Event-by-Event Fluctuations of Average Transverse Momentum in Pb+Pb Collisions at $\sqrt{s}$=17.3 GeV per Nucleon

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Abstract

Enhanced event-by-event fluctuations are expected to accompany the QCD phase transition predicted in ultra-relativistic heavy ion collisions. On the other hand, unusually small fluctuations may be related to a larger degree of thermalization of the created hot and dense matter.

In the WA98 experiment at CERN-SPS, the large-acceptance photon spectrometer LEDA allows to measure the average transverse momentum of photons on an event-by-event basis. Fluctuations potentially surpassing the dominating contributions from statistical fluctuations and limited energy resolution are isolated by a comparison with a data sample constructed from mixed events. Based on model calculations, it is discussed to what extend the observed effect can be explained by correlations from π^0 decays.

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