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New way to access the quark fragmentation functions in electron-positron annihilation

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The description of the polarized quark hadronization process is one of the most challenging problems in strong interactions. The various single hadron and dihadron fragmentation functions, that quantify this process, are determined by analyzing the inclusive production of hadrons in electron-positron annihilation process. These, in turn, are used to extract the transverse momentum dependent parton distribution functions from the experiments on semi-inclusive deep inelastic scattering process, elucidating the spin-orbit correlations in nucleon.

In this talk we present a framework for new measurement of polarized quark fragmentation functions in electron-positron annihilation process. This measurement offers a number of exciting opportunities to improve our understanding of the polarized quark hadronization and test the universality of the fragmentation functions, and can be performed at the upcoming BELLE II experiment.

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