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Measurement of charged and neutral kaons in Ar+Sc collisions at NA61/SHINE experiment

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NA61/SHINE is a large-acceptance fixed-target experiment located at the CERN SPS. The main physics goals of the NA61/SHINE ion program are the study of the properties of the onset of deconfinement and the search for signatures of the critical point of strongly interacting matter. These goals are pursued by performing an energy (beam momentum 13A-158A GeV/c) and system size (p+p, p+Pb, Be+Be, Ar+Sc, Xe+La, Pb+Pb) scan. In addition, the experiment performs dedicated hadron production measurements relevant to neutrino and cosmic ray physics.

The experiment has recently reported an unexpected excess of charged over neutral K meson production in central Ar+Sc collisions at 11.9 GeV center-of-mass energy per nucleon pair, which amounts to (23.3 ± 5.5)% at mid-rapidity. In this contribution, rapidity and transverse mass spectra and total multiplicity of K^+, K^-, and K^0_S mesons, as well as charged over neutral K meson production ratio in Ar+Sc collisions will be presented. The obtained results will be compared to the charge and neutral kaon production in different colliding systems measured by the NA61/SHINE experiment, model predictions, and measurements performed by the other experiments.

Auteur principal: ŠUŠA, Tatjana (Ruđer Bošković Institute)

Orateur: ŠUŠA, Tatjana (Ruđer Bošković Institute)

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