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## Fission with PARIS @ VAMOS

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As obvious from the intense experimental and theoretical work done over the past decades, nuclear fission is complex. A major reason of this is the interference of various aspects, from both reaction dynamics and nuclear structure, which determines the observables that can ultimately be measured in the laboratory. The last years showed that high-fold coincidences between as many as possible observables are crucial to unravel the intricacies of fission, a mandatory condition for un-ambiguous interpretation. In this context, an innovative experimental approach was set up at GANIL coupling for the first time a heavy-ion spectrometer such as VAMOS++ and a new-generation scintillator gama array like PARIS. While the former is capable of identifying accurately in mass and charge the fragments emitted in fission, the latter gives access to the properties of the coincident gamma rays over their full dynamical range with unprecedented quality,as well as information about the coincident neutrons. In this contribution, the first experiment with PARIS@VAMOS dedicated to fission induced by fusion and nucleon transfer in  $^{238}\text{U}+^9\text{Be}$  collisions is presented. A selection of results is used to illustrate the performance of the set up in terms of efficiency, resolution, and sensitivity. The variety of aspects that can be addressed is highlighted. In particular, the so-called fission gamma bump and its highly probable connection to the Pygmy Dipole Resonance is demonstrated by means of calculations employing microscopic nuclear level densities and strength functions. The impact of this connection is double, as it makes the gamma bump a relevant signature of the dynamics after scission, as well as it proposes fission as a new probe of soft dipole modes, complementary to the conventional approaches.

### Type of contribution

Invited Speaker

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