

Observation and Reconstruction of Antiproton Annihilation at Rest in LArIAT

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Antiproton annihilation at-rest can provide a unique probe into the intra-nuclear structure of nuclei. This process was first observed in the 1950's using photographic emulsion and has since been observed and studied on a variety of nuclei. We present here the first observation and reconstruction of antiproton annihilation at-rest interactions on argon nuclei using data from the LArIAT experiment, a liquid argon time projection chamber (LArTPC). LArIAT was exposed to a charged particle test-beam at Fermilab from 2015-2017. Antiprotons tagged using LArIAT's beamline instrumentation were reconstructed in the LArTPC, and the multiplicities of final-state particles emerging from the identified annihilation at-rest vertex were measured. These results will inform searches for neutron-antineutron oscillation events in the future LArTPCs like DUNE due to their similar topological signature.

Alternate track

1. Quark and Lepton Flavour Physics

I read the instructions above

Yes

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