

1 ${}^3_{\Lambda}\text{H}$ and ${}^4_{\Lambda}\text{H}$ Lifetime Measurements in Au+Au collisions at
2 $\sqrt{s_{\text{NN}}} = 3 \text{ GeV}$ with the STAR detector

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6 The study of hyperon-nucleon interaction (Y-N) is of great interest in recent years
7 because of its connection to high-density matter systems such as neutron stars. The
8 presence of hyperons inside neutron stars softens the equation of state, inhibiting the
9 formation of large mass neutron stars. Hypernuclei, being bound states of nucleons and
10 hyperons, serve as a natural probe to study the Y-N interaction. Precise measurements of
11 the lifetime provide direct information on the Y-N interaction.

12 The data from fixed target Au+Au collisions at $\sqrt{s_{\text{NN}}} = 3 \text{ GeV}$, taken in 2018 by
13 the STAR detector, is ideal for studying the properties of light hypernuclei, such as ${}^3_{\Lambda}\text{H}$
14 and ${}^4_{\Lambda}\text{H}$, due to the large statistics and high production yield. In this talk, lifetime mea-
15 surements of ${}^3_{\Lambda}\text{H}$ and ${}^4_{\Lambda}\text{H}$ in Au+Au collisions at $\sqrt{s_{\text{NN}}} = 3 \text{ GeV}$ will be presented. The
16 new results will be compared to previous measurements, and physics implications will be
17 discussed.

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