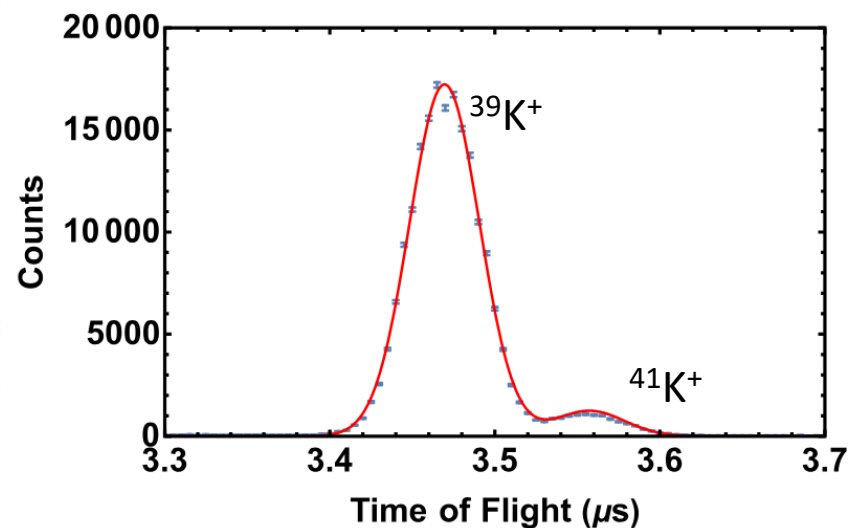
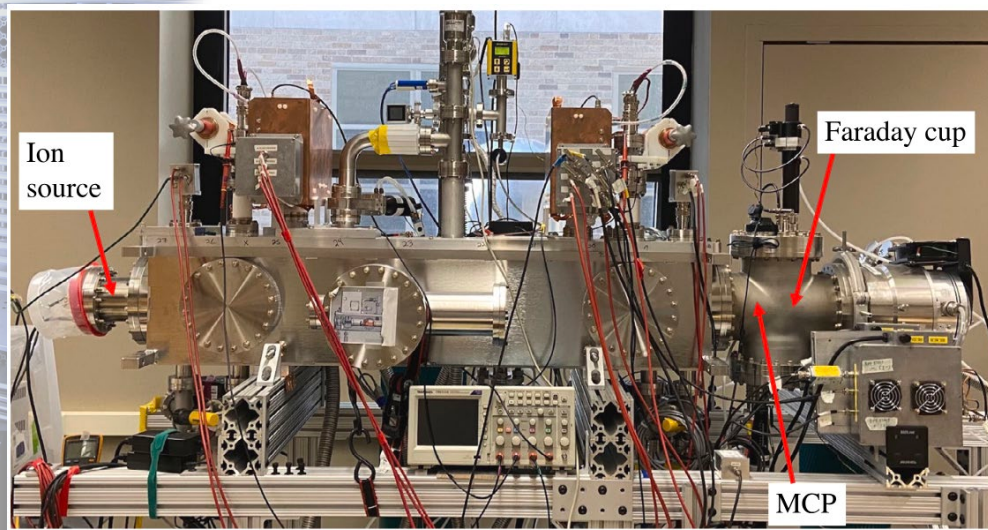


Commissioning of the St. Benedict cooler-buncher



- The Superaligned-Transition-Beta-Neutrino-Ion-Coincidence-Trap (St. Benedict) aims to test predictions of the Standard Model from precision angular correlation measurements of beta decay transitions between mirror nuclei.
- A critical component of St. Benedict is its radio-frequency quadrupole that will cool and bunch the continuous radioactive ion beam from the gas catcher enabling its capture in the downstream measurement Paul trap.
- The cooler-buncher can produce 50 ns-wide bunches resulting in a clear separation of $^{39}\text{K}^+$ and $^{41}\text{K}^+$ at the exit of the device while achieving a 93(1)% bunching efficiency.



D.P. Burdette *et al.*, NIM A **1084**, 171187 (2026)
PHY-1713857, 2050527, 2310059

