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Isolde V

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The Isolde facility was established in 1967 and since then has been rebuilt three times, in 1976, 1983 and in 1992. The fourth and current incarnation is 26 years old, and there is now a strong case for another major upgrade to address increasing demands on the targets, the isotope separators, and the experimental hall.

The existing target areas are well designed and have already been upgraded with new frontends in 2010 and 2011. However the scope for further upgrades is limited. For this reason an extension of the target area is proposed, with two new target stations along with new isotope separators and a modern beam delivery system. This would modernise and expand Isolde's capabilities whilst minimising perturbation of the existing facility.

The new target stations would be designed for the $2\text{ GeV } 4\mu\text{A}$ proton beam from the upgraded PS-Booster synchrotron. The eventual performance of the upgraded PS-Booster is uncertain, and the target stations should be capable of accepting up to $6\mu\text{A}$ of protons.

The proposed beam-line layout would permit routine delivery of 3 to 4 simultaneous beams to the Isolde experimental area. This would dramatically increase the amount of beam time available, and along with the intensity increase of the driver beam the overall output of Isolde should be increased by at least four times over the current level.

Other features of the Isolde V proposal include a new beam-cooler and HRS for routine isobar separation, a dedicated non-radioactive ion-source for testing and machine development, and a flexible beam switching system for improved scheduling. A layout for a new experimental area will be shown for new or upgraded experiments. This could even free up sufficient space inside the existing hall for the proposed ISR compact ion storage ring.

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