

Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

A simulation study for a Forward Calorimeter upgrade plan in ALICE at LHC YASUTO HORI, TAKU GUNJI, HIDEKI HAMAGAKI, University of Tokyo, CNS, JAN LAK, RICHARD SETO, EDWRD KISTENEV, MICKEY CHIU, CARLE VALE, ANDREY SUKHANOV — We plan to install a Forward Calorimeter(FoCAL) in $\eta=1-4$ region of the ALICE experiment at LHC. A main subject is the search for signatures of small-x parton saturation effects, which is recently discussed from the point of Color Glass Condensate(CGC). It also enables to study long range hadron correlations like “Ridge” found in the AuAu collision at RHIC. The basic measurements are π^0 and direct γ spectrums in p+p, p+A, and A+A collisions. Since two γ from a high momentum π^0 decays are merged into a same cluster, π^0/γ separation at high momentum is a challenging task. The measurement of single electron from heavy quarks and W boson is also possible in p+p,p+A collisions. A SiW Tracking Calorimeter can be the solution to theses requirements. It is a sampling calorimeter which measures a precise lateral and longitudinal shower shape by a set of silicon sensors. A tungsten is a good choice for absorber material because of its short radiation length and excellent ratio of radiation and absorption lengths. A simulation study for possible physics will be presented. And then the conceptual design of FpCal and its performance study by a GEANT simulation and a beamtest of PHENIX Forward Calorimeter prototype will be also presented.

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Date submitted: 06 Jul 2009

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