

Performance Characterization Studies of sPHENIX Hadronic Calorimeter Scintillating Tiles

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sPHENIX is an experiment currently being built and will be installed at the Relativistic Heavy Ion Collider of Brookhaven National Lab. sPHENIX will measure jets and upsilons in Au+Au collisions of 200 GeV and is composed of a tracking and calorimeter system that includes a hadronic calorimeter (HCal) of two radial segments. The inner HCal will sit inside a 1.4T superconducting solenoid magnet, and the outer HCal will sit outside the magnet. Plastic scintillating tiles are sandwiched in between absorber plates running parallel to the beam direction and angled so that a particle exiting the interaction point hits four absorber plates. The HCal tiles and their respective SiPM signals are aggregated into a single calorimeter tower. Each towers' batch of tiles will have a similar behavior to optimize the HCal's performance. To achieve this, a performance characterization of each tile will be done by analyzing the tiles' response to cosmic rays. The cosmic ray study results will also be used in conjunction with beam test results from an sPHENIX calorimeter system prototype to calibrate the HCal. This talk focuses on the testing and analysis procedure of the HCal scintillating tiles and their performance characterization results that will aid in the sPHENIX HCal system calibration.