PARIS + nuBall experiment: The GDR gamma-decay gated by states of different deformation

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A study of the γ-decay of GDR formed in a hot ^{192}Pt compound nucleus was performed in June 2018 at IPN Orsay. The main goal of the experiment was to explore a link between characteristics of the compound and residual nuclei by investigating the GDR emission from the ^{192}Pt compound nucleus in its 4n decay channel leading to the 188Pt residue. 188Pt is a nucleus known for its ground state prolate shape and tri-axial band based on 12$^+$ state. The experimental method which can deliver information on feeding of states of different deformations was based on simultaneous measurement of GDR and low-energy γ rays.

The ^{192}Pt compound nuclei were created with fusion reaction using beam of ^{18}O at 90 MeV on ^{174}Yb target. The experimental set-up consisted of the PARIS + nuBall arrays. 32 PARIS detectors were employed to measure high-energy γ rays from the GDR decay, while low-energy discrete transitions were measured by 24 clover HPGe and 10 coaxial Ge detectors of nuBall. It is a very first experiment in which PARIS detectors were used for this type of measurement. To fully take advantage of these detectors, they were placed in a non-standard, wall geometry.

During the talk, the performance of the setup will be presented in details along with the method of analysis. Preliminary results of the data analysis will be shown.