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# Search for low-mass New Physics states from B-meson decays at BABAR

*Thursday, 30 March 2023 09:00 (20 minutes)*

We present here the most recent $BABAR$ results on searches for new particles with masses below the electroweak scale predicted by many extensions of the Standard Model (SM). The results are based on the full data set of about 470 fb$^{-1}$ collected at the $\Upsilon(4S)$ resonance at the PEP-II collider, including a search for an Axion-Like Particle, $a$, produced in the Flavor-Changing Neutral-Current decay $B \to Ka$, with $a \to \gamma\gamma$, which is expected to be competitive with the corresponding SM electroweak processes.
We present also the search for the decays $B^0 \to \psi_D + calB$ where
$calB$ is a baryon ($\Lambda$ or proton), 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 and only one baryon 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 in the enrgy region between 0.5 and 4.2 GeV/c$^2$.

## Submitted on behalf of a Collaboration?

Yes

## Participate in poster competition?

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