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

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An analysis of about 211 million  $B^0\bar{B}^0$  pairs produced in  $e^+e^-$  collisions at the  $\Upsilon(4S)$  resonance and recorded by the  $BABAR$  experiment is used to search for the decay  $B^0 \rightarrow \psi_D \Lambda$ , which produces the dark matter particle ( $\psi_D$ ) and baryogenesis simultaneously. The hadronic recoil method has been applied with one of the  $B$  mesons from  $\Upsilon(4S)$  decay fully reconstructed, while only one  $\Lambda$  baryon decaying into a proton and a charged pion is present in the signal  $B$ -meson side. The missing mass of signal  $B_{sig}$  is considered as the mass of the dark particle  $\psi_D$ . The signal events of the decay  $B^0 \rightarrow \psi_D \Lambda$  are selected on the missing mass distribution in the range of 0.5 to 4.2  $\text{GeV}/c^2$  for 197 different  $\psi_D$  mass hypotheses, and stringent upper limits on the decay branching fraction are derived.

### In-person participation

No

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