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## Measurement of beam polarization at an $e^+e^-$ $B$ -Factory with a new tau polarimetry technique

*Wednesday 15 May 2024 16:00 (15 minutes)*

Belle II is considering upgrading SuperKEKB with a polarized electron beam. The introduction of beam polarization to the experiment would significantly expand the physics program of Belle II in the electroweak, dark , and lepton flavor universality sectors. For all of these future measurements a robust method of determining the average beam polarization is required to maximize the level of precision. The *BABAR* experiment has developed a new beam polarimetry technique, Tau Polarimetry, capable of measuring the average beam polarization to better than half a percent. Tau Polarimetry strongly motivates the addition of beam polarization to SuperKEKB and could also be used at future  $e^+e^-$  colliders such as the ILC.

We present the results obtained with the *BABAR* detector by using the full data set of about  $470 \text{ fb}^{-1}$  collected at the  $e^+e^-$  PEP-II collider.

### Mini Symposia (Invited Talks Only)

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