



COLOGNE 2021

30 August – 3 September, 2021

<https://astro.uni-koeln.de/hrms2021>



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First Circular: December 2020

The Colloquium will be held at the "Department of Chemistry" of the "University of Cologne", KÖLN – GERMANY (approximately 20 min by tramway from the train station [Köln Hbf]). The local organization will be undertaken by the "Laboratory Astrophysics Group" of the I. Physikalisches Institut, Universität zu Köln.

Scientific Program:

There will be **10 invited lectures** and **3 mini-symposia**. Parallel sessions will feature **36 contributed lectures given by PhD students and postdocs**. **7 poster sessions** are planned. The scientific fields covered are:

- High resolution rotational, vibrational, and electronic spectroscopy of molecules (radicals, ions, complexes, clusters, ...)
- Molecular dynamics
- Theory assisting the prediction, simulation, and interpretation of spectra
- New techniques for high-resolution spectroscopy
- Applications to atmospheric sciences, astrophysics, planetology, combustion, gas-phase biomolecules, metrology and fundamental physics, cold molecules, etc.

Important dates:

- 2nd circular: **February/March 2021**
- Deadline for final registration and submission of abstracts: **June 1st 2021**
- Deadline for final reservation of accommodations: **June 1st 2021**
- 3rd circular with meeting information: **July 2021**

Covid-19 information:

The symposium is planned as a conference in presence mode in Cologne from August 30 to September 3, 2021. Due to the Covid-19 pandemic it is not fully clear at present whether the conference can be held in person in summer of 2021. However, **the symposium will be held in any case** either in presence mode as planned up to now or online, if required by the pandemic conditions. Please mark the symposium in your calendar and stay tuned for the second circular in February/March 2021 for further information.

Accommodation and Meals:

Single, double and larger rooms have been reserved at two youth hostels in the city, conveniently to be reached by tram. Participants who prefer to stay in hotels should arrange for the reservations themselves. For this purpose, a link to the official tourism office will be available on the homepage of the colloquium (see below). Hotel reservations should be made quite early, as August is a highly touristic period. Lunch will be available at the campus restaurant „Mensa“. During the conference there will be an excursion combined with a banquet. Moreover, excursions for accompanying persons will be organized. For participants arriving on Sunday August 29, 2021, corresponding arrangements for accommodations will be available.

Fees:

We estimate conference fees to be 300 € (350 US\$), with a reduction for students (250 €, 300 US\$). This price includes congress participation, colloquium proceedings, welcome on Sunday August 29th in the evening, excursion and banquet. Further information (including prices for accompanying persons) will be given in the second circular. Fees will increase after an **Early Bird Registration** Period ending May 1.

WARNING: No cash payment will be accepted (only credit card or bank transfer payment is possible).

Amat-Mills Prizes:

As in previous colloquia, two prizes will award the best student talk and the best student poster. Instructions for application will be given in the second circular.

WWW home page:

Up-to-date information can be found on the conference home page:

<https://astro.uni-koeln.de/hrms2021>

You may also contact the local organizing committee via E-Mail : hrms2021@ph1.uni-koeln.de

Invited Speakers

Pascale Ehrenfreund (German Aerospace Center (DLR), Germany):

Space Exploration: Tracing Organics and Habitability in our Solar System and beyond

Clara Sousa-Silva (Harvard University, Cambridge, MA, USA)

Creating a Spectroscopic Toolkit for the Characterization of Exoplanets

Anne Amy-Klein (Université Paris 13 Nord, France)

High-Precision Molecular Spectroscopy referenced to Frequency Standards at the 10⁻¹⁴ Level

Isabelle Kleiner (Université Paris-Est, France)

Spectroscopy of large Amplitude Motions: From Interstellar Chemistry to Molecular Structures

Thomas R. Rizzo (Ecole Polytechnique Fédérale de Lausanne, Switzerland)

Cryogenic Vibrational Spectroscopy of Conformationally Selected Biomolecules

Ann Carine Vandaele (Royal Belgian Institute for Space Aeronomy, Brussels, Belgium)

Spectroscopic Exploration of the Martian System

Joseph T. Hodges (NIST, Gaithersburg, USA)

Cavity-based Spectroscopy – Towards one-dimensional Spectra traceable to the Cs Clock

Edit Mátyus (Eötvös Loránd University, Budapest, Hungary)

Recent Developments and Future Challenges in Molecular Quantum Theory

Henrik Kjaergaard (University of Copenhagen, Denmark)

Accurate Gibbs Energies of Complex Formation

Ad van der Avoird (Radboud Universiteit, Nijmegen, Netherlands)

Para-Ortho Hydrogen Conversion: Solving a 90-Year Old Mystery

Martin Suhm (University of Göttingen, Germany)

A Doorway to Vibrational Resonance and other Benchmarkable Quantities in Hydrate Clusters

Minisymposium 1: Laboratory astrophysics and spectroscopy

- Oskar Asvany (University of Cologne, Germany):

Rotational Action Spectroscopy in Ion Traps

- Brett McGuire (MIT, Cambridge, MA, USA):

Big Game Hunting: Tools and Techniques for Identifying Large Molecules in Space

- Christine Joblin (IRAP, Toulouse, France): *Deciphering the Infrared Emission of Astro-PAHs: The Interplay between Laboratory Experiments, Quantum Chemistry and Modelling*

- Peter Schilke (University of Cologne, Germany):

High Excitation Molecular Lines in Various Astrophysical Environments

Minisymposium 2: Spectroscopy Environmental and Atmosphere

- Agnès Perrin (Universités de Paris, France):

Molecules of Tropospheric or Stratospheric Interest: From the Laboratory Spectroscopy to Satellite Applications

- Didier Mondelain (Université Grenoble Alpes, France):

Molecular Spectroscopy by Laser Techniques for the Study of Planetary Atmospheres

- Georg Wagner (German Aerospace Center (DLR), Germany):

FT Spectroscopy in Support of Atmospheric Spectroscopic Databases: Recent Advances at DLR

- Lilian Joly (Université de Reims Champagne-Ardenne, France):

Atmospheric Measurements by Ultra Light SpEtrometer: Greenhouse Gas Measurements under tethered Balloons, Weather Balloons and Drones

Minisymposium 3: Precision Spectroscopy

- Shuiming Hu (University of Science and Technology of China, Hefei, China):

Cavity-Enhanced Precision Spectroscopy of Molecules: Methods and Applications

- Stephan Schiller (University of Düsseldorf, Germany):

High-Resolution Spectroscopy of the Simplest Molecule: From Novel Techniques for Molecular Ion Spectroscopy to Fundamental Physics

- Luigi Consolino (Istituto Nazionale di Ottica, Florence, Italy):

THz High Precision Spectroscopy

- Takeshi Yasui (University of Tokushima, Japan):

THz Dual-Comb Spectroscopy