Electron measurement in the STAR experiment

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Single electron spectra at high-pt provide a measurement of heavy quark production and are therefore an important probe of the possible quark gluon plasma that may be formed in the initial moments of high energy heavy-ion collisions. In particular, charm production is sensitive to the initial gluon density of the colliding system [1]. Final state effects, such as quark energy loss in the medium and initial state effects such as shadowing can be studied by comparison of charm production in pp, pA and AA collisions. With the addition of electromagnetic calorimeter, the STAR detector is capable of measuring electrons in heavy-ion collision with high efficiency and purity. During the last two RHIC runs half of the STAR Barrel Electromagnetic Calorimeter (BEMC), covering $0 < \eta < 1$ and $\Delta\phi = 2\pi$, has been commissioned and STAR took data with the BEMC for the $\sqrt{s_{NN}} = 200$ GeV p+p, d+Au and Au+Au runs. In this work we present studies on electron/hadron discrimination using the information provided by the STAR Time Projection Chamber (TPC) and the Barrel Electromagnetic Calorimeter. In particular we will concentrate on the TPC dE/dX and the BEMC energy information. We compare the deposited energy in the calorimeter with the paricle momentun in order to select the electron candidates.

[1] B. Muller and X. N. Wang, Phys. Rev. Lett. 68 (1992) 2437

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