00 in Jinchen Jiari Hotel Building A on the first floor.
- For all days, meals will be in buffet form at dining hall of Jinchen Jiari Hotel on the first and second floor.
- Breakfast time: 6:30; Lunch time: 12:00; Supper time: 18:30.

## Conference Secretary Room: (会务组)

Jinchen Jiari Hotel Building A, Room 6528 .

## Thursday, June 9

Registration Day (Jinchen Jiari Hotel)

## Friday, June 10

Opening Ceremony (Second floor at Jinchen Jiari Hotel Building A)

| Time       | Room | Chair       | Speaker   | Title  |
|------------|------|-------------|---|--|
| 8:00-8:40  |      | Jianshe Yu  | 1. Ruguang Zhou<br>(Vice President of<br>Jiangsu Normal<br>University)<br>2. Kening Lu<br>(Scientific<br>Committee)<br>3. Jibin Li<br>(Organizing<br>Committee)<br>4. Zengji Du (Dean<br>of School of<br>Mathematical<br>Science) | Opening ceremony, group photo  |
| 8:40-9:20  | 1    | Chengzhi Li | Maoan Han   | Theory of Rotated Periodic Equations<br>and Application                                  |
| 9:20-10:00 |      |             | Jianshe Yu  | On uniqueness of periodic solution<br>for the equation $x'(t)=-f(x(t-1))$                |
| 8:40-9:20  | 2    | Kening Lu   | Goong Chen  | Computation, Simulation and<br>Visualization of Pulverizing Aircraft<br>Mountain Crashes |
| 9:20-10:00 |      |             | Wieslaw<br>Krawcewicz   | Dihedral Molecular Congurations<br>Interacting by Lennard-Jones and<br>Coulomb Forces    |
| 8:40-9:20  | 3    | Zengji Du   | Chongchun Zeng  | Instability, index theorems, and<br>exponential dichotomy of<br>Hamiltonian PDEs         |
| 9:20-10:00 |      |             | Zhiwu Lin   | Metastability of Kolmogorov flows  |

| 10:00-10:20 Tea Break |   |                |                |   |
|-----------------------|---|----------------|----------------|---|
| 10:20-11:00           | 1 | Chongchun Zeng | Wen Huang      | Common difference sets, higher order recurrence sets and related problems                                   |
| 11:00-11:40           |   |                | Peter Kloeden  | Asymptotic invariance of forward attracting sets of nonautonomous dynamical systems                         |
| 11:40-12:00           |   |                | Wenmeng Zhang  | Differentiability of the conjugacy in the Hartman-Grobman Theorem   |
| 10:20-11:00           | 2 | Xiaobiao Lin   | Wantong Li     | Traveling Wave Solutions of Lotka-Volterra Competition Systems with Nonlocal Dispersal in Periodic Habitats |
| 11:00-11:40           |   |                | Bingtuan Li    | Population Spatial Spread in A Shifting Habitat   |
| 11:40-12:00           |   |                | Yuting Ding    | Bifurcation analysis and chaos switchover phenomenon in a nonlinear financial system with delay feedback    |
| 10:20-11:00           | 3 | Shigui Ruan    | Jia Li         | New revised models for interactive wild and sterile mosquitoes  |
| 11:00-11:40           |   |                | Yanni Xiao     | Piecewise virus-immune dynamic model with HIV-1 RNA-guided therapy  |
| 11:40-12:00           |   |                | Maoxing Liu    | The dynamic behaviors of the delayed spread diseases  |
| 12:00-14:00 Lunch     |   |                |                |   |
| 14:00-14:40           | 1 | Maoan Han      | Pei Yu         | Bifurcation of Limit Cycles in 3-dimensional Competitive Lotka-Volterra Systems                             |
| 14:40-15:20           |   |                | Qigui Yang     | Dynamics of a 5D hyperchaotic system based on modified generalized Lorenz system                            |
| 15:20-16:00           |   |                | Zhaosheng Feng | Lie Symmetry Methods to Degenerate Differential Equations   |
| 14:00-14:40           | 2 | Wantong Li     | Xiaobiao Lin   | Spatial Dynamics and Concatenated Wave Patterns Consisting of Non-intersecting Traveling Waves              |
| 14:40-15:20           |   |                | Xing Liang     | Propagation Phenomena of Diffusion Systems in Heterogenous Media  |
| 15:20-16:00           |   |                | Shangbin Ai    | Traveling waves for a predator-prey system  |
| 14:00-14:40           | 3 | Jia Li         | Shigui Ruan    | From Malaria to Zika: Modeling the Transmission Dynamics and Control of Mosquito-Borne Diseases             |
| 14:40-15:20           |   |                | Huaiping Zhu   | Bifurcation and dynamics of compartmental models for mosquito-borne diseases                                |
| 15:20-16:00           |   |                | Lin Wang       | Formation, bifurcations and switches of flocking in a two-agent flock with processing delay                 |

|                              |   |                |                |   |
|------------------------------|---|----------------|----------------|---|
| 14:00-14:40                  | 4 | Zhaosheng Feng | Yuan Yuan      | A Time-Delayed Epidemic Model for Ebola Disease Transmission  |
| 14:40-15:20                  |   |                | Mingshu Peng   | Some results about delayed systems and discrete-time dynamical systems  |
| 15:20-16:00                  |   |                | Xiaohua Zhao   | Further Simplification for normal form of Generalized Hamiltonian Systems   |
| <b>16:00-16:20 Tea Break</b> |   |                |                |   |
| 16:20-17:00                  | 1 | Xiaohua Zhao   | Xilin Fu       | Flow Switchability in Discontinuous Dynamical Systems   |
| 17:00-17:40                  |   |                | Changjian Liu  | A new criterion for the monotonicity of two Abelian integrals   |
| 17:40-18:00                  |   |                | Lijuan Sheng   | On the number of limit cycles by perturbing a piecewise smooth Lienard system   |
| 16:20-17:00                  | 2 | Xiaoqiang Zhao | Zhicheng Wang  | Time periodic traveling waves for a periodic and diffusive SIR epidemic model   |
| 17:00-17:40                  |   |                | Jian Fang      | Accelerating propagation in delayed nonlocal dispersal equations  |
| 17:40-18:00                  |   |                | Lingli Xie     | Study on the Geometrical Properties and Existence of Orbit Homoclinic to Saddle Node in Three-dimensional C2 Autonomous Vector Fields |
| 16:20-17:00                  | 3 | Lin Wang       | Yijun Lou      | Age-structured within-host HIV dynamics with multiple target cells  |
| 17:00-17:40                  |   |                | Shengqiang Liu | A nosocomial-pathogens-infections model with impulsive antibiotics treatment on multiple bacterias                                    |
| 17:40-18:00                  |   |                | Juan Li        | Will nutrient input and toxin from phytoplankton generate algal blooms in shallow lakes?  |
| 16:20-17:00                  | 4 | Mingshu Peng   | Feng Xie       | A geometric approach to stationary defect solutions in one space dimension  |
| 17:00-17:40                  |   |                | Xianlong Fu    | Asymptotic analysis of a size-structured cannibalism population model with delayed birth process                                      |
| 17:40-18:00                  |   |                |                |   |

## Saturday, June 11

### ● (Second floor at Jincheng Jiari Hotel Building A)

| Time                         | Room | Chair       | Speaker        | Title   |
|------------------------------|------|-------------|----------------|---|
| 8:00-8:40                    | 1    | Yi Wang     | Dongmei Xiao   | Dynamics, integrability and topology for Lotka--Volterra Hamiltonian systems in $\mathbb{R}_+^4$  |
| 8:40-9:20                    |      |             | Meirong Zhang  | Measure Differential Equations: From Absolutely Continuous to Completely Singular Measures  |
| 9:20-10:00                   |      |             | Chengzhi Li    | Periodic Orbits in 3-Dimensional Systems and Application to a Perturbed Volterra System   |
| 8:00-8:40                    | 2    | Junping Shi | Steve Cantrell | Fitness based prey dispersal and prey persistence in intraguild predation systems   |
| 8:40-9:20                    |      |             | Xingfu Zou     | Asymptotic profiles of steady states for a diffusive SIS epidemic model with mass action infection mechanism  |
| 9:20-10:00                   |      |             | Peixuan Weng   | Dynamical behaviors of two producer-scrounger models  |
| 8:00-8:40                    | 3    | Haibo Chen  | Qiru Wang      | Existence and exponential stability of almost-periodic solutions for neutral BAM neural networks with time-varying delays in leakage terms on time scales |
| 8:40-9:20                    |      |             | Hongjun Cao    | Complete synchronization of discrete-time neuron networks   |
| 9:20-10:00                   |      |             | Rongnian Wang  | Aronszajn-type Topological Regularity for Nonlinear Multi-valued Evolution Equations  |
| <b>10:00-10:20 Tea Break</b> |      |             |                |   |
| 10:20-11:00                  | 1    | Rui Peng    | Junjie Wei     | Bifurcation analysis of a diffusive spruce budworm model with delay   |
| 11:00-11:40                  |      |             | Haiyan Wang    | Partial Differential Equations Arising from Online Social Networks  |
| 11:40-12:00                  |      |             | Yixiang Wu     | Coexistence of competing species for intermediate dispersal rates in a reaction-diffusion chemostat model   |
| 10:20-11:00                  | 2    | Xing Liang  | Yi Wang (USTC) | Traveling Wave Solutions of Lotka-Volterra Competition Systems with Nonlocal Dispersal in Periodic Habitats   |
| 11:00-11:40                  |      |             | Zeng Lian      | Periodic structure and Smale horseshoe for a type of quasi-periodic hyperbolic systems  |
| 11:40-12:00                  |      |             | Hui Liu        | Multiplicity and stability of closed characteristics on compact star-shaped hypersurfaces in $\mathbb{R}^{2n}$  |

|                          |   |                |               |  |
|--------------------------|---|----------------|---------------|--|
| 10:20-11:00              | 3 | Qiru Wang      | Haibo Chen    | Generalized quasilinear asymptotically periodic Schrödinger equations with critical growth                   |
| 11:00-11:40              |   |                | Shiwang Ma    | Bound state solutions of Kirchhoff type problems with critical exponent                                      |
| 11:40-12:00              |   |                | Jiangjun Liu  | Birkhoff normal form for integrable HPDEs  |
| 10:20-11:00              | 4 | Dongmei Xiao   | Jingli Ren    | Bifurcations in a Seasonally Forced Predator-Prey Model with Generalized Holling Type IV Functional Response |
| 11:00-11:40              |   |                | Baogao Jia    | Comparison Theorems and Asymptotic Behavior of Solutions of Discrete Fractional Equations                    |
| 11:40-12:00              |   |                | Feifei Du     | Monotonicity and convexity for nabla fractional $(q,h)$ -differences   |
| <b>12:00-14:00 Lunch</b> |   |                |               |  |
| 14:00-14:40              | 1 | Xingfu Zou     | Junping Shi   | Global Existence of Solutions and Uniform Persistence of Diffusive Predator-Prey Model with Prey-Taxis       |
| 14:40-15:20              |   |                | Weihua Jiang  | Bifurcation in a reaction - diffusion predator - prey model  |
| 15:20-16:00              |   |                | Zhian Wang    | Asymptotic stability of bacterial population chemotaxis  |
| 14:00-14:40              | 2 | Meirong Zhang  | Zhenxin Liu   | Recurrent solutions for stochastic differential equations  |
| 14:40-15:20              |   |                | Xiaoying Han  | Predation models with indirect effects in fluctuating environments   |
| 15:20-16:00              |   |                | Jianhua Huang | Dynamics and ergodicity of stochastic Magneto-hydrodynamic equations   |
| 14:00-14:40              | 3 | Shengqiang Liu | Yonghui Xia   | Linear Quaternion Differential Equations: Basic Theory and Fundamental Results                               |
| 14:40-15:20              |   |                | Hui Wan       | The backward bifurcation in mosquito-borne diseases  |
| 15:20-16:00              |   |                | Xueying Wang  | Mathematical Modeling of Cholera Epidemics   |

|                              |   |               |                |   |
|------------------------------|---|---------------|----------------|---|
| 14:00-14:40                  | 4 | Shangbin Ai   | Bo Deng        | Spike Renormalization: One Big Chaos  |
| 14:40-15:20                  |   |               | Weishi Liu     | Destabilization effects of viscosity and non-uniformity of nozzles on stationary subsonic waves of isentropic gas flows |
| 15:20-16:00                  |   |               | Shengfu Deng   | Generalized solitary-wave solutions for gravity capillary waves on water —a dynamic approach                            |
| <b>16:00-16:20 Tea Break</b> |   |               |                |   |
| 16:20-17:00                  | 1 | Peixuan Weng  | Shangjiang Guo | Asymptotic analysis of a size-structured cannibalism population model with delayed birth process                        |
| 17:00-17:20                  |   |               | Daqing Jiang   | Study on the stationary distributions and periodic solutions of stochastic predator-prey models                         |
| 17:20-17:40                  |   |               | Heping Jiang   | Turing-Hopf bifurcation in a diffusive mussel-algae model   |
| 17:40-18:00                  |   |               | Jinfa Cheng    | On Fractional Green's Formula and Gauss's Formula   |
| 18:00-18:20                  |   |               |                |   |
| 16:20-17:00                  | 2 | Jianhua Huang | Jifeng Chu     | Stable periodic solutions of singular differential equations  |
| 17:00-17:20                  |   |               | Wengui Hu      | Spatial entropy of multi-dimensional symbolic dynamical systems   |
| 17:20-17:40                  |   |               | Zhiming Wang   | Singular Perturbation Inverse Method and Application to Lure's SPSs   |
| 17:40-18:00                  |   |               | Zhaoxia Wang   | Non-isochronicity of the center in polynomial Hamiltonian systems   |
| 18:00-18:20                  |   |               | Xinsong Yang   | Synchronization And Control for Differential Equations with Discontinuous State on the Right-Hand Sides                 |
| 16:20-17:00                  | 3 | Shiwang Ma    | Hongying Shu   | Bounded global Hopf branches for stage-structured differential equations  |
| 17:00-17:20                  |   |               | Yun Tian       | Center problem of a class of planar switching systems   |



|             |   |           |                |   |
|-------------|---|-----------|----------------|---|
| 17:20-17:40 |   |           | Haihua Liang   | Parallelization of the Lyapunov constants and cyclicity for monodromic singularity of planar polynomial vector fields |
| 17:40-18:00 |   |           | Yanling Tian   | Some properties of a prey-predator system   |
| 16:20-17:00 | 4 | Wen Huang | Juntao Sun     | Homoclinic solutions for a fourth-order ODE system  |
| 17:00-17:20 |   |           | Enhui Shi      | Periodic points for amenable group actions  |
| 17:20-17:40 |   |           | Guohua Zhang   | A result of structure of amenable groups and its application  |
| 17:40-18:00 |   |           | Tao Pan        | Periodic solution of a stochastic logistic equation with periodic impulsive perturbation                              |
| 18:00-18:20 |   |           | Yi Wang (SUFE) | Quasi-periodic solutions of beam equations with the nonlinear terms depending on the time and space variables         |

## Sunday, June 12

### ● (Second floor at Jincheng Jiari Hotel Building A)

| Time                         | Room | Chair        | Speaker         | Title  |
|------------------------------|------|--------------|-----------------|--|
| 8:00-8:40                    | 1    | Junjie Wei   | Xiaoqiang Zhao  | Basic Reproduction Ratios for Periodic Compartmental Models with Time Delay  |
| 8:40-9:20                    |      |              | Yongli Song     | Bifurcation analysis and spatial patterns in the diffusive predator-prey model with herd behavior                        |
| 9:20-10:00                   |      |              | Xiangsheng Wang | Periodic Systems with Time Delay and Avian Influenza Dynamics  |
| 8:00-8:40                    | 2    | Pei Yu       | Yujun Zhu       | Some topological properties and entropy for partially hyperbolic diffeomorphisms   |
| 8:40-9:20                    |      |              | Chunhai Kou     | Time fractional diffusion systems and their applications in control theory   |
| 9:20-10:00                   |      |              | Xianyi Li       | Complicate dynamics for a three dimensional non-chaotic system   |
| 8:00-8:40                    | 3    | Zhen Jin     | Xiaodi Li       |  |
| 8:40-9:20                    |      |              | Hongci Cong     | Birkhoff normal form for some nonlinear PDEs with inner parameter  |
| 9:20-10:00                   |      |              | Lijun Zhang     | Classification and Bifurcation of a Class of Second-Order ODEs and Its Application to Nonlinear PDEs                     |
| <b>10:00-10:20 Tea Break</b> |      |              |                 |  |
| 10:20-11:00                  | 1    | Yongli Song  | Yuming Chen     | Instability and non-synchronization in delayed differential equations induced by using fast and random switching         |
| 11:00-11:40                  |      |              | Wenxin Qin      | On Non-Exact Monotone Twist Maps   |
| 11:40-12:20                  |      |              | Chuncheng Wang  | Hopf bifurcation for a partial neutral functional differential equation  |
| 10:20-11:00                  | 2    | Xianglong Fu | Chufen Wu       | Epidemic waves of a spatial SIR model in combination with random dispersal and non-local dispersal                       |
| 11:00-11:40                  |      |              | Shiliang Wu     | Front-like entire solutions for several evolution systems  |
| 11:40-12:20                  |      |              | Ji Li           | Nonautonomous perturbation and chaotic behavior  |
| 10:20-11:00                  | 3    | Daqing Jiang | Xuemei Li       | On the persistence of quasi-periodic invariant tori in bifurcation theory  |
| 11:00-11:40                  |      |              | Jianguo Si      | Quasi-Periodic Solutions for the Reversible Derivative Nonlinear Schrödinger Equations with Periodic Boundary Conditions |

|                    |   |           |               |  |
|--------------------|---|-----------|---------------|--|
| 11:40-12:20        |   |           | Jie Rui       | Quasi-periodic solutions for quasi-periodically forced nonlinear Schrödinger equations                       |
| 10:20-11:00        | 4 | Xianyi Li | Zhengxin Zhou | Research on the center-focus problem by using a new method   |
| 11:00-11:40        |   |           | Yuanshi Wang  | Necessary and sufficient conditions for the existence of periodic solutions in a mutualism-parasitism system |
| <b>12:20 Lunch</b> |   |           |               |  |