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Performance of PHENIX HBD in Au + Au central collisions

The PHENIX experiment observed a large enhancement of electron-positron pairs in the invariant mass range of 0.2 to 0.5 GeV/c^2 in Au+Au collisions at sqrt(s_NN)=200 GeV. However, it is difficult to draw a firm physics conclusion from the measurement, since the measurement still has large statistical and systematic uncertainties.The main uncertainty comes from the small signal-to-background ratio of about 1/200 in minimum bias collisions. The electron decay branching ratios of light vector mesons are very small (~10^{-4}), while there are many background electrons mainly originating from pi^0 Dalitz decays and gamma conversions.
A Hadron Blind Detector,(HBD) has been installed in the PHENIX to reject such background electrons using the opening angle information of electron positron pairs, since the opening angle of electron positron pairs from those decays is small compared to the pairs from light vector mesons.
PHENIX has successfully collected p+p and Au+Au data with the HBD in 2009 and 2010.
In Au+Au central collisions, high occupancy of HBD readout pads needs to be handled. The high occupancy is mainly due to the scintillation light emitted by CF4, which is the Cherenkov radiator gas of the HBD. In Au+Au peripheral collisions or p+p collisions, the effect of scintillation light is negligible compared to the Cherenkov light by electrons. However, in Au+Au central collisions, the number of charged particles is so large that the effect of scintillation lights becomes significant.
In this poster, details of the analysis scheme to handle this situation will be presented and current performance of HBD in di-electron measurements will be reported.

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