Motivated by the experimental evidence for the onset of deconfinement in central Pb+Pb collisions at low SPS energies, NA61/SHINE is performing a system size and energy scan of the phase diagram of the strongly interaction matter. Crucial for the interpretation of the results, and for the search of the critical point is the study of smaller collision systems, such as the one provided by Ar+Sc collisions.

For more than 30 years, the production of strangeness has been proposed as a sensitive signal to QGP formation. Strange particles are of particular interest in hadronic collisions since they carry a new quantum number not present in the colliding nuclei. The study of \( \Lambda \) hyperons allows to study simultaneously strangeness production and the effect of net baryon density. A systematic study of the energy dependence of \( \Lambda \) production has been performed previously by NA49 for Pb+Pb collisions, and recently by NA61/SHINE in p+p collisions.

In this contribution, the new results of \( \Lambda \) production in Ar+Sc collisions is presented from the recent data taken by NA61/SHINE collaboration for a wide range of energies: 13, 19, 30, 40, 75 and 150 AGeV.
We present and discuss results with a comparison with previous analysis from NA61/SHINE, NA49 collaboration and other experiments.