

In-Situ Calibration of the sPHENIX Hadronic Calorimeter using Isolated Single Hadrons

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1 A first goal from early running of the sPHENIX detector is to ensure an
2 accurate calibration of its calorimeters and a complete understanding of the
3 uncertainties associated with the calorimeter response to produced particles.
4 Both of these steps are necessary for successfully achieving the physics goals
5 of sPHENIX, especially in conducting various high-precision jet measurements.
6 This study explores measurements of the calorimetric response to single hadrons
7 in the sPHENIX calorimeter system, which is comprised of an electromagnetic
8 calorimeter, followed by two layers of its hadronic calorimeter. Isolated tracks
9 of momentum p are found utilizing the sPHENIX charged-particle tracking sys-
10 tems and are matched to calorimeter energy deposits E ; E/p ratios are then
11 constructed for use in precise data-to-MC comparisons. The methodology re-
12 garding the minimization of background energy from neutral particles within
13 the track isolation area will also be presented. These measurements can be
14 used to understand non-linearities in the hadronic response and quantify the
15 uncertainty in the calorimeter hadronic response between data and MC.