

$^{177, 178}\text{Yb}$ ground-state lifetimes

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The study of half-lives in the region of isotopes around $A=180$ is of particular importance, as nuclei in this mass region provide opportunities for investigating both fundamental and applied properties of nuclear matter. The isotopes examined in the present work are the unstable isotopes of ytterbium with $A=177$ and $A=178$, which undergo β -decay to the corresponding lutetium isobars ($^{177,178}\text{Lu}$). The currently adopted half-life values of $^{177,178}\text{Yb}$ originate from outdated studies, making their re-measurement using modern techniques and experimental setups necessary. Along these lines two experiments were carried out with the activation method. The first experiment was carried out at IFIN-HH, where the ROSPHERE experimental setup was employed. A proton-transfer reaction $^{176}\text{Yb}(^9\text{Be}, ^8\text{Be})^{177}\text{Yb}$ was used to study the decay of ^{177}Yb . The second experiment was conducted at IKP Köln, where the CATHEDRAL spectrometer was used to record the de-excitation γ -rays from a $2n$ -transfer reaction, $^{176}\text{Yb}(^{18}\text{O}, ^{16}\text{O})^{178}\text{Yb}$. The results of the analysis from both experiments provide updated half-life values for the ground states of ^{177}Yb and ^{178}Yb and are in good agreement with the values reported in the existing literature.

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