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## Recent Results from the FIONA Separator at LBNL

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Recently, the Berkeley Gas-filled Separator (BGS) at the Lawrence Berkeley National Laboratory (LBNL) was coupled to a new mass analyzer, FIONA. The goal of BGS+FIONA is to provide a  $M/\Delta M$  separation of  $\sim 300$  and transport nuclear reaction products to a shielded detector station on the tens of milliseconds timescale. These upgrades will allow for direct  $A$  and  $Z$  identification of ii) new actinide and transactinide isotopes with ambiguous decay signatures such as electron capture or spontaneous fission decay and i) superheavy nuclei such as those produced in the  $48\text{Ca} + \text{actinide}$  reactions.

Nuclear reaction products recoil from the target and are separated from the beam and unwanted reaction products in the BGS. There they pass through a window and into a radio-frequency gas catcher where they are thermalized and extracted into a radio-frequency quadrupole (RFQ) trap. The nuclear reaction products are cooled and bunched in the RFQ trap, where they maintain a  $+1$  or  $+2$  charge, and are injected into the mass analyzer. The mass analyzer consists of crossed electric and magnetic fields such that the ions take trochoidal trajectories. Here we will present recently results from the FIONA commissioning experiments.

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