

Dynamics and Statistical Physics Division Fachverband Dynamik und Statistische Physik (DY)

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The Dynamics and Statistical Physics Division covers theoretical and experimental activities in all areas of statistical physics, quantum dynamics and many-body systems, nonlinear dynamics and pattern formation, data analysis and machine learning as well as active matter, fluid physics, soft matter, and complex fluids. The DY section has strong links and joint sessions with the sections of Biological Physics (BP), Chemical Physics and Polymers (CPP), Socio- and Econophysics (SOE), and Low Temperatures (TT).

Overview of Invited Talks and Sessions

(Lecture halls H37, H43, and H47; Poster P3 and P4)

Invited Talks

DY 3.6	Mon	10:45–11:15	H37	Collective behavior of photoactive macroscopic particles — ●IKER ZURIGUEL
DY 4.2	Mon	9:45–10:15	H43	Physical application of infinite ergodic theory — ●ELI BARKAI
DY 4.7	Mon	11:30–12:00	H43	Modelling the movements of organisms: Movement ecology meets active particles and anomalous diffusion — ●RAINER KLAGES
DY 8.1	Mon	15:00–15:30	H43	Spatio-temporal pattern formation in time-delayed optical systems — ●SVETLANA GUREVICH
DY 8.6	Mon	16:45–17:15	H43	Nonlinear dynamics and time delays in metal cutting — ●ANDREAS OTTO
DY 9.5	Mon	16:00–16:30	H47	Large-deviation simulations of non-equilibrium stochastic processes — ●ALEXANDER K. HARTMANN
DY 14.1	Tue	9:30–10:00	H43	Robust signal amplification and information integration via self-tuned proximity to bifurcation points — ●ISABELLA GRAF
DY 14.7	Tue	11:30–12:00	H43	Beyond the connectionist view: (De-)synchronizing neural networks via cell-intrinsic dynamics — ●SUSANNE SCHREIBER
DY 15.6	Tue	10:45–11:15	H47	Beyond spheres - active matter in new shapes — ●JULIANE SIMMCHEN
DY 15.11	Tue	12:30–13:00	H47	Emergent correlations and boundary fluctuations in epithelial cell sheets — ●SILKE HENKES
DY 17.1	Tue	14:00–14:30	H43	Mechanistic origins of temperature scaling in the early embryonic cell cycle — ●LENDERT GELENS
DY 24.1	Wed	15:00–15:30	H43	Dynamics of odd and chiral active systems — ●HARTMUT LÖWEN
DY 24.7	Wed	16:45–17:15	H43	Odd dynamics and universal flows of passive objects in a chiral active fluid — ●CORY HARGUS, FEDERICO GHIMENTI, JULIEN TAILLEUR, FRÉDÉRIC VAN WIJLAND
DY 24.11	Wed	18:00–18:30	H43	How to model frictional contacts in sheared and active colloids — ●FRIEDERIKE SCHMID, KAY HOFMANN, KAY-ROBERT DORMANN, BENNO LIEBCHEN
DY 31.6	Thu	10:45–11:15	H37	Strong coupling and coherence in quantum thermodynamics — ●JANET ANDERS, FEDERICO CERISOLA, JAMES CRESSER, ET AL
DY 32.1	Thu	9:30–10:00	H43	Fluctuation-Response Relations for Non-equilibrium Systems — ●BENJAMIN LINDNER
DY 36.1	Thu	15:00–15:30	H37	Light-Driven Manipulation of Passive and Active Microparticles — ●SVETLANA SANTER

DY 44.1	Fri	9:30–10:00	H47	From Cavitation in Soft Matter to Erosion on Hard Matter — •CLAUS-DIETER OHL
DY 46.1	Fri	11:30–12:00	H43	Equilibrium and non-equilibrium dynamics of biological systems with memory — •ROLAND NETZ

Invited Talks of the joint Symposium Physics of Embryonic Development Across Scales: From DNA to Organisms (SYED)

See SYED for the full program of the symposium.

SYED 1.1	Mon	9:30–10:00	H1	Emergent crystalline order in a developing epithelium — KARTIK CHHAJED, NATALIE DYE, MARKO POPOVIĆ, •FRANK JÜLICHER
SYED 1.2	Mon	10:00–10:30	H1	A tissue rigidity phase transition shapes morphogen gradients — CAMILLA AUTORINO, DIANA KHOROMSKAIA, BERNAT COROMINAS-MURTRA, ZENA HADJIVASILIOU, •NICOLETTA PETRIDOU
SYED 1.3	Mon	10:30–11:00	H1	Building quantitative dynamical landscapes of developmental cell fate decisions — •DAVID RAND
SYED 1.4	Mon	11:15–11:45	H1	Control of lumen geometry and topology by the interplay between pressure and cell proliferation rate — •ANNE GRAPIN-BOTTON, BYUNG HO LEE, MASAKI SANO, DANIEL RIVELINE, KANA FUJI, TETSUYA HIRAIWA
SYED 1.5	Mon	11:45–12:15	H1	Chromosomes as active communication and memory machines — •LEONID A. MIRNY

Invited Talks of the joint SKM Dissertationspreis 2025 (SYSD)

See SYSD for the full program of the symposium.

SYSD 1.1	Mon	9:30–10:00	H2	Nanoscale Chemical Analysis of Ferroic Materials and Phenomena — •KASPER AAS HUNNESTAD
SYSD 1.2	Mon	10:00–10:30	H2	Advanced Excitation Schemes for Semiconductor Quantum Dots — •YUSUF KARLI
SYSD 1.3	Mon	10:30–11:00	H2	Aspects and Probes of Strongly Correlated Electrons in Two-Dimensional Semiconductors — •CLEMENS KUHNENKAMP
SYSD 1.4	Mon	11:00–11:30	H2	Mean back relaxation and mechanical fingerprints: simplifying the study of active intracellular mechanics — •TILL MÜNKER
SYSD 1.5	Mon	11:30–12:00	H2	Coherent Dynamics of Atomic Spins on a Surface — •LUKAS VELDMAN

Invited Talks of the joint Symposium AI in (Bio-)Physics (SYAI)

See SYAI for the full program of the symposium.

SYAI 1.1	Thu	9:30–10:00	H1	Predicting interaction partners and generating new protein sequences using protein language models — •ANNE-FLORENCE BITBOL
SYAI 1.2	Thu	10:00–10:30	H1	Realizing Schrödinger’s dream with AI-enabled molecular dynamics — •ALEXANDRE TKATCHENKO
SYAI 1.3	Thu	10:30–11:00	H1	Emergent behavior of artificial intelligence — •STEFFEN RULANDS
SYAI 1.4	Thu	11:15–11:45	H1	AI in medical research - navigating complexity with AI — •DANIEL TRUHN
SYAI 1.5	Thu	11:45–12:15	H1	Computational Modelling of Morphogenesis — •DAGMAR IBER

Invited Talks of the joint Symposium Nonequilibrium Collective Behavior in Open Classical and Quantum Systems (SYQS)

See SYQS for the full program of the symposium.

SYQS 1.1	Thu	15:00–15:30	H1	Active quantum flocks — REYHANEH KHASSEH, SASCHA WALD, RODERICH MOESSNER, CHRISTOPH WEBER, •MARKUS HEYL
SYQS 1.2	Thu	15:30–16:00	H1	Robust dynamics and function in stochastic topological systems — •EVELYN TANG
SYQS 1.3	Thu	16:00–16:30	H1	Nonequilibrium Dynamics of Disorder-Driven Ultracold Fermi Gases — •ARTUR WIDERA

SYQS 1.4	Thu	16:45–17:15	H1	Topological classification of driven-dissipative nonlinear systems — •ODED ZILBERBERG, GRETA VILLA, KILIAN SEIBOLD, VINCENT DUMONT, GI-ANLUCA RASTELLI, MATEUSZ MICHAŁEK, ALEXANDER EICHLER, JAVIER DEL PINO
SYQS 1.5	Thu	17:15–17:45	H1	Learning dynamical behaviors in physical systems — •VINCENZO VITELLI

Sessions

DY 1.1–1.3	Sun	16:00–18:15	H2	Hands-on Tutorial: AI Fundamentals for Research (joint session BP/TUT/DY/AKPIK)
DY 2.1–2.11	Mon	9:30–12:30	H31	Nonequilibrium Quantum Systems (joint session TT/DY)
DY 3.1–3.11	Mon	9:30–12:45	H37	Active Matter I (joint session DY/BP/CPP)
DY 4.1–4.11	Mon	9:30–13:00	H43	Focus Session: Nonlinear Dynamics and Stochastic Processes – Advances in Theory and Applications I
DY 5.1–5.7	Mon	9:30–11:15	H47	Statistical Physics: General
DY 6.1–6.6	Mon	11:30–13:00	H47	Critical Phenomena and Phase Transitions
DY 7.1–7.7	Mon	15:00–17:00	H37	Active Matter II (joint session BP/CPP/DY)
DY 8.1–8.11	Mon	15:00–18:30	H43	Focus Session: Nonlinear Dynamics and Stochastic Processes – Advances in Theory and Applications II
DY 9.1–9.12	Mon	15:00–18:30	H47	Statistical Physics far from Thermal Equilibrium
DY 10.1–10.4	Mon	16:15–17:15	H34	Wetting, Fluidics and Liquids at Interfaces and Surfaces I (joint session CPP/DY)
DY 11.1–11.4	Mon	17:30–18:30	H34	Wetting, Fluidics and Liquids at Interfaces and Surfaces II (joint session CPP/DY)
DY 12.1–12.13	Tue	9:30–13:15	H31	Quantum Coherence and Quantum Information Systems (joint session TT/DY)
DY 13.1–13.13	Tue	9:30–13:00	H37	Many-body Quantum Dynamics I (joint session DY/TT)
DY 14.1–14.9	Tue	9:30–12:30	H43	Focus Session: Nonlinear Dynamics in Biological Systems I (joint session DY/BP)
DY 15.1–15.11	Tue	9:30–13:00	H47	Active Matter III (joint session DY/BP/CPP)
DY 16.1–16.6	Tue	14:00–15:30	H37	Many-body Systems: Equilibration, Chaos, and Localization (joint session DY/TT)
DY 17.1–17.4	Tue	14:00–15:15	H43	Focus Session: Nonlinear Dynamics in Biological Systems II (joint session DY/BP)
DY 18.1–18.6	Tue	14:00–15:30	H47	Pattern Formation
DY 19.1–19.5	Wed	9:30–12:15	H17	Focus Session: Quantum Emission from Chaotic Microcavities (joint session HL/DY)
DY 20.1–20.13	Wed	9:30–13:00	H37	Many-body Quantum Dynamics II (joint session DY/TT)
DY 21.1–21.8	Wed	9:30–11:30	H43	Granular Matter
DY 22.1–22.29	Wed	10:00–12:00	P3	Poster: Statistical Physics
DY 23.1–23.20	Wed	10:00–12:00	P3	Poster: Active Matter, Soft Matter, Fluids (joint session DY/CPP)
DY 24.1–24.11	Wed	15:00–18:30	H43	Focus Session: Broken Symmetries in Statistical Physics - Dynamics of Odd Systems
DY 25.1–25.10	Wed	15:00–18:00	H44	Statistical Physics of Biological Systems I (joint session BP/DY)
DY 26.1–26.9	Wed	15:00–17:30	H45	Networks, From Topology to Dynamics (joint session SOE/BP/DY)
DY 27.1–27.14	Wed	15:00–18:00	P4	Poster: Nonlinear Dynamics, Pattern Formation, Granular Matter
DY 28.1–28.7	Wed	15:00–18:00	P4	Poster: Machine Learning, Data Science
DY 29.1–29.9	Wed	15:00–18:00	P4	Poster: Quantum Dynamics and Many-body Systems
DY 30.1–30.12	Thu	9:30–12:45	H31	Quantum-Critical Phenomena (joint session TT/DY)
DY 31.1–31.11	Thu	9:30–12:45	H37	Focus Session: Nonequilibrium Collective Behavior in Open Classical and Quantum Systems
DY 32.1–32.6	Thu	9:30–11:15	H43	Nonlinear Stochastic Systems
DY 33.1–33.13	Thu	9:30–13:00	H47	Machine Learning in Dynamics and Statistical Physics I
DY 34.1–34.6	Thu	11:30–13:00	H43	Nonlinear Dynamics, Synchronization, and Chaos
DY 35.1–35.13	Thu	15:00–18:30	H31	Fluctuations, Noise and Other Transport Topics (joint session TT/DY)
DY 36.1–36.9	Thu	15:00–17:45	H37	Microswimmers and Microfluidics (joint session DY/BP/CPP)
DY 37.1–37.9	Thu	15:00–17:15	H43	Brownian Motion and Anomalous Diffusion

DY 38.1–38.11	Thu	15:00–18:00	H44	Focus Session: Innovations in Research Software Engineering (joint session BP/DY)
DY 39.1–39.6	Thu	15:00–16:30	H47	Machine Learning in Dynamics and Statistical Physics II
DY 40	Thu	18:00–19:00	H43	Members' Assembly
DY 41.1–41.7	Fri	9:30–11:15	H37	Quantum Dynamics, Decoherence, and Quantum Information (joint session DY/TT)
DY 42.1–42.7	Fri	9:30–11:15	H43	Stochastic Thermodynamics
DY 43.1–43.12	Fri	9:30–13:00	H44	Active Matter IV (joint session BP/CPP/DY)
DY 44.1–44.11	Fri	9:30–12:45	H47	Droplets, Wetting, Complex Fluids, and Soft Matter (joint session DY/CPP)
DY 45.1–45.6	Fri	11:30–13:00	H37	Quantum Chaos (joint session DY/TT)
DY 46.1–46.5	Fri	11:30–13:00	H43	Statistical Physics of Biological Systems II (joint session DY/BP)
DY 47.1–47.1	Fri	13:15–14:00	H2	Closing Talk (joint session BP/CPP/DY)

Members' Assembly of the Dynamics and Statistical Physics Division

Thursday 18:00–19:00 H43