LEPP JOURNAL CLUB

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Elliptic Flow at Forward Rapidity in Au+Au Collisions using the PHENIX Detector at RHIC

Brookhaven National Laboratory's Relativistic Heavy-ion Collider (RHIC) can collide gold nuclei up to a center of mass energy per nucleon pair of 200 GeV. From these collisions, key insights into the bulk properties of the newly created hot and dense partonic matter arise from studying the azimuthal anisotropy of the emitted particles, colloquially called ``elliptic flow''. These measurements have revealed that at mid-rapidity ($-1 \leq$ pseudorapidity (η) ≤ -1) the medium is strongly interacting, undergoes rapid thermalization, behaves hydrodynamically at low transverse momentum (p_T), and experiences quark degrees of freedom. Using unidentified charged hadrons, RHIC's STAR and PHOBOS experiments have measured a substantial decrease in elliptic flow from mid to forward rapidity out to $\eta \approx 5$. However, these measurements are hindered by limited (STAR) or no (PHOBOS) p_T capabilities at forward angles. Therefore, it is not clear whether the decrease in elliptic flow from mid to forward rapidity is due to a change in the medium, a decrease in $\langle p_T \rangle$, or some other mechanism. In order to better understand the source of this decrease, elliptic flow measurements have recently been made at forward rapidity using the PHENIX Muon Arm spectrometers ($1.2 < |\eta| \leq 2.4$), which have p_T capability. This talk will discuss these recent PHENIX results and their potential implications, as well as the Reaction Plane Detector upgrade that significantly improved the measurements.

Friday

September 28, 4:00pm

301 Physical Sciences Building

(Refreshments, 3:45pm)

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