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Gamma-ray spectroscopy of nuclear fission

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Gamma-ray spectroscopy is a versatile tool which can be used to study the decay of the excited fragments produced in the complex process of nuclear fission. Gamma ray coincidence and relative time information can give important information on both the nuclear structure of exotic neutron-rich nuclei and the fission process itself. Recent results from the nu-Ball hybrid gamma-ray spectrometer at the ALTO facility of IJC Lab will be presented. In particular, studies of short-lived states in neutron-rich nuclei will be highlighted [1][2][3] along with recent advances in the understanding on the generation of angular momentum in the fission process [4]. The prospects for new and innovative measurements using gamma spectroscopy of fission will be presented.

[1] *Prompt and delayed spectroscopy of the neutron-rich ^{94}Kr and observation of a new isomer*, R-B. Gerst et al. Phys. Rev. C 102, 064323 (2020)

[2] *First lifetime investigations of $N>82$ iodine isotopes: The quest for collectivity*, G. Häfner et al. Phys. Rev. C 104, 014316 (2021)

[3] *Spectroscopy and Lifetime Measurements in $^{134,136,138}\text{Te}$ Isotopes and Implications for the Nuclear Structure beyond $N = 82$* , G. Hafner, R. Lozeva, et al. Phys. Rev. C103 034317 (2021)

[4] *Angular momentum generation in nuclear fission*, J.N. Wilson et al. Nature 590, p566–570 (2021)

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