

# Laboratory Astrophysics in the Age of ALMA and JWST

799. WE-Heraeus-Seminar

18 - 21 September 2023

at the

Max-Planck-Institut für Kernphysik,  
Heidelberg

**WILHELM UND ELSE  
HERAEUS-STIFTUNG**



# Program

**Monday, 18 September 2023**

12:30 - 14:00	Arrival at the MPIK and Registration (Foyer Otto Hahn Lecture Hall, Building 12)	
14:00	<b>Session 1: Overview and current developments</b>	
14:00 – 14:15	Scientific organizers	<b>Welcome Words</b>
14:15 – 15:00	Thomas Henning	<b>JWST Observations of Star and Planet Formation</b>
15:00 – 15:45	Evelyne Roueff	<b>Physics and chemistry of photon-dominated regions: current challenges</b>
15:45 – 16:30	Paul Molliere	<b>Molecules in Exoplanet Atmospheres</b>
16:30 – 17:00	<i>COFFEE BREAK</i>	
17:00	<b>Contributed Talks</b>	
17:00 – 17:20	Gayatri Batra	<b>Exploring the silicon derivatives of aromatic hydrocarbons for facilitating astronomical searches</b>
17:20 – 17:40	Hayley Bunn	<b>Millimeter/submillimeter spectroscopy and interstellar search for singly and doubly deuterated methyl mercaptan (CH<sub>2</sub>DSH/CHD<sub>2</sub>SH)</b>
17:40 – 18:00	Parker Crandall	<b>Optical Spectrum of the Urotropin Radical Cation</b>
18:00 – 18:20	Lisa Gamer	<b>MOCCA: a 4-kilo-pixel microcalorimeter detector for CSR</b>
18:20 – 18:40	Miguel Jiménez-Redondo	<b>Reactions of CN<sup>+</sup>, HCN<sup>+</sup> and HNC<sup>+</sup> with H<sub>2</sub> studied in a low-temperature ion trap</b>
18:40 – 19:00	Daniel Strasser	<b>Formation of new bonds in ionization of isolated molecules</b>
19:00	<i>BUFFET DINNER AND POSTER SESSION (MPIK Foyer)</i>	

# Program

Tuesday, 19 September 2023

09:00	<b>Session 2: Spectroscopy</b>	
09:00 – 09:45	Silvia Spezzano	Laboratory spectroscopy - From clouds to planets
09:45 – 10:30	Stephan Schlemmer	Misslons: Missing Ions in Laboratory and Space
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Donatella Loru	A multispectroscopic approach to underline the role of polycyclic aromatic hydrocarbons in the interstellar medium
11:45 – 12:30	Guido Fuchs	Old stars with new matter: Watching the infrared sky at high spectral resolution
12:30 – 14:00	<i>LUNCH BREAK</i>	
14:00	<b>Labtour MPIK</b>	
16:00	<i>COFFEE BREAK</i>	
16:30	<b>Contributed Talks</b>	
16:30 – 16:50	Alexey Potapov	Trapped water on silicates in the laboratory and in astrophysical environments
16:50 – 17:10	Tamar Stein	Computational exploration of the oxygen( <sup>1</sup> D) reactivity with C <sub>2</sub> H <sub>x</sub> hydrocarbons: astrochemical reaction pathways
17:10 – 17:30	Taarna Studemund	Small Silicon Oxide Cations as Precursors for Interstellar Dust: Optical Absorption and Photodissociation Properties

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17:30 – 17:50	Akemi Tamanai	<b>Experimental verification for effect of dust agglomeration on MIR spectra: What do individual dust agglomerates tell us about observed spectra?</b>
17:50 – 18:10	Richard Thomas	<b>Probing charge-transfer neutralization reactions in cool plasmas using the ion storage facility DESIREE</b>
18:10 – 18:30	Xavier Urbain	<b>Merged beams experiments with neutral atoms and stored molecular ions at the CSR</b>
18:45	<b>Bus transfer to S’Kastanie</b>	
19:30	<i>CONFERENCE DINNER</i>	

# Program

Wednesday, 20 September 2023

09:00	<b>Session 3: Gas phase experiments</b>	
09:00 – 09:45	Oldrich Novotny	<b>Recombination of molecular ions at the Cryogenic Storage Ring</b>
09:45 – 10:30	Brianna Heazlewood	<b>Studying ion–neutral reaction dynamics at low temperatures</b>
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Sandra Brünken	<b>Infrared Action Spectroscopy as a Tool for Probing Gas-Phase Dynamics</b>
11:45- 12:30	Henning Zettergren	<b>Astrophysical studies at the DESIREE facility</b>
12:30- 14:00	<i>LUNCH BREAK</i>	
14:00	<b>Session 4: Fundamental processes</b>	
14:00 – 14:45	Jennifer Meyer	<b>Ion molecule reactive scattering for astrophysics?</b>
14:45 – 15:30	Roman Curik	<b>Indirect dissociative recombination of cold molecular ions</b>
15:30 – 16:15	Alexandre Faure	<b>Electron collisions with interstellar molecules and molecular ions</b>
16:15	<i>COFFEE BREAK</i>	
17:00	<b>Poster Session</b>	
19:00	<i>BUFFET DINNER AND POSTER SESSION (MPIK Foyer)</i>	

# Program

Thursday, 21 September 2023

09:00	<b>Session 5: From Complex Molecules to Dust Grains</b>	
09:00 – 09:45	Harold Linnartz	<b>Inter- and circumstellar ice research in the era of JWST - the laboratory perspective</b>
09:45 – 10:30	Veerle Sterken	<b>Cosmic dust in the solar system</b>
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Otto Dopfer	<b>Photochemical Properties of Astrochemically-Relevant Silicon Clusters: Bridging the Gap Between Diatomics and Silicate Grains</b>
11:45- 12:30	Annemieke Petrignani	<b>Zooming in on photo-processing of PAHs</b>
12:30- 14:00	<i>LUNCH BREAK</i>	
14:00	<b>End of the seminar and departure</b>	