



Contribution ID: 67

Type: **Oral contribution**

## **Search for invisible decay of a dark photon produced in $e^+e^-$ collisions at BABAR**

*Wednesday, April 19, 2017 12:05 PM (15 minutes)*

We search for single-photon events in 53 fb<sup>-1</sup> of  $e^+e^-$  collision data collected with the BABAR detector at the PEP-II B-factory. We look for events with a single high-energy photon and a large missing momentum and energy, consistent with production of a spin-1 particle  $A'$  through the process  $e^+e^- \rightarrow \gamma A'$ ,  $A' \rightarrow \text{invisible}$ . Such particles, referred to as “dark photons”, are motivated by theories applying a U(1) gauge symmetry to dark matter. We find no evidence for such processes and set 90% confidence level upper limits on the coupling strength of  $A'$  to  $e^+e^-$  for a dark photon with a mass lower than 8 GeV. In particular, our limits exclude the values of the  $A'$  coupling suggested by the dark-photon interpretation of the muon ( $g-2$ ) anomaly, as well as a broad range of parameters.

**Primary author:** ANULLI, Fabio (ROMA1)

**Presenter:** ANULLI, Fabio (ROMA1)

**Session Classification:** Sessione Frontiera Intensità

**Track Classification:** Sessione Frontiera Intensità