独立行政法人理化学研究所　仁科加速器研究センター
第75回RIBF核物理セミナー
RIKEN Nishina Center for Accelerator Based Science
The 75th RIBF Nuclear Physics Seminar

Superheavy element research at GSI

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The search for superheavy elements (SHE), or transactinides, and the investigation of their nuclear and chemical properties are highly ranked, key research topics at the GSI. This research is pursued with a variety of techniques: the velocity filter SHIP, the penning trap SHIPTrap, the gas-filled separator TASCA, the nuclear spectroscopy setup TASISpec, and, last not least, sophisticated chemical techniques. These, very often highly complementary techniques will be described briefly. In an exemplary way, most recent results of the search for superheavy elements at SHIP and a breakthrough of direct mass measurements in the heavy element region with SHIPTrap will be mentioned. Gas-phase chemistry has provided means to discover and investigate Hs (element 108) isotopes around the doubly-magic ^{270}Hs. These mainly nuclear oriented studies – which include nuclear reaction and nuclear structure aspects - have, at the same time, provided much better "chemical" data on the volatility of HsO_4. These results will be compared with most recent fully-relativistic theoretical model calculations. The new and highly efficient gas-filled recoil separator TASCA is now fully commissioned. Its performance will be discussed together with perspectives for the planned SHE research program. As TASCA can be operated with a small spot in the focal plane, the newly emerging TASISpec setup plans to exploit these possibilities with its highly efficient
α-e⁻-γ-X-ray multi-coincidence spectroscopy in the SHE region.

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The seminar will be given in English.

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