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Nuclear structure studies in the vicinity of the $Z = 28$ neutron-rich isotopes with AGATA and PRISMA

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In this letter of intent, we propose four experiments for nuclear structure studies of neutron-rich isotopes in the vicinity of $Z = 28$ via lifetime measurements. The production of the nuclei of interest was optimized to efficiently collect data for the proposed physics cases by multi-nucleon transfer reactions of a ^{208}Pb beam impinging on an innovative $^{70}\text{Zn}(80\%)/^{64}\text{Ni}(20\%)$ alloy target (in-beam test of the alloy scheduled in November 2022). The target-like products will be identified in the PRISMA spectrometer in coincidence with the de-excitation gamma-rays in the AGATA array. The lifetimes of the excited states in the isotopes of interest will be measured by the so-called Recoil-Distance Doppler-Shift Method with a differential plunger. The total amount of beam time requested with PLAVE+ALPI is 20 days (16 for lifetime measurements and 4 for gamma spectroscopy studies).

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