Contribution ID: **496** Type: **Oral presentation**

Two-particle correlation in e+e- collisions at 91-209 GeV with archived ALEPH data

Wednesday 6 April 2022 15:00 (20 minutes)

The first measurement of $anti-k_T$ jets and two-particle angular correlations of charged particles emitted in high energy e^+e^- annihilation is presented. The archived data at a center-of-mass energy of 91-209 GeV were collected with the ALEPH detector at LEP between 1992 and 2000.

At 91 GeV, no significant long-range correlation was observed in either the lab coordinate analysis or the thrust coordinate analysis, where the latter is sensitive to a medium expanding transverse to the color string between the outgoing $q\bar{q}$ pair from Z boson decays. We also present the first measurement of anti-k_T jet energy spectra and substructures compared to various event generators, NLO, and NLL'+R resummation calculations.

The correlation functions are measured over a broad range of pseudorapidity and full azimuth as a function of charged particle multiplicity for the first time with LEP2 data. This data set provides higher event multiplicity reach up to around 50 and a chance to sample different underlying hard-scattering processes. Studies of the high energy annihilation data will expand our search for collective phenomena in e^+e^- collisions to a new phase space for a potential discovery.

Primary authors: BADEA, Anthony (Harvard University (US)); BATY, Austin Alan (Rice University (US)); MCGINN, Christopher (CU Boulder); PEREPELITSA, Dennis (CU Boulder); INNOCENTI, Gian Michele (CERN); MAGGI, Marcello (Universita e INFN, Bari (IT)); PETERS, Michael Joseph (Massachusetts Inst. of Technology (US)); CHANG, Paoti (National Taiwan University); SHENG, Tzu-An (Massachusetts Inst. of Technology (US)); LEE, Yen-Jie (Massachusetts Inst. of Technology (US)); CHEN, Yi (Massachusetts Inst. of Technology (US)); CHEN, Yu-Chen (Janice) (Massachusetts Institute of Technology)

Presenter: CHEN, Yi (Massachusetts Inst. of Technology (US))

Session Classification: Parallel Session T05: QGP in small and medium systems

Track Classification: QGP in small and medium systems