

Search for Baryogenesis and Dark Matter in B -meson decays with the $BABAR$ detector

Friday 19 July 2024 15:04 (17 minutes)

We present the most recent $BABAR$ searches for reactions that could simultaneously explain the presence of dark matter and the matter-antimatter asymmetry in the Universe. This scenario predicts exotic B -meson decays of the kind $B \rightarrow \psi_D calB$, where

$calB$ is an ordinary matter baryon (proton, Λ , or Λ_c) and ψ_D is a dark-sector anti-baryon, with branching fractions accessible at the B factories. The hadronic recoil method has been applied with one of the B mesons from $\Upsilon(4S)$ decay fully reconstructed, while only one baryon is present in the signal B -meson side. The missing mass of signal B meson is considered as the mass of the dark particle ψ_D . Stringent upper limits on the decay branching fraction are derived for ψ_D masses between 0.5 and 4.3 GeV/ c^2 . The results are based on the full data set of about 430 fb⁻¹ collected at the $\Upsilon(4S)$ resonance by the $BABAR$ detector at the PEP-II collider.

Alternate track

1. Beyond the Standard Model

I read the instructions above

Yes

Presenter: MIDDLETON, Sophie (Caltech)

Session Classification: Dark Matter

Track Classification: 09. Dark Matter Detection