

## Search for Baryogenesis and Dark Matter in $B$ -meson decays at $BABAR$ .

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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,  $\Lambda$ , or  $\Lambda_c$ ) and  $\psi_D$  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  $\psi_D$ . Stringent upper limits on the decay branching fraction are derived for  $\psi_D$  masses between 0.5 and 4.3  $\text{GeV}/c^2$ . The results are based on the full data set of about  $430 \text{ fb}^{-1}$  collected at the  $\Upsilon(4S)$  resonance by the  $BABAR$  detector at the PEP-II collider.

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