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Commissioning of the RFQ Components for St. Benedict

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The Superallowed Transition Beta-Neutrino Decay Ion Coincidence Trap (St. Benedict) is currently under construction at the Nuclear Science Laboratory (NSL) at the University of Notre Dame. It aims to measure the beta-neutrino angular correlation parameter for superallowed mixed mirror beta decays. Measurements of this kind offer unique insight into the electroweak part of the Standard Model through tests of unitarity of the Cabibo-Kobayashi-Maskawa (CKM) matrix. In order to make these measurements at the required precision, radioactive ions coming from the tandem accelerator at the NSL must be stopped and then delivered to a trap in bunches with low emittance and well defined energy. St. Benedict will achieve this with the use of several elements including a large volume gas cell, a differentially pumped chamber containing both a radio-frequency carpet and a radio frequency quadrupole (RFQ) ion guide, an RFQ cooler and buncher and a Paul trap. Progress on the offline commissioning of the ion guide and cooler and buncher will be presented along with the status of the Paul trap. This work is supported by the National Science Foundation under grant number PHY-1725711.

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