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Performance of hadron calorimeter (Projectile Spectator Detector – PSD) at NA61/SHINE experiment

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The fixed target experiment NA61/SHINE at CERN SPS is aimed to study the onset of deconfinement and searching for the critical point of strongly interacting matter. A segmented hadron calorimeter - the Projectile Spectator Detector (PSD) - is used in NA61 experiment to determine a collision centrality and to reconstruct an event plane orientation in collisions of nuclei. The PSD gives a precise characterization of the event class for the analysis as well as centrality selection on trigger level.

Wide ranges of beam energies and size of the system require high dynamic range of read-out electronics. Meanwhile sensitivity to low signals is needed for the PSD calibration based on minimum ionizing energy losses. The PSD is also used as particle identification detector to distinguish electrons and positrons from pions in data taking for Fermilab neutrino beam lines in 2017.

PSD hardon calorimeter performance will be discussed as well as linearity of response and energy resolution will be presented. Data taking at extremely high energies (up to 150 AGeV) with heavy ions (Pb) will be shown.

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