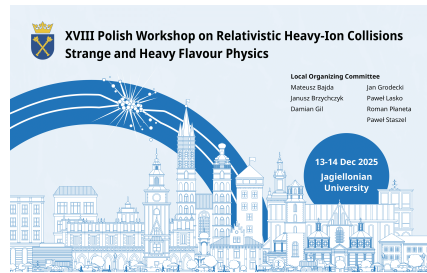


XVIII Polish Workshop on Relativistic Heavy-Ion Collisions: Strange and Heavy Flavour Physics



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

NA61/SHINE at the CERN SPS is a multipurpose fixed-target experiment designed for measurements of charged and neutral hadrons. The main physics goals of the NA61/SHINE strong interaction program are to study the properties of the onset of deconfinement and to search for signatures of the critical point of strongly interacting matter. These objectives are pursued by performing a comprehensive scan in beam momentum ($13A-150(8)A$ GeV/c) and system size ($p+p$, $p+Pb$, Be+Be, Ar+Sc, Xe+La, Pb+Pb).

The multiplicities of hadrons belonging to the same isospin multiplet are expected to be similar, as their mass differences are small (charged kaons are heavier by only about 1% with respect to neutral ones). However, NA61/SHINE has reported an unexpected excess of charged over neutral kaon production in central Ar+Sc collisions at a center-of-mass energy per nucleon pair of 11.9 GeV, amounting to $(18.4 \pm 6.1)\%$ at mid-rapidity. Preliminary NA61/SHINE results at a lower collision energy (8.8 GeV) support this observation.

This contribution will present the experimental details of this intriguing result, including the particle production spectra of

mesons and the charged-to-neutral kaon production ratio in Ar+Sc collisions. It will also compare these results to the world data on charged-to-neutral kaon ratios in nucleus–nucleus collisions.

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