Beitrag ID: **83** Typ: **Talk**

3D structure of jet-induced diffusion wake in an expanding quark-gluon plasma

Dienstag, 28. März 2023 09:40 (20 Minuten)

Diffusion wake accompanying the jet-induced Mach-cone provides a unique probe of the properties of quark-gluon plasma in high-energy heavy-ion collisions. It can be characterized by a depletion of soft hadrons in the opposite direction of the propagating jet. We explore the 3D structure of the diffusion wake induced by γ triggered jets in Pb+Pb collisions at the LHC energy within the coupled linear Boltzmann transport and hydro model. We identify a valley structure caused by the diffusion wake on top of a ridge from the initial multiple parton interaction (MPI) in jet-hadron correlation as a function of rapidity and azimuthal angle. This leads to a double-peak structure in the rapidity distribution of soft hadrons in the opposite direction of the jets as an unambiguous signal of the diffusion wake. Using a two-Gaussian fit, we extract the diffusion wake and MPI contributions to the double peak. The diffusion wake valley is found to deepen with the jet energy loss as characterized by the γ-jet asymmetry. Its sensitivity to the equation of state and shear viscosity is also studied.

Experiment/Theory

Theory/Phenomenology

Affiliation

Key Laboratory of Quark and Lepton Physics (MOE) & Institute of Particle Physics, Central China Normal University

Primary authors: YANG, Zhong; WANG, Xin-Nian (LBNL)

Vortragende(r): YANG, Zhong

Sitzung Einordnung: Parallel: High-Momentum Hadrons & Correlations

Track Klassifizierung: High momentum hadrons and correlations