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Long-range near-side correlation in e+e- collisions at 183-209 GeV with ALEPH archived data

The first measurement of two-particle angular correlations for charged particles with LEP-II data is presented. The study is performed using archived hadronic e^+e^- data collected by ALEPH at center-of-mass energies up to 209 GeV, above the WW production threshold, which provide access to unprecedented charged-particle multiplicities and more complex color-string configurations if compared to previous measurements at LEP-I energies. An intriguing long-range near-side excess is observed in the correlation function measured with respect to the thrust axis in the highest multiplicity interval (N_{trk} \geq 50). Such a structure is not predicted by the Monte-Carlo simulation. The harmonic anisotropy coefficients v_n , which result from the Fourier expansion of the two-particle correlation functions, were also measured for the first time in e^+e^- data, and compared to PYTHIA6 predictions and to the results obtained in proton-proton collisions. The results presented in this talk provide novel experimental constraints on the formation of collective phenomena in point-like e^+e^- collisions.

Category

Experiment

Collaboration (if applicable)

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