Editorial of the 10th International Conference on Precision Physics of Simple Atomic Systems (PSAS2018)

Preface
The PSAS2018 took place at the Sky Lounge of the University of Vienna, Oskar Morgenstern Platz 1, 1090 Wien, Austria, from Monday 14th to Friday 18th of May 2018. It was organized by the Stefan Meyer Institute for Subatomic Physics (SMI) of the Austrian Academy of Sciences (ÖAW). This was the 10th edition of this biannual conference series. Previous holdings of PSAS are listed further below.

The conference series is devoted to precision studies of simple atomic and molecular systems in order to develop new approaches and to access various fundamental issues within and beyond atomic physics, and possible new physics. Applications include aspects from particle and nuclear physics, atomic and molecular physics, astrophysics and metrology. PSAS2018 covered the following topics:

- Precision spectroscopy of low mass atoms
- Few-electron ions with medium and high Z
- Molecular systems
- Subatomic systems
- Antimatter and exotic atoms
- Fundamental symmetries
- Fundamental constants and their variations
- QED and advanced quantum mechanics
- Casimir effect and its applications
- Precision frequency measurements
- Astrophysics and cosmology
- New SI system
Following the welcome reception at SMI on Sunday 13th of May, the conference was opened on Monday morning by Savely Karshenboim (Chair), Joachim Burgdörfer (IUPAP Liaison) and Eberhard Widmann (Chair and local organizing committee).

On the following days an exciting and busy programme awaited the 116 participants. To give some examples, important and highly topical contributions treated the transition to the new SI system, where artifact-based units are replaced by fundamental constants and atomic properties. Very recent precision measurements on fundamental transitions in hydrogen were presented, which disagree with each other and put additional emphasis on the importance and difficulty to scrutinize the proton size puzzle. Furthermore, precision measurements and calculations on simple molecules and molecular ions have been presented as well as the latest results from antihydrogen and other exotic atoms. Among several outstanding theoretical contributions the four-loop QED calculation for $g-2$ is a particularly noteworthy achievement, where the final results from a 20 years long effort have been presented.

In total 67 oral presentations were given in plenary sessions, 20 of them as invited talks. On each day there were two morning and two afternoon sessions, with exceptions on Wednesday (conference excursion on the afternoon) and on Friday (only one afternoon session). This resulted in 17 sessions with typically 4 speakers each. A total of 32 poster contributions were presented in two sessions on Monday and Tuesday evening and completed the scientific programme. Prizes for the best student posters were awarded to Laura Dreissen, Niklas Michel and Andreas Weigel. Gordon Drake, as a frequent participant and advisor of the PSAS conference series and member and supporter of the community sponsored these awards in his absence, as he couldn't participate personally in PSAS2018 due to other commitments.

The scientific programme was rounded off with social events to provide a setting for animated and fruitful discussions. It is the spirit of the PSAS conference, that the community is not divided during the week, therefore oral contributions had a maximum length of 30 minutes in order to accommodate the large number of talks without the need of parallel sessions. The longer presentation times were granted to the invited speakers and 32 contributors, who committed to submitting a manuscript for the proceedings of PSAS2018. We tested such a scheme as an incentive for the participants to write a proceedings publication and as a fair and transparent way of granting presentation times. Unfortunately, this goal was not attained and in an otherwise very enjoyable conference this surprisingly low moral to honor a proceedings commitment has to be mentioned as the only drop of bitterness. Invited speakers were encouraged to submit proceedings and we thank Stefano Laporta, Catalina Curceanu and René Sedmik for following this recommendation.

An official webpage was implemented for the of PSAS2018 conference (www.psas2018.at). The detailed programme is publicly available on an indico webpage (https://indico.cern.ch/e/psas2018), which was also used to handle abstract submission and registration. We wish to thank CERN for kindly hosting the indico webpage and CERN's indico support team for their frequent and prompt help.
Conference Photo and Conference Excursion
The official conference photo was taken before the lunch break on Tuesday 15th of May. A memorable group photo was also taken during the conference excursion to the Stift Klosterneuburg on the afternoon of Wednesday 16th of May.
Committees

International Advisory Committee

• Claudio Lenz Cesar (Univ. Fed. Rio de Janeiro)
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• Peter Mohr (NIST)
• Krzysztof Pachucki (Warsaw University)
• Wolfgang Quint (GSI)
• Guy Ron (Hebrew Univ. of Jerusalem)

Conference Chairs

• Savely Karshenboim
  Ludwig-Maximilians-Universität, Fakultät für Physik, München, Germany
  Max Planck Institute of Quantum Optics, Graching, Germany
  Pulkovo Observatory, St. Petersburg, Russia
• Eberhard Widmann
  Stefan Meyer Institute, Wien, Austria

Local Organising Committee

• Eberhard Widmann
• Johann Marton
• Martin Simon
• Bernadette Kolbinger
• Julia Matejka
• Fiona Boes
• Doris Pristauz-Telsnigg
• Milen Nenov
• Peter Szokol

Previous holdings of PSAS conferences

• PSAS2016 in Jerusalem
• PSAS2014 in Rio
• PSAS2012 in Eltville
• PSAS2010 in Les Houches
• PSAS2008 in Windsor
• PSAS2006 in Venice
• PSAS2004 in Mangaratiba-Rio
• PSAS2002 in Pushkin-St. Petersburg
• PSAS2000 in Castiglione della Pescaia
Endorsement and Support from Scientific Organisations

PSAS2018 was endorsed by the CODATA task group on fundamental constants.
http://www.codata.org/

CODATA

Support was received by the training network "Accelerators Validating Antimatter" AVA, which is a project from the European Union’s Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 721559.
https://www.liverpool.ac.uk/ava/

AVA

PSAS2018 received sponsorship by the International Union of Pure and Applied Physics (IUPAP) under the Commission 2 (C2) as a Topical Type B conference.

The organizers of PSAS2018 agreed to abide by IUPAP Policies on Conferences, most notable those of Free Circulation of Scientists and on harassment at conferences. Detailed statements were made public on the conference homepage together with a download for the IUPAP poster. The organizers also named two persons as IUPAP advisors, who would consult with those who have suffered from harassment and who would suggest ways redressing their problems

- Chloé Malbrunot, CERN
- Johann Zmeskal, SMI

Thanks to the support of the IUPAP Lakshmi Natrajian (University of Mumbai, India) and Anuradha Natarajan (Dept. of Physics, S.I.W.S. College, Mumbai, India) were able to participate at PSAS2018 and present their contributions.
http://iupap.org/
Sponsors
PSAS2018 received sponsorship by

L+H Vakuum Technik: http://www.lhvakuuum.at/

Hositrad Vacuum Technology: https://www.hositrad.com/

CAEN: http://caen.it/

We express our gratitude to all supporters and sponsors and as well to all session chairs, presenters and participants for their share in making PSAS2018 a successful conference.

We thank the authors of the conference proceedings for their contributions and the referees for their valuable anonymous work.

The editors

Martin Simon
Bernadette Kolbinger
Eberhard Widmann
Savely Karshenboim