Contribution ID: **113** Type: **not specified**

# The 184th HENPIC seminar by Prof. Tianbo Liu

Title: Spin 3/2 hadron: its polarization and fragmentation functions

Abstract: The spin, as a fundamental property of all particles, is proven a powerful quantity to test theories and models in hadron physics. The measurement of the polarization of a hadron produced in high energy scatterings provides an opportunity to understand the property of strong interaction. In this seminar, we will discuss the description of the polarization of a hadron, the spin density matrix of a spin-3/2 hadron, and the physical interpretation of the matrix elements. Then we provide a complete definition of quark fragmentation functions (FFs) to spin-3/2 hadrons from the decomposition of the quark-quark correlation matrix. As an application, we derive the differential cross section of the semi-inclusive electron-positron annihilation in terms of the newly defined FFs, which can also be applied in semi-inclusive deep inelastic scattering process for the study of nucleon structures.

## Summary