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Evolution of collectivity around $N=40$: Lifetime measurements in $^{73,75}\text{Ga}$: Status of the analysis

The main motivation of experiment E708, performed in GANIL in May 2016, was to investigate the evolution of collectivity around $N=40$ by lifetime measurements of the low-lying states in ^{74}Zn , ^{73}Ga and neighbouring nuclei. The transition probabilities deduced from the lifetimes should allow us to further profound our knowledge of the interlay between single-particle and collective degrees of freedom in this mass region.

The aim was to unambiguously determine lifetimes of interest, by analysing Recoil-Distance Doppler-Shift data in γ - γ coincidences. The experiment was performed with the AGATA tracking array coupled to the VAMOS++ spectrometer allowed us to detect the gamma-rays in coincidence with recoils emitted in the deep-inelastic reaction in inverse kinematics of ^{208}Pb beam on a ^{76}Ge target.

Due to a limited beam intensity, an order of magnitude lower than proposed one, coming from the target (plunger) issues, the main physics case of measurement of the lifetime of $5/2^-$ state in ^{73}Ga and ^{75}Ga will be reached by γ singles not by using γ γ coincidence data. By covering a wide range of target-degrader distance, from $100\mu\text{m}$ to 10mm , a large range of lifetimes of excited states is accessible. Preliminary analysis shows that from 29 analysed isotopes, lifetimes of about 100 can be measured out of which around 80 are unknown.

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