

XXXIX. Dynamics Days Europe, University of Rostock, Germany, September 2 – September 6, 2019

	Sunday 01.09.2019	Monday 02.09.2019	Tuesday 03.09.2019	Wednesday 04.09.2019	Thursday 05.09.2019	Friday 06.09.2019
08:00 – 09:00		Registration				
09:00 – 09:45		Joachim Burgdörfer (Vienna), p. 29	E. K. U. Gross (Halle), p. 31	Jeroen Lamb (London), p. 33	Andreas Daffertshofer (Amsterdam), p. 35	Eduard Feireisl (Prague), p. 38
09:45 – 10:30		Arnd Scheel (Minneapolis), p. 29	Stuart Althorpe (Cambridge), p. 32	Just Herder (Delft), p. 34	Bettina Keller (Berlin), p. 36	Daniela Rupp (Zurich), p. 39
10:30 – 11:00		Posters & Coffee break				
11:00 – 11:20		Fischer, Kuwashima, Olmi, Gurusamy	Colet, Suzuki, Montoya, Mokhtari	Kettemann, Orlov, Novičenko, Katz	Just, Atay, Schöll, Isensee	Kashchenko, Iwase, Goldobin
11:20 – 11:40		Bader, Ebisawa, Ullner, Shimokawa	Beck, Matcharashvili, Curbelo, Cisternas	Kaiser, Zviagin, Anishchenko, Kuznetsov	Richter, Blyuss, Ruzzene, Parlitz	Fülöp, Kawamoto, Eydam
11:40 – 12:00		Linke, Sampath, Sajid, Crumeyrolle-Smieszek	Schäfer, Carl, Zhdanov, Gaiko	Taher, Boldyrev, Shepelev, Hasan	Slipantschuk, Bosschaert, Omel'chenko, Shimizu	Hinke Osinga (Auckland), p. 40
12:00 – 12:20		Cheesman, Isoshima, Ponomarenko, Itto	Totz, Krall, Trukhanova, Wolftrum	Böttcher, Zvyagin, Strelkova, Cardoso	Ryu, Schneider, Zakharova, Hegedüs	
12:30 – 14:00		Posters, Lunch break & discussion				
14:00 – 14:45	arrival	David Leitner (Reno), p. 30	Peter Szmolyan (Vienna), p. 32	Excursion (City of Rostock)	Sebastian Wiczorek (Cork), p. 37	departure
14:50 – 15:10		Timme, Kalkhouran, Fedorova, Néda	Constantinos Siettos (Naples), p. 33		Wolfram Just (London), p. 38	
15:10 – 15:30		Fette, Kakhki, Zeitlin, Gzal			Posters & Coffee break	
15:30 – 16:00		Maaß	Barland, Zakharova, Provata, Cartwright			
16:00 – 16:20		Posters	Rydin, Moskalenko, Hofmann, Yanagita		Rombouts, Schöll, Berner, Contreras	
16:20 – 16:40			Jacquod, Voit, Lohse, Dana		Kosiuk, Claussen, Omelchenko, Mermillod-Blondin	
16:40 – 17:00			Plietzsch, Gong, Sommerfeld, Leonel		Avitabile, Stelzer, Rakshit, Filatrella	
17:00 – 17:20			Schiffer, Timperi, Schneider, Lozej		Desroches, Sieber, Jalan, Karaca	
17:20 – 17:40			Tyloo, Kaloudis, Gebhard, Yanchuk		Kaklamanos, Saha, Ghosh, Mukhopadhyay	
17:40 – 18:00			Greiner, Russo, Salieva, Shamolin			
18:00 – 22:00			Poul Hjorth (Copenhagen), p. 34 Dinner Talk & Conference Dinner			<p>legend:</p> <p>Auditorium Maximum (AM)</p> <p>AM, AE1, AE2, H1</p>

Monday

9:00-9:45 Joachim Burgdörfer: "Thermalization and quantum chaos"

9:45-10:30 Amd Scheel: "Growing stripes"

Session C1-AM

Minisymposium M1-AM "Nonlinearities and self-organization in musical acoustics"

11:00-11:20 Jost Leonhardt Fischer "Shock wave characteristics in the initial transient of wind instruments"

11:20-11:40 Rolf Bader "Viscoelastic memory effect as cause of musical instrument spectral flux and musical liveliness"

11:40-12:00 Simon Linke "Describing minimum bow force using Impulse Pattern Formulation (IPF) – an empirical validation"

12:00-12:20 Noah Cheesman "The Painleve Paradox in 3D"

Session C1-AE1

Minisymposium M2-AE1 "Chaotic and nonlinear dynamics for ICT"

Fumiyoshi Kuwashima "Stable THz wave generation using laser chaos"

Satoshi Ebisawa "Chaotic oscillation of laser diode with optical injection and pseudorandom drive current"

K.I. Amila Sampath "Electrically wavelength-tunable light source by means of stimulated Brillouin scattering in single-mode fibers"

Takashi Isoshima "Control of wavefront propagation properties for natural computing in two-dimensional optical bistable devices"

Session C1-AE2

Simona Olmi "Cross frequency coupling in next generation inhibitory neural mass models"

Ekkehard Ullner "The brain activity at rest as self-sustained collective irregular dynamics in spiking networks"

Zamra Sajid "Modelling myeloproliferative neoplasms: Dynamics of myeloid lineage for Ph-negative MPN in stem" ~~Cancelled~~

Vladimir Ponomarenko "Dynamics of synchronization measures between autonomous regulation processes of heart rate and blood pressure"

Session C1-H1

Arumugan Gurusamy "Discontinuous Galerkin methods for Keller-Segel chemotaxis system with general chemotactic sensitivity and cross-diffusion"

Michiko Shimokawa "Breakup of falling droplets by instability of vortex ring"

Marlene Crumeyrolle-Smieszek "Numerical simulation of convection of a phase change material in a rectangular cavity"

Yuichi Itto "Entropy production rate of diffusivity fluctuations of RNA-protein particles"

14:00-14:45 David Leitner: "Mapping energy transport networks in proteins"

Session C2-AM

Minisymposium M3-AM "Structure and dynamics of future power grids"

14:50-15:10 Marc Timme "Detecting state space dimensionality (and network size) from time series of few variables"

15:10-15:30 Michael Fette "Bifurcational analysis of power system characteristics – Comparison to measurements in practical applications"

15:30-16:00 Philipp Maaß "Short-term power grid stability under stochastic feed-in of renewable energy sources"

Session C2-AE1

Sara Ameli Kalkhouran "Event-based model for digital oscillators"

Mahla Mirzaee Kakhki "Topological steps toward walking colloidal bipeds"

Session C2-AE2

Antonina Fedorova "Non-Gaussian states: a first sign of complex events"

Michael G. Zeitlin "Sheaves, schemes, and all that: new looking glass for quantum phenomena"

Session C2-H1

Zoltan Neda "Flickering candle flames and their emergent synchronization. An experimental and dynamical systems approach"

Majdi Gzal "Mathematical model for the nonlinear dynamics of valve spring"

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Tuesday

9:00-9:45 E.K.U. Gross: "Potential energy surfaces and Berry phases from the exact factorization: A rigorous approach to non-adiabatic dynamics"

9:45-10:30 Stuart Althorpe: "Real-time dynamics from imaginary-time path-integrals: theory and practice"

Session C3-AM

Minisymposium M3-AM "Structure and dynamics of future power grids"

11:00-11:20 Pere Colet "Power grid frequency fluctuations and smart devices with dynamic demand control"

11:20-11:40 Christian Beck "Superstatistical methods for power grids"

11:40-12:00 Benjamin Schäfer "Power grid frequency: data-driven and statistical analysis"

12:00-12:20 Philippe Jacquod "Optimal placement of inertia and primary control in high voltage power grids"

Session C3-AE1

Norikazu Suzuki "Non-Markovianity and subdiffusion of volcanic seismicity"

~~Teimuraz Matcharashvili "Dynamic changes in the characteristics of the foundation structure and in the local seismicity occurred during the construction of the hydroelectric power plant"~~

Peter Carl "Signatures of low-dimensional intraseasonal motion in the data of a German climate station"

Verena Krall "Topological universality of ride-sharing efficiency and the impact of asymmetric request distributions"

Session C3-AE2

Minisymposium M4-AE2 "Phase space geometry of Hamiltonian systems and applications"

Francisco Gonzalez Montoya "Revealing roaming on the double Morse potential energy surface with Lagrangian descriptors"

Jezabel Curbelo "Lagrangian study of phase space geometrical structures in 3D vector fields"

Dmitry Zhdanov "Phase space representation of quantum dynamics using squeezed coherent states"

Mariya Trukhanova "The gauge field theory in condensed matter physics"

Session C3-H1

Fahimeh Mokhtari "On the sl2-representation near the triple-zero bifurcation"

Jaime Cisternas "Dipolar chains and their hidden branches of equilibria"

Valery Gaiko "Global bifurcations of limit cycles and strange attractors in multi-parameter dynamical systems"

Matthias Wolfrum "Phase-sensitive excitability of a limit cycle"

14:00-14:45 Peter Szmolyan: "Geometric singular perturbation theory beyond the standard form"

14:45-15:30 Constantinos Siettos: "To the infinity and beyond: Some ODEs and PDEs case studies"

Session C4-AM

Minisymposium M3-AM "Structure and dynamics of future power grids"

16:00-16:20 Leonardo Rydin "Tackling stability for conventional and inverter-based power grids in the presence of resistive terms"

16:20-16:40 Carl Hendrik Totz "Control of synchronization in two-layer power grids"

16:40-17:00 Anton Plietzsch "A generalized linear response theory for renewable fluctuations in lossy microgrids"

17:00-17:20 Johannes Schiffer "Almost global synchronization in droop-controlled microgrids - a multivariable cell structure approach"

17:20-17:40 Melvyn Tyloo "The key player problem in realistic large-scale power grids"

17:40-18:00 Martin Greiner "Renewable energy networks"

Session C4-AE1

Olga Moskalenko "Jump intermittency near the boundary of generalized synchronization in systems with complex topology of attractor"

Maximilian Voit "Dimensional reduction in coupled heteroclinic cycles"

Chen Gong "Repulsively coupled Kuramoto-Sakaguchi phase oscillators ensemble subject to common noise"

Kalle Timperi "Transitions in random dynamical systems with bounded uncertainty"

Konstantinos Kaloudis "A Bayesian nonparametric approach to the approximation of the global stable manifold"

Lucia Russo "Symmetry and bifurcations in ring networks with periodically switched connections"

Session C4-AE2

Minisymposium M5-AE2 "PDEs and dynamics with symmetries"

Timo Hofmann "Symplectic local Lyapunov exponents are symmetric"

Alexander Lohse "Symmetry effects on non-asymptotic attraction"

Mara Sommerfeld "Hamiltonian relative equilibria in symplectic representations of compact connected groups"

Isabelle Schneider "Symmetry-breaking control of reaction-diffusion equations"

Björn Gebhard "An equivariant degree and periodic solutions of the N-vortex problem"

Evgeny Galakhov and Olga Salieva "Uniqueness of the trivial solution for some quasilinear inequalities"

Session C4-H1

Tatsuo Yanagita "Emergence of quasi-equilibrium in Hamiltonian systems"

~~Itzhack Dana "Accelerated modes and chaotic superdiffusion of periodically kicked interacting particles"~~
Edson Leonel "An investigation of chaotic diffusion in a family of Hamiltonian mappings whose angles diverge in the limit of vanishingly action"

Crt Lozej "Structure, size and statistical properties of chaotic components in Hamiltonian systems with divided phase space"

Serhiy Yanchuk "Coexistence of Hamiltonian-like and dissipative dynamics in chains of coupled oscillators with skew-symmetric coupling"

Maxim V. Shamolin "Integrable dynamical systems with dissipation"

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Wednesday

9:00-9:45 Jeroen Lamb: "Bifurcations in random dynamical systems"

9:45-10:30 Just Herder: "Towards dynamic synthesis in compliant mechanisms"

Session C5-AM

Minisymposium M3-AM "Structure and dynamics of future power grids"

11:00-11:20 Stefan Kettemann "Propagation of disturbances in power grids"

11:20-11:40 Franz Kaiser "The impact of network topology on failure spreading in power grids"

11:40-12:00 Halgurd Taher "Enhancing power grid synchronization and stability through time delayed feedback control"

12:00-12:20 Philipp Böttcher "Time delay effects in the control of synchronous electricity grids"

Session C5-AE1

Minisymposium M6-AE1 "Solvability and qualitative behaviour of solutions for viscoelastic fluids dynamics models"

Vladimir Orlov "On some fractional models of viscoelastic mediums"

Andrei Zviagin "Weak solvability of thermo-model for one viscoelastic fluid"

Aleksandr Boldyrev "Uniform attractors for weak solutions to viscoelastic media with memory"

Victor Zvyagin "On the weak solvability of initial-boundary value problems for a class of integro-differential equations with memory"

Session C5-AE2

Victor Novicenko "Adaptive delayed feedback control to stabilize in-phase synchronization in complex oscillator networks"

Vadim Anishchenko "Target waves and new chimera structures in a 2D lattice of nonlocally coupled Van der Pol oscillators"

Igor Shepelev "Formation mechanisms of spiral and double-well chimeras in a 2D lattice of coupled bistable FitzHugh-Nagumo oscillators"

Galina Strelkova "Forced synchronization of a heterogeneous multilayer network of nonlocally coupled maps"

Session C5-H1

Shmuel Katz "Solitary waves in a non-integrable chain with double-well potentials"

Maxim Kuznetsov "Investigation of Turing structures formation under the influence of wave instability"

Cris Ragheb Hasan "Existence and stability of periodic travelling waves: who will prevail in a Rock-Paper-Scissors game?"

Silvana Cardoso "Convective nanoflow in self-assembled precipitate membranes"

18:00-22:00 Poul Hjorth: "Big grants and big data"

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Thursday

9:00-9:45 Andreas Daffertshofer: "Phase reduction of network dynamics of coupled oscillators"

9:45-10:30 Bettina Keller: "Markov models for complex molecular dynamics"

Session C6-AM

Minisymposium M7-AM "Spectral methods in applied mathematics"

- 11:00-11:20 Wolfram Just "Transfer operator technique for analytic maps, or: Chaos in the Hilbert space"
- 11:20-11:40 Martin Richter "Convergence properties of transfer operators for billiards with a mixed phase-space"
- 11:40-12:00 Julia Slipantschuk "Transfer operator approach to ray tracing in circular domains"
- 12:00-12:20 Jung-Wan Ryu "New type of oscillation death in coupled counter-rotating identical nonlinear oscillators"

Session C6-AE1

Minisymposium M8-AE1 "Dynamics of delay differential equations and applications"

- Fatihcan Atay "Consensus-type problems on networks with time delays"
- Konstantin Blyuss "Mathematical modelling of awareness-based disease control"
- Maikel Bosschaert "Initialization of homoclinic solutions near Bogdanov-Takens points in delay differential equations"
- Isabelle Schneider "Mechanisms of delayed feedback control"

Session C6-AE2

Minisymposium M9-AE2 "Synchronization patterns in networks"

- Eckehard Schöll "Partial synchronization in complex networks"
- Giulia Ruzzene "Minimal action to control chimera states"
- Oleh Omel'chenko "Quasiperiodic Chimera states"
- Anna Zakharova "Control of synchronization patterns in multilayer networks"

Session C6-H1

- Jonas Isensee "Predicting spatio-temporal time series using dimension reduced local states"
- Ulrich Parlitz "Predicting high dimensional chaos using machine learning"
- Taro Shimizu "Measuring Lyapunov spectrum of large chaotic systems with global coupling by time series analysis"
- Ferenc Hegedüs "Control of multistability in harmonically driven nonlinear oscillators via a temporary addition of a second harmonic component to the driving"

14:00-14:45 Sebastian Wieczorek: "Rate-induced tipping points: Beyond classical bifurcations"

14:45-15:30 Wolfram Just: "Control of pedestrian flows: Social dynamics beyond modelling"

Session C7-AM

Minisymposium M10-AM "Recent advances in slow-fast dynamics"

- 16:00-16:20 Stephane Barland "Experimental observation of low dimensional dynamics in a fully connected network of spiking lasers"
- 16:20-16:40 Jan Rombouts "Dynamically changing bistable switches in the cell cycle"
- 16:40-17:00 Ilona Kosiuk "Geometric singular perturbation theory meets cell biology: new challenges and recent advances"
- 17:00-17:20 Daniele Avitabile "Canards and slow passage through bifurcations in infinite-dimensional dynamical systems"
- 17:20-17:40 Mathieu Desroches "Canards in excitatory networks and their mean-field limits"
- 17:40-18:00 Panagiotis Kaklamanos "Geometry of an extended prototypical three-timescale system: bifurcations of mixed-mode oscillations"

Session C7-AE1

Minisymposium M11-AE1 "Recent advances in time-delayed systems"

- Anna Zakharova "Designing solitary states by time delays"
- Eckehard Schöll "Delay-induced chimeras in neural networks with fractal topology"
- Jens Christian Claussen "Sleep bout statistics from sleep depth diffusion models: including a REM step and its influence on the distributions"
- Florian Stelzer "Performance boost of time-delay reservoir computing by non-resonant clock cycle"
- Jan Sieber "Temporal dissipative solitons and their spectrum"
- Arindam Saha "Extreme events in delay-coupled relaxation oscillators"

Session C7-AE2

Minisymposium M9-AE2 "Synchronization patterns in networks"

- Astero Provata "Mechanisms underlying the formation of Chimera states in brain dynamics"
- Rico Berner "Self-organization on complex oscillator networks with adaptive coupling"
- Iryna Omelchenko "Chimera control in small networks"
- Sarbendu Rakshit "Intralayer synchronization in evolving multiplex hypernetworks"
- Sarika Jalan "Impact of multiplexing on spatiotemporal dynamical patterns in networks: Role of inhibition"
- Saptarshi Ghosh "Taming chimera state using heterogeneous delays"

Session C7-H1

- Julyan Cartwright "The bee Trigona builds its comb like a crystal"
- Maximiliano Contreras "Complete synchronization emergence under advection"
- Alexandre Mermillod-Blondin "Diagnostics of fs-laser induced plasma formation in bulk fused silica with the help of low-order harmonic emission"
- Giovanni Filatella "Josephson junctions for signal detection"
- Ertugrul Karaca "AB initio study of superconductivity and electron-phonon interaction in the tetragonal BiLi"
- Aritra Mukhopadhyay "Dimensional coupling induced current reversal in two-dimensional driven lattices"

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Friday

9:00-9:45 Eduard Feireisl: "On solving ill-posed problems"

9:45-10:30 Daniela Rupp: "Imaging ultrafast dynamics in helium nanodroplets"

Session C8-AM

Session C8-AE1

Session C8-AE2

11:00-11:20 Iliia Kashchenko "The dynamics of equation with large state-dependent delay"

Tatsuya Iwase "Decentralized topology optimization implemented as a self-organization of multi-agent systems"

Denis Goldobin "Macroscopic reductions for oscillator populations beyond Ott-Antonsen ansatz"

11:20-11:40 Agnes Fülöp "Chaoticity of the non-Abelian gauge field theory on lattice considering the complexity"

Atsushi Kawamoto "Collective motion pattern analysis on self-propelled particles using Rayleigh-Morse models"

Sebastian Eydam "Mode-locked solutions in systems of globally-coupled phase oscillators"

11:40-12:20 Hinke Osinga: "Robust chaos: a tale of blenders, their computation, and their destruction"