

# PROTON-RICH IONS DECAYING BY EC: A SYNERGY BETWEEN NUCLEAR AND NEUTRINO PHYSICS

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**Abstract:** Neutrino oscillation studies have demonstrated that neutrinos have a mass and they mix. Next facilities will need pure, in flavour, and intense beams for very long-baseline experiments with massive detectors. The ultimate goal is the discovery and measurement of CP violation in the lepton sector. The CP-odd terms in the oscillation probability have different energy dependence with respect to the CP-even terms. Boosted ions decaying by electron capture with half-lives of the order of sec. offer the virtue of providing a forward monochromatic neutrino beam with appropriate properties for a beta-beam facility. These proton-rich isotopes are of high interest for nuclear physics studies too.

We have recently performed systematic study of candidate nuclei for the construction of a monochromatic neutrino beam facility in the proton rich rare earth region. In this contribution we show the results of the experimental study of the beta decay of two possible candidate nuclei ( $^{152}\text{Yb}$  and  $^{150}\text{Er}$ ) using the Total Absorption Gamma Spectroscopy (TAGS) technique at GSI. A comparison of these results with earlier high resolution measurements will be discussed as well as possible new measurements at Isolde.

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