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The low energy Storage Ring - CRYRING@ESR - Project

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The Swedish in-kind contribution to the FAIR facility in Darmstadt, the heavy-ion storage ring CRYRING will be transported to Darmstadt this year. Instead of warehousing until installation at the Facility for Antiproton and Ion Research, FAIR, the immediate installation behind the existing Experimental Storage Ring, ESR, has been proposed and worked out in detail by a Swedish-German working group.

The proposed installation behind the ESR in combination with its own injector makes CRYRING@ESR the perfect machine for FAIR related tests of diagnostics, software and concepts on one side, and atomic physics experiments with heavy, highly charged ions stored at low energy on the other side. Challenging physics perspectives are also opened up for low-energy nuclear physics investigations. CRYRING@ESR provides beams of low charged ions independently on the GSI accelerator facility, which will have to shutdown for an extended period due to necessary upgrades towards FAIR and, hence, provides an on-line test environment for FAIR parts. CRYRING can decelerate, cool and store heavy, highly-charged ions down to a few 100 keV/nucleon. It provides a high performance electron cooler in combination with a gas jet target and thus opens up a very attractive physics program as a natural extension of the ESR, which can only operate down to about 4 MeV/nucleon. CRYRING@ESR is a first step towards atomic physics with low-energy, highly charged ions at FAIR as planned within the SPARC and APPA collaborations.

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