

# EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

## Letter of Intent to the ISOLDE and Neutron Time-of-Flight Committee Lifetime measurements using a three-foil plunger in the A~100 region at HIE-ISOLDE/MINIBALL setup

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and the Miniball Collaboration

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### Abstract

*We propose to measure the half-lives of, and, electromagnetic matrix elements between, nuclear levels around the <sup>100</sup>Sn region by employing a three-foil plunger device in conjunction with the standard Miniball setup. The HIE-ISOLDE radioactive beams, having higher intensities and higher energies, will be advantageous to study previously inaccessible nuclei in the N=Z=50 closed shell region evolution of collectivity and the influence of the neutron-proton component of the effective nucleon-nucleon interaction. Data will also allow us to advance our knowledge of effective charges, core polarisation, state occupations, the effect of deformation on the proton emitting states and the particle tunneling rates in this region. A proof-of-principle test and initial experiments will be carried out using the available <sup>74</sup>Kr, <sup>102</sup>Cd and <sup>114</sup>Xe beams. In the future, we will require some development of proton-rich Cd, Te and Xe beams.*

**Requested shifts:** 9 shifts initially and later shifts will be requested for full proposals  
**Beamline:** [MINIBALL + CD-only]

