First results from the 1996 run of CERES on low-mass electron pair production in Pb-Au collisions at 160 GeV/c per nucleon

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We report preliminary results from the 1996 lead beam run mainly devoted to the measurement of low-mass electron-positron pairs in Pb-Au collisions at 160 GeV/c per nucleon. CERES completed a 40 day long run with the Pb beam in November 1996. The set-up was practically unchanged with respect to the 95 run. It consisted of the basic double RICH spectrometer and external tracking detectors – a doublet of silicon radial drift chambers and a large pad chamber located before and after the spectrometer, respectively. The main differences to the 95 run are better quality Si-detectors and better operating conditions of the pad chamber resulting in higher resolution and a higher global efficiency. In addition, several improvements have been made to increase the data taking rate allowing to record a total of about 60 million events on tape.

The results obtained in the analysis of the Pb-Au data show an enhanced production of low-mass electron-positron pairs in the mass range $0.2 < m_{ee} < 1.5$ GeV/c^2 over the yield expected from the known sources in pp collisions, scaled to the Pb-Au case with the event multiplicity. No excess is observed for $m_{ee} < 2m_{\pi}$. A quantitative comparison with the enhancement previously reported in S-Au collisions at 200 GeV/c per nucleon will be presented. The high statistics run allows, in addition, detailed studies of the multiplicity- and the p_T-dependences of the enhancement. This additional information provides further constraints for the theoretical models which have been proposed to explain the CERES S-Au results and should help to discriminate between them.