Fission studies with the ν-Ball2 array

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A series of recent experiments to perform high-resolution gamma ray spectroscopy of nuclear fission have been carried out with the ν-Ball2 spectrometer [1]. ν-Ball2 is a state-of-the-art hybrid array developed and constructed at the ALTO facility of IJC Lab in Orsay and used by a large international collaboration. Several open questions are currently being addressed, such as the evolution of fragment yield distributions in the sub-actinide region [2], the emission of high energy gamma rays in nuclear fission with potential population of collective excitations (PDR, GDR, etc.) in the emerging fragments [3]. The experiments have also explored other outstanding questions, such as the angular momentum carried away by neutron emission [4] and angular correlations between the spins of fission fragment partners and the fission axis itself [5]. Finally, the potential energy landscape before fission occurs can also be studied by gamma spectroscopy of fission shape isomers [6][7]. An overview of these new studies from the ν-Ball2 experimental campaign will be given and selected results will be presented along with future perspectives.

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