Argonne NATIONAL LABORATORY

PHY Seminar

Physics Division Seminar

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Extending our Knowledge of Neutron-Rich Very Exotic Nuclei at the RIBF: First In-Beam γ-Spectroscopy of ^{78}Ni

Host: Daniel Santiago

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Magic numbers, defining closed shells for stable nuclei, have been reexamined in radioactive nuclei where the unbalanced proton-to-neutron ratio questions the persistence or evolution of the established shell gaps. ^{78}Ni, with 28 protons and 50 neutrons, provides a unique testbed to investigate the persistence of those magic numbers for very neutron-rich nuclei. We will report on the first γ in-beam spectroscopy measurement of ^{78}Ni performed at the RIBF facility (Wako, Japan). This experiment combined the MINOS device, a thick liquid hydrogen target surrounded by a proton tracker, with the DALI2 γ-ray array, in order to measure the first excited states of ^{78}Ni from one- and two-proton knockout reactions.