

# **Studies of isomers populated in proton induced fission of $^{238}\text{U}$ and other heavy targets**

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We propose to search for nano- and microsecond isomers in neutron-rich nuclei produced in proton induced fission of heavy targets. The distribution of products for fission induced by energetic 230 MeV protons differs from that of spontaneous fission. Thus, the exotic isotopes that will be produced with sufficient yield and studied are to large extent unknown. For many of those nuclei the only information available comes from the beta decay studies in which the structure of low-lying and usually low-spin states is revealed. The aim of our experiment is to search for nano- and microsecond isomeric states of yrast character which will be populated in fission and will decay by cascades of gamma-rays. Identification of such states and their decay modes carries important spectroscopic information.

We will use a number of Germanium detectors for gamma coincidence measurements supplemented by a tagging device, possibly a Delta E – E Si detector for Z identification of fission products which will be implanted into the Si detector in front of the Germanium detectors setup. This idea is similar to the Isomer-scope concept for experiments with neutron-rich radioactive ion beams at Oak Ridge and GANIL. For the Germanium detectors, sufficient efficiency can be obtained using a set of 4 segmented Clover detectors. For the Delta E – E telescope, we propose to use 20 microns thick 50x50 mm Delta E detectors coupled to a CD type thick Si detector serving as an active catcher.