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Revisiting lifetimes in the *gh* shell using the activation method and a contemporary analysis framework

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Abstract

The *gh* shell ($A = 50 - 82$) presents unique opportunities for fundamental studies, as well as nuclear applications, the latter mainly due the multi-faceted decay properties and uses of the relevant isotopes (e.g. in medical physics). In a series of measurements over the past 3 years, several data sets have been collected for both ground-state and isomeric state decays across the *gh* shell. The measurements involved state-of-the-art experimental γ-spectroscopy setups to extract decay lifetimes using the activation method together with a new analysis framework developed specifically to ensure the reliability of the uncertainty estimation of the final results. Half-lives have been remeasured in ground and isomeric states of Te, Sb, Yb and Dy and Er isotopes. Some of the results update much earlier existing values from the 1960s, while all offering improved precision and opportunities for re-evaluations of the relevant nuclear data.

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