

## Signs of shape coexistence in mid-shell Te isotopes

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Many examples of shape coexistence are found, when one type of nucleon is at or close to a shell closure and the other type approaches midshell. This holds also for the  $Z=50$  shell gap at the tin isotopes [1]. Shape coexistence in the region is attributed to 2p-2h intruder states in Sn, or 2p-4h states in Cd. This discovery led to a change in the perception of many nuclei especially in the Cd isotopic chain, that had been regarded as prime examples of vibrational excitations up to that point. Shape coexistence in Te isotopes has long been suspected, but experimental evidence is still scarce. The energy systematics of low lying  $0_2^+$ ,  $0_2^+$  and  $2_3^+$  states makes these states possible candidates for 4p-2h states [3], but information on E0 and E2 transition strengths is often lacking [2].

We want to present recent lifetime measurements in  $^{112-120}\text{Te}$ , that have been performed using the recoil-distance Doppler-shift method. The nuclei of interest were populated in fusion-evaporation reactions. The lifetime of low-lying yrast states and their absolute transition strengths could be determined in all cases with the differential decay-curve method. The resulting  $B(E2, 2_1^+ \rightarrow 0_1^+)$  systematics confirm the collective nature of the low lying states. The  $B_{4/2} = \frac{B(E2, 4_1^+ \rightarrow 2_1^+)}{B(E2, 2_1^+ \rightarrow 0_1^+)}$  ratio suggests that in these Te isotopes - as in the Cd isotopes - a vibrational picture is too simple.

We want to conclude with an outlook on upcoming spectroscopic and lifetime measurements in neutron-midshell Te isotopes, which comprise also the low-lying off-yrast states. This will allow to further clarify the role of shape coexistence.

### References

- [1] P. Garrett *et al.*, Journal of Physics G: Nuclear and Particle Physics **43(8)** 084002 (2016).
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