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## Study on the transverse polarization of $\Lambda$ and $\bar{\Lambda}$ in $e^+e^-$ annihilation at Belle

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Spontaneous hyperon polarization has been a long standing issue for about 40 years. The so called polarizing Fragmentation Function (FF),  $D_{1T}^\perp(z, p_{T\perp})$ , describes the production of a transversely polarized hadron from an unpolarized quark, where  $z$  denotes the fractional energy of the hadron and  $p_{T\perp}$  the transverse momentum with respect to the fragmenting quark. The polarizing FF can be determined by measurement of the transverse polarization of hyperons. Because of the chiral-even nature, the polarizing FF sign is possible to be unambiguously measured. It provides a unique opportunity to test the universality of the FFs. The large  $e^+e^-$  annihilation data sample collected by the Belle experiment at the KEKB storage ring allows a precision study of the production of transversely polarized hyperons and check our current understanding of the associated QCD dynamics. The status of the analysis on the transverse polarization of  $\Lambda(\Lambda)$  in the  $\pi^-$  inclusive production in  $e^+e^-$  annihilation at Belle will be presented for both cases of with and without a light hadron to tag the flavor of the quark fragmenting to the  $\Lambda(\Lambda)$ .

**Presenter:** GUAN, Yinghui (Indiana University)

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