781st ASRC Seminar

Date: 2月18日(火) 15:00 ～16:30

Location: Meeting Room 103, ASRC bldg.

Speaker: Dr. Dieter Ackermann(GANIL,France)

Title: Superheavy nuclei and others
– nuclear structure and reaction studies at GANIL, S3 and beyond

要旨: The scientific program envisaged at S3, includes the investigation of superheavy nuclei (SHN) and isotopes in the region of N=Z, as well as atomic physics studies. This presentation will mainly focus on the part concerning the heaviest species in the chart of nuclides, the Segré chart. A summary of the scientific program envisaged for the field of SNH is given e.g. in ref.s [1, 2]. The possible features to be studied for the various heavy and superheavy nuclei range from cross section measurements to detailed decay spectroscopy. X-ray spectroscopy has the potential of settling the still open question of Z identification for the heaviest nuclei produced for the first time at the FLNR (see e.g. ref.s [3, 4]). Apart from allowing for the investigation of K-isomers, isotopic and isotonic trends of low-lying nuclear excitations by exploiting γ-electron- α/fission and X-ray coincidences, S3's focal plane detection system SIRIUS is also an ideal tool to study delayed processes like isomeric states and β-delayed fission. In addition, a low energy set-up including a gas stopping cell, laser spectroscopy instrumentation and a multi-reflection time-of-flight spectrometer (MR ToF) will be used to study nuclei in the N=Z region as well as the heaviest nuclear species. In a farer future the synthesis and investigation of, also so far unknown, highest-Z systems is envisaged, for which the earlier experiments will establish the basis. The envisaged scientific program at S3, concerning the initial exploitation phase, as well as preparatory activities at GANIL and elsewhere will be discussed in this presentation.

[1] D. Ackermann and Ch. Theisen, Phys. Scripta 92, 083002 (2017).
[2] D. Ackermann, Nucl. Phys. A 944, 376 (2015).
[3] Y.T. Oganessian and V.K. Utyonkov, Nucl. Phys. A 944, 62 (2015).
[4] Y.T. Oganessian, A. Sobiczewski, and G.M. Ter-Akopian, Phys. Scr. 92, 023003 (2017).

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