

# Fission as a relevant probe of the nuclear level density away from $\beta$ -stability

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Fission at moderate to high excitation energy is proposed as an innovative approach to study the evolution of the nuclear level density (NLD) away from  $\beta$ -stability. A four-dimensional dynamical Langevin model [1], implementing various prescriptions of the asymptotic level-density parameter  $a$ , is employed to demonstrate the relevance of considering typical fission observables, and namely the pre- and post-scission neutron multiplicities, to investigate the evolution of  $a$  with  $N$  and  $Z$  [2,3]. The richness of fission is shown to offer an alternative route, that is very complementary to the conventional fusion-evaporation method from which no consensus emerged yet. In particular, to investigate the isospin-dependence of the NLD, the present calculations lead us to propose a series of fusion-induced fission measurements based on  $\text{Ca} + \text{Pb}$  collisions which are readily available at current experimental facilities. This set of reactions can be further enhanced with today, as well as future, radioactive beams.

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