



広島大学

広島大学 極限宇宙研究拠点
CORE-U
Core of Research for the Energetic Universe
HIROSHIMA UNIVERSITY

第 57 回 (2020年度第 1 回) 極限宇宙研究拠点 (CORE-U) セミナー

日時 : 2020 年 9 月 3 日 (木) 12:50 – 14:20

場所 : オンライン開催

(聴講希望の方は担当者まで問い合わせてください)

講師 : Ralf Seidl 氏 (理化学研究所専任研究員)

題目 : Fragmentation function related measurements at Belle

概要 :

The formation of massive final state hadrons out of nearly massless, high-energetic partons is governed by the strong interaction, described by Quantum-Chromo-Dynamics (QCD). As nearly all the visible mass of the universe is created via QCD, it is of particular interest to understand how such hadrons are formed in the fragmentation process. Additionally, fragmentation functions (FFs) are universal objects that can be used to learn about the spin, flavor and transverse momentum dependence of the structure of the nucleon such as studied in deeply inelastic lepton-nucleon scattering or hadron-hadron collisions.

Unfortunately, fragmentation functions cannot be calculated from first principles and need to be measured instead. The cleanest way to access them is in the electron-positron annihilation process as no hadrons exist in the initial state and at leading order a clean quark-antiquark pair is produced. The Belle experiment at the KEK-B collider has accumulated more than 1 ab^{-1} of e^+e^- data which has been used to extract various fragmentation related measurements for unpolarized and polarized fragmentation of light hadrons as well as various heavier hadrons. Recently, the explicit transverse-momentum dependence of pions, kaons and protons was studied. An introduction to fragmentation functions will be given before these Belle related measurements will be discussed.

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