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## A Low-Energy Storage Ring at an ISOL Facility: A Vision for the Future

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Employing storage rings for precision physics experiments with highly charged ions (HCI) is a powerful approach –yet the full potential of this method remains to be unlocked at low energies. Storage of freshly produced secondary particles in a storage ring is a straightforward way to achieve the most efficient use of these rare species.

All presently operating heavy-ion storage rings are in operation at high-energy in-flight facilities. However, there are numerous physics cases requiring beams at low energies.

Successful nuclear reaction studies at the ESR have been demonstrated at GSI with decelerated beams and at CRYRING at GSI with stable beams from a local injector. Pure, ultra-thin, windowless gas targets in combination with beam cooling enable highest energy and angular resolutions. However, the deceleration of the beam is a slow process accompanied with inevitable beam losses.

Therefore, there is a dream to build a dedicated low-energy storage ring at an ISOL facility with a post-acceleration capability. One of the major advantages is the ability to efficiently accumulate the beam if it is injected directly at the energy required by the experiment. Depending on the radioactive half-life and beam loss rates, this may provide beam intensities approaching space charge limit.

Looking ahead, it might be possible to incorporate into the ring a free-neutron target. Combined with intense radioactive ions beams this would open an enormous discovery potential for neutron-induced reaction studies.

While the storage ring project at CERN/ISOLDE awaits realization, the scientific case has been firmly established. TRIUMF, with its world-leading ISOL capabilities and post-acceleration infrastructure, stands as an ideal site to bring this vision to life.

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