

Upgrade of Projectile Spectator Detector at NA61/SHINE experiment

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Projectile Spectator Detector (PSD) is a sampling hadron calorimeter used in the NA61/SHINE experiment to provide measurement of collision centrality and event plane reconstruction independently from tracking detectors. The PSD consists of modules with longitudinal segmentation based on lead/scintillator layers with the sampling ratio 4:1. Light from scintillator plates is collected with WLS fibers and each six consecutive scintillator plates are read out by one Hamamatsu MPPC placed at the end of the module. A fast analog signal from PSD modules allows to select events with required centrality on-line at the trigger level. Performance of the PSD will be shown for the measurements at the energy range 13 – 150 AGeV.

New physics program of NA61/SHINE experiments beyond 2020 includes open charm measurements. Current beam rate has to be increased by an order of magnitude. This requires PSD upgrade to survive in new high radiation conditions and to have faster photodetectors and read-out electronics. Instead of the present PSD, it is proposed to use two forward calorimeters. The first one is modified current PSD with constructed beam hole in the center and the second one is a new calorimeter with small transverse sizes placed downstream. Details of the PSD upgrade including simulation results of radiation conditions as well as results of the performance studies for new calorimeter system will be presented.

The speaker is a student or young scientist

No

Section

1. Intermediate and high energies, heavy ion collisions

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