

# Decay of Highly Polarized Nuclei at the Isolde Decay Station

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The capability to deliver highly polarized beams to the Isolde Decay Station (IDS) detector system will offer an capability beyond any other nuclear physics facility in the world. Typical beta decay experiments are limited to estimating the spin-parity of the excited states to gamma-gamma correlation measurements, which require large statistics, or estimates from the decay strength. Nuclei will be laser polarized and delivered to the IDS with a dedicated beamline using small gauss coils to maintain polarization. Polarized nuclei can then be readily oriented in a magnetic field, providing an absolute reference frame. The IDS will provide a highly efficient, granular detector system, allowing for the precise measurement of the degree of asymmetry of delayed beta, gamma, and neutron radiation. Possible measurements will be discussed, such as the identification of intruder states in the decay of neutron rich Mg, Mn, and Cu isotopes, or the identification of single particle spin parities in magic or semi magic nuclei such as  $^{53}\text{Ca}$  and  $^{133}\text{In}$ .

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