Astrophysics with modern small-scale accelerators

496. Wilhelm und Else Heraeus – Seminar
6-10 February 2012, Physikzentrum Bad Honnef, Germany

First circular, dated 15 September 2011

This is the first circular of the 496th Wilhelm und Else Heraeus – Seminar, on „Astrophysics with modern small-scale accelerators".

The seminar aims to bring together both experienced and young scientists working in the field. Scientists from Germany and abroad are invited to apply. Ideally, about half of the participants should be PhD students or young postdocs.

For all participants board and lodging will be covered by the Wilhelm und Else Heraeus Foundation.

Scientific scope

The quest for the origin of the chemical elements is intimately linked to understanding the origins of mankind. In order to answer it, information from several areas of physics are needed, including astronomical and meteoritical observations and stellar models.

Nuclear reactions link the astrophysical models with the astronomical observations. In order to make a meaningful comparison between model and observation, the uncertainties of the nuclear reaction rates must be sufficiently low. For stable or sufficiently long-lived nuclei, the relevant nuclear reactions can usually be studied at small accelerators. Stable-beam experiments at small accelerators can more easily approach the astrophysically relevant low energies than larger scale, radioactive ion beam facilities with their generally much lower beam intensity. In addition, the higher luminosity enables precision experiments. However, presently low-energy, small accelerator based experiments are hosted at a variety of relatively small facilities without much coordination.

The workshop aims to bring together specialists from small accelerator based facilities from Germany and worldwide, with the aim to detect synergies between different experimental approaches and facilities. To this end, there will be overview talks by renowned scientists, in addition to a limited number of contributed talks. Two overview talks will be dedicated to a look over the horizon at large-scale facilities such as FAIR and CERN. Another important part of the program are extended poster sessions including brief oral presentations of the posters. Finally, about a quarter of the seminar time will be assigned to discussions to facilitate the detection and exploitation of synergies.

Invited overview speakers

Daniel Bemmerer (Helmholtz-Zentrum Dresden-Rossendorf, Germany)
”Nuclear astrophysics at underground Laboratories”
Shawn Bishop (Technische Universität München, Germany)
”Charge exchange and other reactions”
Michael Heil (GSI Helmholtzzentrum für Schwerionenforschung, Germany)
”Neutron-induced reactions”
György Gyürky (ATOMKI, Hungary):
”Proton- and Alpha-induced reactions”
Franz Käppeler (Karlsruhe Institute of Technology, Germany):
”Astrophysics with spallation sources”
Reiner Krücken (TRIUMF, Canada):
”Astrophysics with radioactive ions”
Oliver Meusel (Goethe Universität Frankfurt, Germany):
”New experimental developments - accelerators”
Ralf Plag (GSI Helmholtzzentrum für Schwerionenforschung, Germany):
”New experimental developments – data acquisition”
Thomas Rauscher (Universität Basel, Switzerland):
”Theory - network calculations – nuclear potentials”
Georg Rugel (Helmholtz-Zentrum Dresden-Rossendorf, Germany):
”Accelerator Mass Spectrometry”
Kerstin Sonnabend (Goethe Universität Frankfurt, Germany):
”Photon-induced Reactions”
Michael Wiescher (University of Notre Dame, USA):
”The birth of the chemical elements”

Venue, travel, and accommodation

The seminar will take place at the Physikzentrum Bad Honnef (PBH), near Bonn/Germany. PBH is hosted in a 19th century industrialist’s villa with a pleasant park near Germany’s oldest natural reserve.

Nearby international airports include Cologne/Bonn, Düsseldorf, and Frankfurt. The nearest train station is Rhöndorf, at 10 minutes walking distance.

All participants will be hosted inside the Physikzentrum, in single and double rooms, facilitating informal discussions. The meals will also be served in the Physikzentrum.

Registration, abstract submission, and conference fee

Registration should be done on the workshop web site
http://exp-astro.physik.uni-frankfurt.de/we-heraeus-seminar
by December-1, 2011. (Click on „Registration“.) An abstract can be submitted when registering. There is no conference fee. Participants are strongly encouraged to submit an abstract for an oral or poster presentation. The number of participants is limited to 60.

In order to encourage discussions between participants, all speakers and participants are kindly asked to participate for the full duration of the workshop (Monday morning 6 February 2011 – Friday noon 10 February).

Dates and deadlines

September-19, 2011:	First circular including call for papers.
December-1, 2011:	Registration and abstract submission, at this weblink.
January-7, 2012:	Second circular including scientific program.
February-5, 2012:	Arrival of participants at PBH, welcome reception
February-6, 2012:	8:30 start of workshop
February-10, 2012:	12:30 closing of workshop

Scientific organizers

René Reifarth
Institut für Angewandte Physik, Goethe-Universität Frankfurt am Main
reifarth@physik.uni-frankfurt.de

Daniel Bemmerer
Institut für Strahlenphysik, Helmholtz-Zentrum Dresden-Rossendorf (HZDR)
d.bemmerer@hzdr.de

Kerstin Sonnabend
Institut für Angewandte Physik, Goethe-Universität Frankfurt am Main
sonnabend@iap.uni-frankfurt.de

Andreas Zilges
Institut für Kernphysik, Universität zu Köln
zilges@ikp.uni-koeln.de

Conference secretary

Charlotte Schleyer
Institut für Angewandte Physik, Goethe-Universität Frankfurt am Main
Max-von-Laue-Straße 1, 60438 Frankfurt am Main, Germany
schleyer@iap.uni-frankfurt.de
Phone: +49-69-798-47439
Fax: +49-69-798-47444

Workshop web site

http://exp-astro.physik.uni-frankfurt.de/we-heraeus-seminar