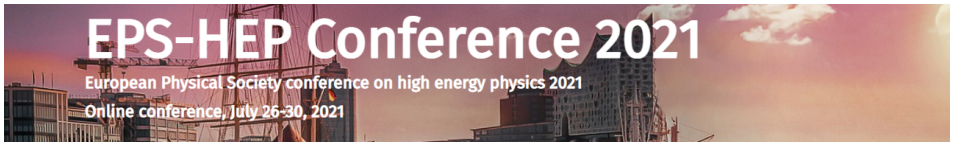

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Search for self-interacting dark matter with the BABAR detector

Friday, July 30, 2021 10:10 AM (20 minutes)

A new class of dark matter models introduces a dark sector with new Dirac fermions charged under an additional U(1) gauge group. The corresponding gauge boson, the dark photon A', has a MeV-GeV mass and couples to the Standard Model photon (and Z) via kinetic mixing. Fermionic bound states ("darkonium" Υ_D) could form if the dark sector coupling constant is strong enough. We present a search for dark sector bound states (Υ_D) in $e^+e^- \to \gamma\Upsilon_D$, $\Upsilon_D \to A'A'A'$, $A' \to X^+X^-$ ($X = e, \mu, \pi$) decays for 0.02 GeV $\leq m_{A'} \leq$ 1.0 GeV, 1 GeV $\leq m_{\Upsilon_D} \leq$ 10 GeV using the full data sample collected by the $BABAR$ detector.

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Collaboration / Activity

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