

# Search for a Dark Leptophilic Scalar $\phi_L$ in $e^+e^- \rightarrow \tau + \tau - \phi_L$ with the BABAR detector

## Content

Many models of dark matter and hidden sectors predict new particles with masses below the electroweak scale. Low-energy electron-positron colliders such as BABAR are ideally suited to discover these hidden-sector particles. We present a recent search for prompt and long-lived hidden scalars produced in association with tau leptons and decaying into a lepton pair. This search is sensitive to viable models that could account for the muon  $g - 2$  excess. We also present results a search for dark muonic forces, and for invisible particles produced in six-quark final states. These examples show the importance of B-factories in constraining and discovering new hidden-sector physics beyond the Standard Model.

## Summary

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