



## Research Activities at GSI's SHIP Separator

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The velocity filter SHIP at the GSI in Darmstadt separates the intense heavy-ion beams delivered by UNILAC from the products of complete heavy-ion-induced fusion reactions. SHIP was among the first experimental devices to become operational at the GSI accelerator facility in 1976, and this year marks its 50th anniversary. Initially, SHIP was primarily dedicated to the synthesis of superheavy elements, leading to the discovery of six new chemical elements, from hassium to copernicium.

Over time, the scientific program has continuously evolved and, in recent years, has expanded to include pioneering experiments in high-precision mass spectrometry with the SHIPTRAP Penning trap, as well as laser spectroscopy studies using the RADRIS and JetRIS setups. Recent highlights include high-precision mass measurements of superheavy nuclides including long-lived isomeric states [1], laser spectroscopy investigations of isotope shifts in fermium and nobelium isotopes [2], and high-resolution laser spectroscopy of <sup>254</sup>No [3].

In this presentation, I will briefly introduce the experimental methods and review selected highlights from recent experimental campaigns.

### References

- [1] O. Kaleja *et al.*, Phys. Rev. C **106**, (2022) 054325.
- [2] J. Warbinek *et al.*, Nature **634** (2024) 1075.
- [3] J. Lantis *et al.*, Phys. Rev. Res. **6**, (2024) 023318.