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Lifetime measurements in odd-mass tellurium

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Reduced transition probabilities B(E2) in even-mass tellurium nuclei, accessible experimentally through lifetime measurements, have long been of particular interest in order to study the effect on collectivity when adding two extra protons outside the closed Z=50 shell of Sn. Historically, the main focus has been on the extreme neutron deficient area, close to the neutron shell closure at N=50. However, recently more eyes have turned towards the midshell region, where the number of valence particles is maximal. New measurements of lifetimes in midshell nuclei Te-116 and Te-118 have given more information on the structure of the ground state band and further helped the understanding of the evolution of collectivity over the isotopic chain. Thus far these lifetime measurements have almost exclusively been restricted to even-mass Te. In the odd-mass Te isotopes, the yrast 23/2-, 19/2- and 15/2- states have been interpreted as due to the coupling of a h11/2 neutron to the 6+, 4+ and 2+ states in the neighboring even-mass isotopes. Thus, odd-mass nuclei may also contain useful information on the structure of the ground state band and the role of the unpaired neutron. In this work, lifetime measurements of low lying states in the neutron h11/2 band of midshell region odd-mass Te have been measured for the first time, using the Recoil Distance Doppler Shift technique and Differential Decay Curve Method in coincidence mode. Preliminary results of the ongoing analysis will be presented.

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