9th Colloquium

on the

Qualitative Theory of Differential Equations

Bolyai Institute, University of Szeged

June 28–July 1, 2011, Szeged, Hungary

Organizing Committee:

M. Bartha, A. Dénes, Á. Garab, L. Hatvani, J. Hegedűs, J. Karsai, D. Knipl,
T. Krisztin (chair), G. Makay, J. Nagy-György, M. Polner, G. Röst, A. Szijártó,
J. Terjéki, R. Vajda, G. Vas

We plan to publish the **Conference Proceedings** in electronic form on the World Wide Web pages of the Electronic Journal of Qualitative Theory of Differential Equations in a separate volume. Papers for this volume are to be submitted via the EJQTDE Editorial System in English by July 31, 2011. All papers will be refereed. Except for written versions of plenary talks, papers should embody new results with proofs, where appropriate. All papers should correspond to the Mathematical Reviews rule of reviewing proceedings of conferences (see Editorial Statement in MR 98a, for example). For more information on the format of the papers see the WWW pages:

http://www.math.u-szeged.hu/ejqtde/

http://www.math.u-szeged.hu/EditorEJQTDE/

Tuesday (June 28)

Morning

Plenary Section   **Chair: Tibor Krisztin**

09:00–09:15 **Opening Ceremony**

09:20–10:10 **Sell, George:** Navier–Stokes equations with Navier boundary conditions for an oceanic model

10:20–11:10 **Haller, George:** Variational theory of hyperbolic Lagrangian coherent structures

Section A   **Chair: Vladimir Răsvan**

11:40–12:10 **Hofbauer, Josef:** Minmax via Lyapunov

12:15–12:45 **Farkas, József:** Steady states in a structured epidemic model with Wentzell boundary condition

Section B   **Chair: Milan Medveď**

11:40–12:10 **Obaya, Rafael:** Uniform persistence with applications to finite delay cellular neural networks

12:15–12:45 **Došlý, Ondřej:** Half-linear differential equations: conditional oscillation and its applications

Afternoon

Section A   **Chair: Teresa Faria, Ferenc Hartung**

15:00–15:30 **Győri, István:** History-dependent decay rates for a logistic equation with infinite delay

15:35–16:05 **Liz, Eduardo:** Bubbles for delay differential equations with negative feedback

BREAK

16:30–16:50 **Slezák, Bernát:** On the parameter depedence of the resolvent function of functional differential equations

16:50–17:10 **Ungureanu, Viorica Mariela:** A class of nonlinear differential equations on ordered Banach spaces

17:10–17:30 **Shamolin, Maxim V.:** Integrability and nonintegrability in terms of transcendental functions in dynamics

17:30–17:50 **Zemánek, Petr:** New results in theory of Friedrichs extension

17:50–18:10 **Maghakyan, Abraham:** Maximum principles and boundary value problem for neutral functional differential equations

Tuesday (June 28)

Section B   **Chair: Mihály Pituk, Eduardo Liz**

15:00–15:30 **Rontó, András:** On the solvability of some boundary value problems for linear functional differential equations

15:35–16:05 **Domoshnitsky, Alexander:** Maximum principles and stability of delay differential equations

BREAK

16:30–16:50 **Garab, Ábel:** Unique periodic orbits of a DDE with piecewise linear feedback function

16:50–17:10 **Vas, Gabriella:** Periodic orbits for delay differential equations

17:10–17:30 **Gamliel, Dan:** Using the Lambert function in an exchange process with a time delay

17:30–17:50 **Goltser, Yakov:** Integro-differential equations with distributed delay or advanced

17:50–18:10 **Terjéki, József:** On the convergence of solutions of nonautonomous functional differential equations

Section C   **Chair: Josef Diblík**

16:30–16:50 **Vítovec, Jiří:** Rapid variation on time scales with applications to dynamic equations

16:50–17:10 **Krejčová, Jana:** Oscillation of the fourth-order nonlinear difference equations

17:10–17:30 **Nechvátal, Luděk:** A note on certain linear fractional difference equations

17:30–17:50 **Veselý, Michal:** Almost periodic skew-Hermitian and skew-symmetric linear differential systems

17:50–18:10 **Kosovalic, Nemanja:** Delayed difference equation exhibiting a huge number of stable periodic orbits

18:30–21:00 **Welcome Party**

Wednesday (June 29)

Morning

Plenary Section   **Chair: István Győri**

09:00–09:50 **Nussbaum, Roger:** Positive linear operators, tensor products and delay-differential equations

10:00–10:50 **Mallet-Paret, John:** Some qualitative features of delay-differential equations with variable delays

Section A   **Chair: Tony Humphries**

11:20–11:50 **Lani-Wayda, Bernhard:** Hopf bifurcation for semiflows in Banach spaces

11:55–12:25 **Sieber, Jan:** Periodic orbits in differential equations with state-dependent delay

12:30–13:00 **Lauterbach, Reiner:** Absolutely irreducible group actions and bifurcation

Section B   **Chair: Ondřej Došlý**

11:20–11:50 **Medveď, Milan:** On the asymptotic behavior of solutions of non-linear differential equations of integer and also non-integer orders

11:55–12:25 **Horváth, Miklós:** Uniqueness problems in inverse scattering and the spectral shift function

12:30–13:00 **Faragó, István:** Comparison of different stability and convergence notions in numerical analysis

Afternoon

Section A   **Chair: Rafael Obaya, Xingfu Zou**

15:00–15:30 **Pituk, Mihály:** Asymptotic behavior of the solutions of a linear difference equation with continuous arguments

15:35–16:05 **Diblík, Josef:** On the critical case in oscillation for differential equations with a single delay and with several delays

BREAK

16:30–16:50 **Dénes, Attila:** Eventual stability properties of a non-autonomous Lotka–Volterra equation

16:50–17:10 **Székely, László:** On a SEIR epidemic model with delay

17:10–17:30 **Knipl, Diána:** Dynamic model of pandemic influenza: age structure, vaccination and long distance travel networks

17:30–17:50 **Csizmadia, László:** On the stabilization of the upper equilibrium of the pendulum

17:50–18:10 **Nagy, Bálint:** Bifurcations of an ENSO-model

Wednesday (June 29)

Section B **Chair: Jacques Belair, Miklós Horváth**

15:00–15:30 **Zou, Xingfu:** Global dynamics of a delay differential equation with spatial non-locality in an unbounded domain

15:35–16:05 **Wang, Haiyan:** Spreading speeds and traveling waves for non-cooperative reaction-diffusion systems

BREAK

16:30–16:50 **Szántó, Iván:** Coexistence of limit cycles and invariant conic in a class of polynomial systems on the plane

16:50–17:10 **Šimon Hilscher, Roman:** Oscillation theory of Sturm–Liouville equations with nonlinear dependence in spectral parameter

17:10–17:30 **Řehák, Pavel:** Asymptotic theory of coupled nonlinear differential systems in the framework of regular variation

17:30–17:50 **Bognár, Gabriella:** On similarity solutions for boundary layer flows

17:50–18:10 **Partsvania, Nino:** On two-point boundary value problems for two-dimensional nonlinear differential systems with strong singularities

Section C **Chair: András Rontó**

16:30–16:50 **Fišnarová, Simona:** Half-linear differential equations: Two-parametric conditional oscillation

16:50–17:10 **Haladová, Hana:** Half-linear Euler differential equations in the critical case

17:10–17:30 **Mařík, Robert:** Principal solutions of half-linear equation: yet another integral characterization

17:30–17:50 **Řezníčková, Jana:** A Hartman type asymptotic formula for solutions of nonoscillatory half-linear differential equations

Thursday (June 30)

Morning

Plenary Section   **Chair: László Hatvani**

09:00–09:50 **Walther, Hans-Otto:** On linearization for neutral equations with state-dependent delays

10:00–10:50 **Wu, Jianhong:** Global continuation of periodic solutions of differential systems with state-dependent delay

Section A   **Chair: Bernhard Lani-Wayda**

11:20–11:50 **Simon, László:** Nonlinear second order evolution equations with state-dependent delay

11:55–12:25 **Humphries, Tony:** Dynamics of differential equations with multiple state dependent delays

12:30–13:00 **Hartung, Ferenc:** On second-order differentiability with respect to parameters for differential equations with state-dependent delays

Section B   **Chair: Reiner Lauterbach**

11:20–11:50 **Ruess, Wolfgang M.:** Flow invariance for delay equations

11:55–12:25 **Garay, Barnabás M.:** On two aspects of multivalued dynamics

12:30–13:00 **Răsvan, Vladimir:** Time delays, slope restrictions and monotonicity in nonlinear systems: almost linear behavior

Afternoon

Section A   **Chair: Jan Sieber, László Simon**

15:00–15:30 **Insperger, Tamás:** Equations with delayed and advanced arguments in stick balancing models

15:35–16:05 **Atay, Fatihcan M.:** Laplacian dynamics on graphs with time delays

BREAK

16:30–16:50 **Ladics, Tamás:** On the order of operator splitting methods in reaction-diffusion equations

16:50–17:10 **Erdoğan, Fevzi:** Uniform finite difference schemes for singularly perturbed differential difference equations

17:10–17:30 **Polner, Mónika:** A Hamiltonian structure-preserving vorticity-dilatation formulation of the compressible Euler equations

17:30–17:50 **Hegedűs, Jenő:** Some classical results on the vibrating string revised

17:50–18:10 **Szijártó, András:** Observation problems posed for the Klein–Gordon equation

Thursday (June 30)

Section B   **Chair: István Faragó, Barnabás M. Garay**

15:00–15:30 **Bátkai, András:** Operator splitting for dissipative delay equations

15:35–16:05 **Kovács, Mihály:** The Cahn–Hilliard–Cook equation and its finite element approximation

BREAK

16:30–16:50 **Csikja, Rudolf:** A linear oscillator with hysteresis

16:50–17:10 **Aleroev, Temirkhan S.:** On a class of oscillation of not self-adjoint operators associated with differential equations of fractional order

17:10–17:30 **Ariesanu Pop, Camelia:** Geometrical aspects in the study of Lorenz system

17:30–17:50 **Cheng, Jian:** On the asymptotic stability of a class of perturbed ordinary differential equations with weak asymptotic mean reversion

17:50–18:10 **Awwad, Essam:** On the boundedness of the solutions of nonlinear Volterra integral equations

Section C   **Chair: Alexander Domoshnitsky**

16:30–16:50 **Kundrát, Petr:** On asymptotic properties of differential equations with several power delays

16:50–17:10 **Opluštil, Zdeněk:** Some oscillatory properties of the second-order linear delayed differential equation

17:10–17:30 **Padhi, Seshadev:** Global attractivity of a first order differential equation with applications to some mathematical models

17:30–17:50 **Pati, Smita:** Positive periodic solutions of differential equations with unbounded Green's kernel

17:50–18:10 **Tunç, Cemil:** On the integrability of non-autonomous differential equations of second order with variable deviating argument

19:00–22:00 **Conference Dinner (Rector's Office Building, Dugonics square 13.)**

Friday (July 1)

Morning

Plenary Section   **Chair: Josef Hofbauer**

09:00–09:50 **Constantin, Adrian:** A dynamical systems approach towards isolated vorticity regions for tsunami background states

10:00–10:50 **Mischaikow, Konstantin:** A combinatorial framework for nonlinear dynamics

Section A   **Chair: Wolfgang M. Ruess**

11:20–11:50 **Rezounenko, Alexander:** Some properties of solutions to parabolic partial differential equations with state-dependent delays

11:55–12:25 **Kennedy, Benjamin:** Existence and stability of periodic solutions of a state-dependent delay equation

12:30–13:00 **Hoffman, Aaron:** Multidimensional stability of traveling waves in the discrete bistable equation

Section B   **Chair: Haiyan Wang**

11:20–11:50 **Belair, Jacques:** Distribution of delays in infectious disease models

11:55–12:25 **Faria, Teresa:** Asymptotic behaviour for a Nicholson-type system with patch structure

12:30–13:00 **Röst, Gergely:** Global attractivity principle for functional differential equations

13:00–   **Closing Ceremony**

Notes

Time tables

Tuesday (June 28)

09:00–09:15	*Opening ceremony*		
09:20–10:10	Sell		
10:20–11:10	Haller		
11:40–12:10	Hofbauer	Obaya	
12:15–12:45	Farkas	Došlý	
15:00–15:30	Győri	Rontó	
15:35–16:05	Liz	Domoshnitsky	
16:30–16:50	Slezák	Garab	Vítovec
16:50–17:10	Ungureanu	Vas	Krejčová
17:10–17:30	Shamolin	Gamliel	Nechvátal
17:30–17:50	Zemánek	Goltser	Veselý
17:50–18:10	Maghakyan	Terjéki	Kosovalic
18:30–21:00	*Welcome party*		

Wednesday (June 29)

09:00–09:50	Nussbaum		
10:00–10:50	Mallet-Paret		
11:20–11:50	Lani-Wayda	Medveď	
11:55–12:25	Sieber	Horváth	
12:30–13:00	Lauterbach	Faragó	
15:00–15:30	Pituk	Zou	
15:35–16:05	Diblík	Wang	
16:30–16:50	Dénes	Szántó	Fišnarová
16:50–17:10	Székely	Šimon Hilscher	Haladová
17:10–17:30	Knipl	Řehák	Mařík
17:30–17:50	Csizmadia	Bognár	Řezníčková
17:50–18:10	Nagy	Partsvania	

Time tables

Thursday (June 30)

09:00–09:50	Walther		
10:00–10:50	Wu		
11:20–11:50	Simon	Ruess	
11:55–12:25	Humphries	Garay	
12:30–13:00	Hartung	Răsvan	
15:00–15:30	Insperger	Bátkai	
15:35–16:05	Atay	Kovács	
16:30–16:50	Ladics	Csikja	Kundrát
16:50–17:10	Erdoğan	Aleroev	Opluštil
17:10–17:30	Polner	Ariesanu Pop	Padhi
17:30–17:50	Hegedűs	Cheng	Pati
17:50–18:10	Szijártó	Awwad	Tunç
19:00–22:00	*Conference Dinner*		

Friday (July 1)

09:00–09:50	Constantin		
10:00–10:50	Mischaikow		
11:20–11:50	Rezounenko	Belair	
11:55–12:25	Kennedy	Faria	
12:30–13:00	Hoffman	Röst	
13:00–	*Closing Ceremony*		

List of participants

Aleroev, Temirkhan S. (Russia)
Ariesanu Pop, Camelia (Romania)
Atay, Fatihcan M. (Germany)
Awwad, Essam (Hungary)
Bartha, Mária (Hungary)
Bátkai, András (Hungary)
Belair, Jacques (Canada)
Besenyei, Ádám (Hungary)
Bognár, Gabriella (Hungary)
Buneci, Madalina Roxana (Romania)
Cheng, Jian (Ireland)
Constantin, Adrian (Austria)
Csikja, Rudolf (Hungary)
Csizmadia, László (Hungary)
Dahmani, Zoubir (Algeria)
Dénes, Attila (Hungary)
Diblík, Josef (Czech Republic)
Domoshnitsky, Alexander (Israel)
Došlý, Ondřej (Czech Republic)
Erdoğan, Fevzi (Turkey)
Ergoren, Hilmi (Turkey)
Faragó, István (Hungary)
Faria, Teresa (Portugal)
Farkas, József (Scotland)
Fišnarová, Simona (Czech Republic)
Gamliel, Dan (Israel)
Garab, Ábel (Hungary)
Garay, Barnabás M. (Hungary)
Goltser, Yakov (Israel)
Graef, John (USA)
Győri, István (Hungary)
Haladová, Hana (Czech Republic)
Haller, George (Canada)
Hartung, Ferenc (Hungary)
Hatvani, László (Hungary)
Hegedűs, Jenő (Hungary)
Hofbauer, Josef (Austria)
Hoffman, Aaron (USA)
Horváth, Miklós (Hungary)
Humphries, Tony (Canada)
Insperger, Tamás (Hungary)
Karsai, János (Hungary)
Kennedy, Benjamin (USA)
Knipl, Diána (Hungary)
Kosovalic, Nemanja (Canada)
Kovács, Mihály (New Zealand)
Krejčová, Jana (Czech Republic)
Krisztin, Tibor (Hungary)
Kundrát, Petr (Czech Republic)
Ladics, Tamás (Hungary)
Lani-Wayda, Bernhard (Germany)
Lassoued, Dhaou (France)

Lauterbach, Reiner (Germany)
Liz, Eduardo (Spain)
Maghakyan, Abraham (Israel)
Makay, Géza (Hungary)
Mallet-Paret, John (USA)
Mařík, Robert (Czech Republic)
Medveď, Milan (Slovakia)
Mincsovics, Miklós E. (Hungary)
Mischaikow, Konstantin (USA)
Nagy, Bálint (Hungary)
Nagy-György, Judit (Hungary)
Nechvátal, Luděk (Czech Republic)
Nussbaum, Roger (USA)
Obaya, Rafael (Spain)
Opluštil, Zdeněk (Czech Republic)
Padhi, Seshadev (India)
Partsvania, Nino (Georgia)
Pati, Smita (India)
Pituk, Mihály (Hungary)
Polner, Mónika (Hungary)
Răsvan, Vladimir (Romania)
Řehák, Pavel (Czech Republic)
Remsing, Claudiu (South Africa)
Řezníčková, Jana (Czech Republic)
Rezounenko, Alexander (Ukraine)
Rontó, András (Czech Republic)
Röst, Gergely (Hungary)
Ruess, Wolfgang M. (Germany)
Sell, George (USA)
Shamolin, Maxim V. (Russian Federation)
Sieber, Jan (United Kingdom)
Simon, László (Hungary)
Šimon Hilscher, Roman (Czech Republic)
Slezák, Bernát (Hungary)
Szántó, Iván (Chile)
Székely, László (Hungary)
Szijártó, András (Hungary)
Szimjanovszki, Irma (Hungary)
Terjéki, József (Hungary)
Tunç, Cemil (Turkey)
Ungureanu, Viorica Mariela (Romania)
Vajda, Robert (Hungary)
Várdai, Judit (Hungary)
Vas, Gabriella (Hungary)
Veselý, Michal (Czech Republic)
Vítovec, Jiří (Czech Republic)
Walther, Hans-Otto (Germany)
Wang, Haiyan (USA)
Wu, Jianhong (Canada)
Zemánek, Petr (Czech Republic)
Zou, Xingfu (Canada)