Contribution ID: **69** Type: **not specified**

# Shape evolution in neutron-rich nuclei around mass 100: lifetime measurements in Zr isotopes

*Monday 11 July 2022 12:20 (20 minutes)*

Nuclei around N=60, Z=40 show a rapid variation in the deformation of their ground state with a rather small change in the neutron number. This feature manifests a subtle interplay between different aspects of the forces in the nucleus and makes this region an ideal testing ground for various nuclear structure theories. As an example, it is established that the ground state of Zr isotopes vary from nearly spherical for N<60 to well deformed after N=60 [1–4]. However, the drastic shape transition in Zr beyond N=60 is still a challenge for the description of different
theoretical models [5–11].

Lifetime measurements are an effective way to shed light on the shape evolution in this region of the Segrè chart. For this purpose, a successful experiment was performed in 2017 at GANIL by using the γ-ray tracking array AGATA [12] coupled to the magnetic spectrometer VAMOS [13]. The Orsay Universal Plunger system [14] was installed allowing lifetime measurements in the order of the picosecond with the Recoil Distance Doppler Shift technique [15]. The data set obtained from this experiment contains hundreds of isotopes and is producing many new lifetime results.

In this contribution I will present preliminary results for transition probabilities obtained for $^{98-104}$Zr isotopes by applying the Differential Decay Curve Method of analysis [15], both in single gamma and in coincidence gamma-gamma.

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**Session Classification:** Transitional nuclei and shape coexistence

**Track Classification:** Transitional nuclei and shape coexistence