

NUCLEAR STRUCTURE STUDIES WITH THE PENNING TRAP MASS SPECTROMETER MLLTRAP AT ALTO

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The international ISOL facility ALTO, located at Orsay in France, provides stable ion beams based on a 15 MV tandem accelerator and neutron-rich radioactive ion beams from the interaction of a γ -flux induced by a 50 MeV 10 μ A electron beam in an uranium carbide target. The PARRNe mass separator and a resonance ionization laser ion source allow selecting the ions of interest. In addition to the current β - γ and β -neutron decay spectroscopy experiments performed behind PARRNe, new setups are under preparation in order to extend the fundamental properties measured at ALTO of ground and excited states of exotic nuclei. The novel infrastructure will benefit from the physics research programme of ALTO in the region of the closed shells $N=50$ and $N=82$ and will pave the way toward innovating detection techniques at the SPIRAL2 facility of GANIL. The measurement of these basic properties over a large area of the nuclear chart will permit to test theoretical models and further explore the nuclear structure and the underlying nuclear forces. In particular, the novel infrastructure is being adapted to host a radiofrequency quadrupole cooler and buncher and the double Penning-trap mass spectrometer MLLTRAP, commissioned off-line at the Maier-Leibnitz Laboratory (MLL) in Munich, Germany, for high-precision mass measurements. In addition, the development started at MLL on a novel detector-trap for in-trap decay spectroscopy will be carried out at ALTO. It will provide background free spectra via direct in-situ spectroscopy of stored ions. The status and timeline of the novel setup will be presented.