

Program

Sunday, 15 May

18:00 - 20:00 Registration (for on-site participants)
at the registration desk (guest house 4, library)

Monday, 16 May

08:45 - 09:00 **Roderich Moessner (director of the MPIPKS) & scientific coordinators**
Opening (virtual)

Chair: Joern Davidsen

09:00 - 09:45 **Rajarshi Roy** (University of Maryland, College Park)
Coherence, Chimeras and Passage Time
Statistics in Light

09:45 - 10:30 **Katharina Krischer**
(Technical University of Munich)
Chimera states, coexistence patterns and
multifrequency clusters in systems of nonlinearly
coupled amplitude oscillators

10:30 - 11:00 Coffee break

11:00 - 11:45 **Ying-Cheng Lai** (Arizona State University, Tempe)
Chaos in Dirac electron optics: Emergence of a
relativistic quantum chimera

11:45 - 12:30 **Christoph Bruder** (University of Basel)
Quantum synchronization

12:30 - 13:30 Lunch break

Program

- 13:30 - 14:00 Discussions
Chair: Yuri Maistrenko
- 14:00 - 14:45 **Kanika Bansal** (Columbia University US Army Research Laboratory)
Chimera states in human brain network models (virtual)
- 14:45 - 15:10 **Leonid Rubchinsky**
(Indiana University, Purdue University and Indiana University School of Medicine, Indianapolis)
Experimental observations and modeling of the temporal patterns of neural synchrony
- 15:10 - 15:35 **Maria Masoliver** (University of Calgary)
Embedded Chimera States in Recurrent Neural Networks
- 15:35 - 16:00 **Roberto Budzinski**
(The University of Western Ontario)
The geometry of phase synchronization, chimera states, and waves in oscillator networks
- 16:00 - 16:30 Coffee break
Colloquium chair: Lucas Wetzel (MPIPKS)
- 16:30 - 17:30 **chimer22 colloquium:**
Eckehard Schöll (Technische Universität Berlin)
Chimeras in Physics and Biology: Synchronization and Desynchronization of Rhythms
- 17:30 - 18:30 Discussions
- 18:30 - 19:30 Welcome dinner

19:30 - 20:30 Informal discussions

Tuesday, 17 May

Chair: Christoph Bruder

09:00 - 09:45

Anna Zakharova (Technische Universität Berlin)
Chimera states in multilayer networks

09:45 - 10:30

Igor Belykh (Georgia State University, Atlanta)
Stability of rotatory solitary states in Kuramoto networks with inertia

10:30 - 11:00

Coffee break

11:00 - 11:45

Victor M. Bastidas
(NTT Basic Research Laboratories)
Chimera states in Non-equilibrium quantum Many-body Systems

11:45 - 12:30

Hon-Wai Hana Lau
(Nanyang Technological University Singapore)
Chimeras patterns in conservative systems and the implementation in ultracold atoms

12:30 - 13:30

Lunch break

13:30 - 14:00

Discussions

Chair: Anna Zakharova

14:00 - 14:45

Adilson Motter (Northwestern University, Evanston)
A Mechanism for the Emergence of Chimera States (virtual)

14:45 - 15:10

Oleh Omel'chenko (University of Potsdam)
Chimera states that breathe and move

- 15:10 - 15:35 **Géza Ódor** (Centre for Energy Research Budapest)
Frustrated synchronization in power-grid and brain models
- 15:35 - 16:00 **Rico Berner** (Humboldt-University zu Berlin)
Emergence of partial synchronization in adaptive oscillator networks
- 16:00 - 16:30 Coffee break

Chair: István Z. Kiss
- 16:30 - 16:55 **Patrycja Jaros** (Lodz University of Technology)
Complex dynamics of small chimera states
- 16:55 - 17:20 **Andrey Shilnikov**
(Georgia State University, Atlanta)
Computational exposition of multistable rhythms in 4-cell neural circuits
- 17:20 - 17:45 **Pezhman Ebrahimzadeh** (Forschungszentrum Jülich)
Mix mode chimera states in network of pendula
- 17:45 - 18:10 **Michael Rosenblum** (University of Potsdam)
High-order phase reduction applied to remote synchronization
- 18:15 - 19:15 Dinner
- 19:15 - 20:15 Poster Session (on-site; main building, 2nd floor)
- 20:15 - 21:15 Poster Session (virtual via gather.town)

Wednesday, 18 May

Chair: Tomasz Kapitaniak

08:35 - 09:20

István Z. Kiss (Saint Louis University)
Weak Chimera States in Modular Electrochemical
Oscillator Networks

09:20 - 10:05

Jan Frederik Totz
(Massachusetts Institute of Technology)
Core splitting of spiral wave chimeras

10:05 - 10:30

Ulrike Feudel
(Carl von Ossietzky University Oldenburg)
Transient chaos in non-locally coupled networks:
chimera-like structures in desynchronization

10:30 - 11:00

Coffee break

11:00 - 11:45

Harald Engel (Technische Universität Berlin)
Transition to Collective Dynamics in Networks of
Chemical Relaxation Oscillators

11:45 - 12:30

Jürgen Kurths (Potsdam Institute for Climate
Impact Research (PIK))
Coherence-resonance chimeras in coupled HR
neurons with alpha-stable Lévy Noise

12:30 - 13:30

Lunch break

13:30 - 14:00

Discussions

14:00

Departure by chartered bus from the institute to
Meissen

- 15:00 Guided tour of a vinery in Meissen incl. tasting, afterwards walking tour to the old town of Meissen
- 18:00 - 20:00 Workshop dinner at the restaurant **Ratskeller**, Markt 1, 01662 Meissen, Tel.: +49 3521 7274740
- 20:15 Return bus transfer to MPIPKS/Dresden main station

Thursday, 19 May

Chair: Harald Engel

- 09:00 - 09:45 **Arkady Pikovsky** (University of Potsdam)
Finite-density-induced motility and turbulence of chimera solitons
- 09:45 - 10:30 **Erik A. Martens** (Lund University)
On the Origin of Chimera States in Mechanical Systems
- 10:30 - 11:00 Coffee break
- 11:00 - 11:45 **Eckehard Schöll** (Technische Universität Berlin)
Controlling chimera states in complex networks: interplay of dynamics, network topology, and time delay
- 11:45 - 12:10 **Serhiy Yanchuk** (Potsdam Institute for Climate Impact Research (PIK))
Chimera-like states in adaptive networks
- 12:10 - 12:35 **Syamal Kumar Dana**
(National Institute of Technology Durgapur)
Chimeras in arrays of Josephson junctions under repulsive interactions
- 12:35 - 13:35 Lunch break
- 13:35 - 14:00 Discussions
- Chair: Ying-Cheng Lai*
- 14:00 - 14:45 **Georgios Tsironis** (Harvard University)
Chimera states in SQUID Metamaterials and Machine Learning Predictions (virtual)

- 14:45 - 15:10 **Debabrata Biswas** (Bankura University)
Networks of coupled oscillators: from phase to amplitude chimeras (virtual)
- 15:10 - 15:35 **Sarbendu Rakshit** (Indian Statistical Institute, Kolkata)
Spike chimera states in neuronal hypernetworks (virtual)
- 15:35 - 16:00 **Oleksandr Burylko**
(National Academy of Sciences of Ukraine)
Symmetry breaking yields chimeras in two small populations of Kuramoto-type oscillators
- 16:00 - 16:30 Coffee break

Chair: Arkady Pikovsky
- 16:30 - 17:15 **Edgar Knobloch**
(University of California at Berkeley)
Stability and instability of chimera states in two and three dimensions (virtual)
- 17:15 - 17:40 **Ralph Andrzejak** (Universitat Pompeu Fabra)
A new bridge between the dynamics of partial synchronization and the geometry of fractals (virtual)
- 17:40 - 18:05 **Davor Curic** (University of Calgary)
Neural desynchronization spreading during sleep-like states reveals critical dynamics (virtual)
- 18:15 - 19:15 Dinner
- 19:15 - 20:30 Informal discussions

Friday, 20 May

Chair: Rajarshi Roy

09:00 - 09:45

Carlo Laing (Massey University Auckland)
Chimeras with uniformly distributed
heterogeneity: Two coupled populations (virtual)

09:45 - 10:30

Dibakar Ghosh (Indian Statistical Institute, Kolkata)
Transitions from chimeras to coherence:
An analytical approach (virtual)

10:30 - 11:00

Coffee break

11:00 - 11:45

Frank Hellmann (Potsdam Institute for Climate
Impact Research (PIK))
Oscillators in Power Grids - a unified perspective
(virtual)

11:45 - 12:30

Tomasz Kapitaniak
(Lodz University of Technology)
Transient chimerastates for forced oscillators

12:30 - 12:45

Closing remarks

12:45 - 13:45

Lunch break

13:45 - 15:00

Informal discussions & departure