Novel detectors and analysis methods for radioactive ion beam experiments

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Radioactive ion beam (RIB) facilities allow experimental studies of short-lived atomic nuclei. These experiments are necessary for understanding a range of topics from fundamental questions about nuclear structure to the origin of the elements in our universe. To efficiently run these RIB experiments, advances in detector technology and analysis methods are needed to efficiently make use of the often limited beam time awarded to these experiments. This talk will have two parts. The first part will focus on the development of a next generation neutron detector and the second part with discuss analysis techniques using AI/ML. These are both used in current and future experiments at the Facility for Rare Isotope Beams (FRIB).