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New results on hadron spectra in Be+Be collisions from NA61/SHINE at the CERN SPS

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The NA61/SHINE experiment performs a detailed study of the onset of deconfinement and search for critical point of strongly interacting matter by colliding nuclei of different sizes (protons, Be, Ar, Xe and Pb) at various beam momenta in the SPS energy range.

The study of the onset of deconfinement is carried out by comparing inclusive hadron spectra from the recent Be+Be data taking campaign to the NA61/SHINE reference results on p+p interactions, as well as Pb+Pb data from the NA49 experiment.

The new Projectile Spectator Detector (PSD) allows for excellent centrality measurement and determination of projectile spectator number with one nucleon precision in a model independent way.

First evidence for collectivity in Be+Be collisions is observed based on the transverse mass spectra of negatively charged pions. The spectra are corrected for detector effects, as well as feed-down from weak decays and secondary interactions. The shape of the mid-rapidity transverse mass spectrum in central Be+Be collisions is non-exponential in the soft regime. This feature, also observed in the Pb+Pb data, may indicate transverse collective effects in Be+Be collisions.

The analysis of Be+Be data allows to extract the mean multiplicity of negatively charged pions from the rapidity spectrum and normalize it to the mean number of wounded nucleons. The results are compared with the corresponding ones obtained for p+p and central Pb+Pb collisions.

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