

Tests for laser cooling experiments

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In July 2016, test experiments with stored $^{12}\text{C}^{3+}$ beams (122 MeV/u) could be conducted at the ESR in Darmstadt, Germany. The same type of ion beam was used in August 2012 for a laser cooling experiment, but then a small admixture (12%) of $^{16}\text{O}^{4+}$ was present. This time, we had pure carbon ion beams and also with a much higher ($\sim 10\times$) intensity. Inside the vacuum of the ESR, an XUV detector system, developed by the university of Münster, was installed for tests using the fluorescence from the laser-excited ions. For the excitation, two different laser systems have been used, a pulsed system and a scanning cw system. Both laser systems were developed for laser cooling of stored ion beams, and were also to be tested during this beamtime. The pulsed laser system was developed by the TU-Dresden and HZDR, the scanning cw laser system by the TU-Darmstadt. We will present the detector and laser systems used during the test beamtime at the ESR, and will show some of the preliminary data that could be obtained.

Collaboration

SPARC

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