

# Search for low-mass New Physics states at BABAR (cancelled)

*Thursday, 9 June 2022 14:00 (25 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  $500 \text{ fb}^{-1}$  collected at a center-of-mass energy close to 10 GeV by the BABAR detector at the  $e^+e^-$  PEP-II collider. They include the search for a light dark-matter bound state (the darkonium,  $\Upsilon_D$ ) produced in  $e^+e^- \rightarrow \gamma\Upsilon_D$ , with  $\Upsilon_D \rightarrow A'A'A'$  and the dark photons  $A'$  decaying to pair of leptons or pions. We present also a search for an Axion-Like Particle,  $a$ , produced in the Flavor-Changing Neutral-Current decay  $B \rightarrow Ka$ , with  $a \rightarrow \gamma\gamma$ , which is expected to be competitive with the corresponding SM electroweak processes. Finally, we show the results of a search for Heavy Neutral Leptons of masses between 100 MeV and 1.3 GeV in  $\tau$  decays.

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**Session Classification:** Supersymmetry and BSM