Complexity of Life Conference

Bridging complexity scales and biological systems

23.–27.09.2024
GRAZ | AUSTRIA
University of Graz

HS 11.01
Heinrichstraße 36

The conference of the **Field of Excellence COLIBRI** at the University of Graz

Organizing comittee:
L. **Trussardi**, B. **Tang**,
B. **Corominas Murtra** and
A. **Goritschnig**

COMPLEXITY OF LIFE

Complexity of Life in Basic Research and Innovation

Field of Excellence
University of Graz

UNI GRAZ

Complexity of Life Conference

Bridging complexity scales and biological systems

Monday

23rd of September

09:00-09:30	Registration (in front of lecture hall HS 11.01, Heinrichstraße 36)
09:30-10:00	Welcoming Words by Vice Rector J. Reidl, Th. Schmickl and A. Goritschnig
Session 1 chaired by B. Corominas Murtra	
10:00-11:00	*Fundamental constraints to the logic of living systems* - R. Sole (invited talk)
11:00-11:30	*Hair cells in the cochlea must tune resonant modes to the edge of instability without destabilizing collective modes* - I. Graf (contributed talk)
11:30-12:00	*Scaling Pattern Formation: The physics behind morphogen transport* – A. Aguirre Tamaral (contributed talk)
12:00-14:00	Lunch Break (including coffee at the conference venue)
14:00-15:00	*Passive vs active tissue material phase transitions instruct different morphogenetic trajectories* - N. Petridou (invited talk) chaired by A. Aguirre Tamaral
15:00-15:30	Coffee Break
Session 2 chaired A. Aguirre Tamaral	
15:30-16:00	*Allee pits in metapopulations: critical dispersal rates for connectivity to be beneficial* - C. Grumbach (contributed talk)
16:00-16:30	*Information-geometric point of view on evolutionary games* - V. Jacimovic (contributed talk)
16:30-17:00	*A modified Hughes model for evacuation of bees* - R. Mokhtari (contributed talk)
17:30-19:00	City Tour (starting at Graz main square)
19:00-21:00	Reception at City Hall Graz

Tuesday

24th of September

08:30-09:00	Coffee
09:00-10:00	*Mathematical Foundations of Early-Warning Signs and Resilience* - Ch. Kuehn (invited talk) chaired by C. Soresina
10:00-10:30	Coffee Break
Session 3 chaired by C. Soresina	
10:30-11:30	*Emergence in collective dynamics with apolar alignment* - S. Merino (invited talk)
11:30-12:00	*Non-Markovian models of biological collective motion* - J. Haskovec (contributed talk)
12:00-12:30	*Modeling liver inflammations with reaction diffusion equations* - C. Reisch (contributed talk)
12:30-14:30	Lunch Break (including coffee at the conference venue)
14:30-15:30	*Extrapolating Ecological Stability Across Space, Time, and Species* – A. Clark (invited talk) chaired by J. Liesche
15:30-16:00	Coffee Break
Session 4 chaired by A. Clark	
16:00-16:30	*How conifers and grasses overcome physical limits to sugar export from leaves* - J. Liesche (contributed talk)
16:30-17:00	*The use of Daphnia as a living sensor in aquatic biohybrid systems* - W. Rajewicz (contributed talk)
17:00-17:30	*From Abiotic Probes to Bio-Hybrid Sensing: Transforming Aquatic Ecosystem Surveillance* - R. Thenius (contributed talk)
17:45-18:30	*Strong Emergence Arising from Weak Emergence* – Th. Schmickl (public talk) chaired by B. Tang
18:30-21:00	Poster session and beer

Wednesday

25th of September

08:30-09:00 Coffee

09:00-10:00 *Reaction-diffusion systems from kinetic models for cell populations* - M. Bisi (invited talk) chaired by S. Merino

10:00-10:30 Coffee Break

Session 5 chaired by S. Merino

10:30-11:30 *Derivation of cross-diffusion models in population dynamics: dichotomy, time-scales and fast-reaction* - C. Soresina (invited talk)

11:30-12:00 *Singular limits arise from biological systems and uniform-in-time convergence rate* - T. Bao-Ngoc (contributed talk)

12:00-14:00 Lunch Break

Free afternoon

Thursday

26th of September

08:30-09:00 Coffee

09:00-10:00 *Physics at different scales: The renormalisation group, emergent degrees of freedom, and complexity* - R. Alkofer (invited talk) chaired by A. Koseska

10:00-10:30 Coffee Break

Session 6 chaired by A. Koseska

10:30-11:30 *Network renormalization unravels the multiscale structure of human brain connectomes* - M. Serrano (invited talk)

11:30-12:00 *Biomass competition unifies individual and community scaling patterns* - L. Fant (contributed talk)

12:00-12:30 *How pronounced refractoriness prevents resurgent excitation in jellyfish motor nerve nets* - P. Wu (contributed talk)

12:30-14:30 Lunch Break (including coffee at the conference venue)

14:30-15:30 *Natural computations with quasi-stable states* - A. Koseska (invited talk) chaired by C. Reisch

15:30-16:00 Coffee Break

Session 7 chaired by C. Reisch

16:00-16:30 *A network-based parametrization of positive steady states of biochemical systems* - B. Hernandez (contributed talk)

16:30-17:00 *Information-theoretic limits on growth in minimal chemical systems* - J. Piñero (contributed talk)

17:00-17:30 An Unifying Model of Symbiont Dynamics and Regulation in Corals amid Changing Environments - J. Cavailles (contributed talk)

18:30-21:00 Conference Dinner at Gösserbräu (Neutorgasse 48, A-8010 Graz)

Friday

27th of September

08:30-09:00	Coffee
09:00-10:00	*Global-to-Local Design for Swarm Robotics* – H. Hamann (invited talk) chaired by Th. Schmickl
10:00-10:30	Coffee Break

Session 8 chaired by Th. Schmickl

10:30-11:00	*INSIGNIA-EU. The power of citizen science and honey bees for large scale monitoring of environmental pollution* - K. Gratzer (contributed talk)
11:00-11:30	*Connecting evoked EEGs to single spikes in the barn owl auditory brainstem* - P. Kuokkanen (contributed talk)
11:30-12:30	*Oscillation in a nonlinear Becker-Döring model for prion dynamics* - K. Fellner (invited talk)
12:30-13:00	Conclusions by K. Fellner and organizing comittee

How to get to the venues

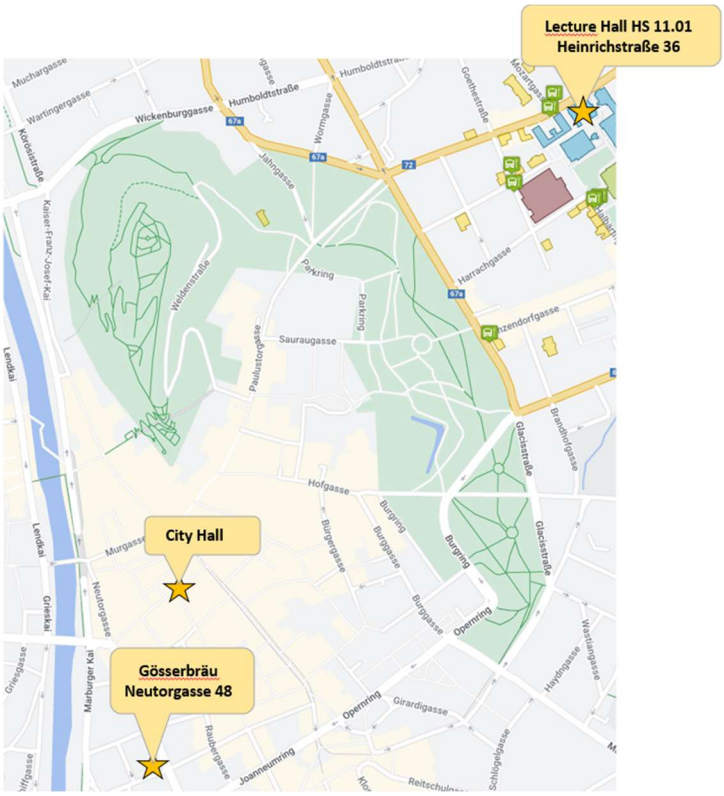
From Main train station (Hauptbahnhof)/Lendplatz
Take Bus 58 toward "Ragnitz";
Stop: Mozartgasse

Take Bus 63 toward "Schulzentrum St. Peter";
Stop: Universität

From Jakominiplatz
Take Bus 31 toward "Uni-ReSoWi";
Stops: Uni/Mensa, Uni/ReSoWi

Take Bus 39 toward "Wirtschaftskammer",
Stop: Zinzendorfgasse

Get the GrazMobil App



Lunch on Campus

You may find various lunch opportunities on and around the campus.

WiFi access to UNIGRAZguest

Guest User Name: CoL_Conference
Password: Am5L5HNW