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Pushing the limits of γ -ray spectroscopy of neutron-rich fission fragments with AGATA–PRISMA coupling

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In this Letter of Intent, we aim to study the structure of neutron-rich nuclei in the region of ^{78}Ni . The main focus is to investigate states resulting from the coupling between excited states of the inert core and valence protons in the $N=50$ nuclei ^{79}Cu and ^{80}Zn . In addition, the proposed experiment will provide a systematic and relevant dataset on excited states in this region of the nuclear chart, extending the neutron-rich frontier by approximately two neutrons per atomic number compared to what has been achieved in previous studies with similar setup. The nuclei of interest will be produced via transfer- and fusion-induced fission reactions in inverse kinematics. The PRISMA spectrometer will be used to isotopically identify fission fragments, and the AGATA gamma tracking array will measure prompt γ rays.

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