

New Frontiers at Heavy Ion Storage Rings: From Atomic Collisions to Many-Body Systems

738. WE-Heraeus-Seminar

20 - 24 June 2022

**HYBRID
at the Physikzentrum Bad Honnef/Germany**

**WILHELM UND ELSE
HERAEUS-STIFTUNG**



Program (CEST)

Sunday, 19 June 2022

18:00 *BUFFET SUPPER for attendees arriving on Sunday*

Monday, 20 June 2022

08:00 *BREAKFAST for attendees arriving on Sunday*

09:00 – 12:00 ARRIVAL and REGISTRATION

12:30 – 14:00 *LUNCH*

14:00 – 14:15 Organizers **Welcome**

Session 1: Magnetic Storage Rings (Chair: Andreas Wolf)

14:15 – 15:00 Daniel Zajfman **The Test Storage Ring @ MPIK and Molecular Ions: A Thirty-Year Perspective**

15:00 – 15:45 Gerard Tranquille **AD-ELENA, The Low Energy Antiproton Facility at CERN**

15:45 – 16:15 *COFFEE BREAK*

16:15 – 17:00 Michael Lestinsky **First Experiments with CRYRING@ESR**

Contributed Talks 1 (Chair: Claude Krantz)

17:00 – 17:20 Weronika Biela-Nowaczyk **Dielectronic Recombination in He-like Oxygen Ions Investigated at CRYRING@ESR**

17:20 – 17:40 Leonard Isberner **First Dielectronic Recombination Measurements at the Cryogenic Storage Ring**

17:40 – 18:00 Pierre-Michel Hillenbrand **Experimental Studies of Nonperturbative Dynamics in Heavy-Ion-Atom Collisions**

Program (CEST)

18:00 – 18:20	Paul Fischer	Time-Resolved Cluster Photo-dissociation in a Multi-Reflection Time-of-Flight Mass Spectrometer
18:20 – 18:40	Åsa Larson	Ab Initio Studies on Charge Recombination Scattering Processes
19:00	<i>DINNER</i>	

Program (CEST)

Tuesday, 21 June 2022

08:00 *BREAKFAST*

Session 2: Experiments at Electrostatic Facilities (Chair: Viviane Schmidt)

09:00 – 09:45	Toshiyuki Azuma	Slow Deexcitation Dynamics of Molecular Ions Stored in RICE and TMU E-Ring
09:45 – 10:30	Lars H. Andersen	Femtosecond Dynamics of Molecular Ions, Studied by Time-Resolved Action Spectroscopy in an Ion-Storage Ring
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Oldrich Novotny	The Cryogenic Storage Ring CSR
11:45 – 12:30	Henning T. Schmidt	Mutual Neutralization Studies with Merged Beams of Stored Ions
12:30 – 14:00	<i>LUNCH BREAK</i>	

Session 3: Collisions (Chair: Abel Kalosi)

14:00 – 14:45	Alfred Müller	The Role of Ion Storage Rings in Studying Electron-Ion Collisions
14:45 – 15:30	Emily Lamour	Ion-Ion Collisions for Atomic Cross Sections Measurements: The FISIC Project at CRYRING
15:30 – 16:15	Ioan F. Schneider	Electron Impact Excitation and Recombination of Molecular Cations: Theoretical Studies and Comparison with Storage Ring Experiments
16:15 – 16:30	Stefan Jorda	About the Wilhelm and Else Heraeus Foundation
16:30 – 19:00	Poster Session / COFFEE	

19:00 *DINNER*

Program (CEST)

Wednesday, 22 June 2022

08:00 *BREAKFAST*

Session 4: Understanding Astrophysical Complexity (Chair: Xavier Urbain)

09:00 – 09:45 Christine Joblin **Study of PAH Photophysics in an Astrophysical Context: The Role of Storage Devices**

09:45 – 10:30 Daniel W. Savin **Astrophysically Motivated Electron-Ion Merged-Beams Studies Using the MPIK Heavy Ion Storage Rings**

10:30 – 11:00 *COFFEE BREAK*

11:00 – 11:45 Alicia Domaracka **Ion Processing of Molecular Clusters: A Way to Form Complex Systems in Space**

11:45 – 12:30 Annemieke Petrigani **Spectroscopy of Interstellar Complex Organic Molecules**

12:30 – 13:30 *LUNCH BREAK*

13:30 **Excursion:**
Hike to Drachenfels vista point and Schloss Drachenburg with refreshments in the park. Details will be announced.

19:00 *DINNER* at the Physikzentrum

Program (CEST)

Thursday, 23 June 2022

08:00 *BREAKFAST*

Session 5: Understanding Atoms and Molecules (Chair: Åsa Larson)

09:00 – 09:45	Sadia Bari	Spectroscopy of Biomolecular Ions at the Advanced Light Sources
09:45 – 10:30	Carsten Brandau	Towards Storage Ring Studies of Highly Charged ^{229}Th Using Nuclear Hyperfine Mixing
10:30 – 11:00	COFFEE BREAK	
11:00 – 11:45	Eva Lindroth	Resonances in the Time and Frequency Domain
11:45 – 12:30	Robert E. Continetti	Reaction Dynamics and Particle Impact Studies with Linear Electrostatic Storage Devices
12:30 – 14:00	<i>LUNCH BREAK</i>	

Session 6: New Instruments and Techniques (Chair: Felix Nuesslein)

14:00 – 14:45	Lisa Gamer	MOCCA: A 4-Kilo-Pixel Microcalorimeter Detector for CSR
14:45 – 15:30	Oded Heber	Merged Beams with Electrostatic Ion Beam Traps (EIBT)
15:30 – 16:15	Robert Moshhammer	Prospects of the CSR Reaction Microscope for In-Ring Electron and Ion Spectroscopy
16:15 – 17:00	COFFEE BREAK	

Program (CEST)

Contributed Talks 2 (Chair: Lutz Schweikhard)

17:00 – 17:20	Arnaud Dochain	Measuring Differential Cross Sections with the Merged Beam Method
17:20 – 17:40	Stephan Fritzsche	A Community Platform for Just Atomic Calculations (JAC)
17:40 – 18:00	Sebastian Fuchs	High-resolution Dielectronic Recombination Spectroscopy with Slow Cooled Pb78+ Ions in the CRYRING@ESR Storage Ring
18:00 – 18:20	Zsolt Mezei	New Insights in the Low Energy Electron-driven Reactivity of Hydride Cations
18:20 – 18:40	Viviane Schmidt	Identification and Removal of Molecular Contaminations at CSR Using Isochronous Mass Spectrometry
19:00	HERAEUS DINNER at the Physikzentrum (cold & warm buffet, with complimentary drinks)	

Program (CEST)

Friday, 24 June 2022

08:00 *BREAKFAST*

Session 7: New Challenges from Astrophysics to Atmospheric Processes (Chair: Annemieke Petrignani)

09:00 – 09:45 James Babb **Radiative Association of Atomic and Ionic Carbon**

09:45 – 10:30 Roland Wester **Controlled Interactions of Cold Trapped Negative Ions**

10:30 – 11:00 COFFEE BREAK

11:00 – 11:45 Viatcheslav Kokoouline **Recent Progress in Theoretical Description of Dissociative Recombination of Polyatomic Molecular Ions**

11:45 – 12:30 Richard D. Thomas **Probing Charge-Transfer Reactions of Atmospheric Importance Using the Ion Storage Facility DESIREE**

12:30 – 12:45 Organizers **Closing Remarks**

12:45 *LUNCH*

End of seminar and departure