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Projectile Spectator Detector for the heavy ion program of the NA61/SHINE experiment at the CERN SPS

Study of event-by-event fluctuations as a function of collision energy and size of colliding nuclei to search for the critical point of strongly interacting matter is the main goal of the NA61/SHINE experiment at the CERN SPS. First measurements using secondary beams of light nuclei are planned at the end of this year. Study of fluctuations requires a good control over fluctuations caused by the variation of the number of interacting nucleons. In NA61/SHINE this will be achieved by a very precise measurements of the number of projectile spectators by the very forward hadron calorimeter, the Projectile Spectator detector, developed and constructed for this experiment. The calorimeter consists of 44 modules, each of them being a lead/scintillator sandwich with the sampling ratio satisfying the compensation condition. Light is collected by WLS-fibers embedded in each of 60 scintillator plates of the module. The readout is made by 10 micropixel avalanche photodiodes at rear side in each module. Response of the calorimeter prototype measured during beam tests in the wide energy range, 2A-160A GeV, at the hadron and fragmented beams is presented.

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