

First Observation of ${}^4_{\bar{\Lambda}}\bar{\text{H}}$ in heavy-ion collisions at RHIC

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Abstract

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2 Matter-antimatter asymmetry is a precondition necessary to explain the existence of
3 our world made predominately of matter over antimatter. Antimatter is rare in the current
4 universe making it difficult to study, but the Relativistic Heavy-Ion Collider (RHIC) provides
5 us a unique opportunity to study antimatter with high-energy nuclear-nuclear collisions.

6 In this talk, we will report the first observation of ${}^4_{\bar{\Lambda}}\bar{\text{H}}$ with the STAR experiment at
7 RHIC. ${}^4_{\bar{\Lambda}}\bar{\text{H}}$ is the heaviest anti-hypernucleus ever observed in experiments. Its observation
8 will bring new opportunities for the study of matter-antimatter asymmetry. We will also
9 report the various production yield ratios among (anti-)hypernuclei and (anti-)nuclei, as
10 well as the lifetime measurements of ${}^3_{\Lambda}\text{H}$, ${}^3_{\bar{\Lambda}}\bar{\text{H}}$, ${}^4_{\Lambda}\text{H}$, and ${}^4_{\bar{\Lambda}}\bar{\text{H}}$.