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Status of PUMA at the new isobar separator beamline RC6

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The antiProton Unstable Matter Annihilation (PUMA) experiment aims to probe the surface properties of stable and unstable isotopes by annihilating antiprotons with protons and neutrons on the surface of nuclei [1]. The pions generated in the annihilation events are identified and counted using a time-projection chamber and a scintillator trigger barrel surrounding the interaction region. While no facility to date combines radioactive ion beam and antiproton production, PUMA aims to bring antiprotons from the Antiproton Decelerator “across the street” to ISOLDE using a transportable ion trap. The experiment’s requirements on isobaric beam purity and vacuum conditions motivate the installation of the new RC6 beamline at ISOLDE, including the Multi-Reflection Time-of-Flight mass spectrometer (MR-ToF MS), currently in operation at the MIRACLS experiment [2]. In this contribution, the status of the PUMA Penning trap, trigger barrel, and TPC are presented, together with the progress on the construction of the new RC6 beamline.

[1] T. Aumann et al., Eur. Phys. J. A (2022) 58: 88

[2] F. Maier et al., NIM A 1048 (2023), 167927

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