$\Lambda$, $\Xi$ and $\Omega$ enhancement at central rapidity in Pb-Pb collisions at 158 A GeV/$c$(*)

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Summary. — $\Lambda$, $\Xi$ and $\Omega$ yields and transverse mass spectra have been measured in $\text{Pb-Pb}$ and $\text{p-Pb}$ collisions at $158\;\text{A GeV}/c$. The yields in $\text{Pb-Pb}$ interactions are presented as a function of the collision centrality and compared with those obtained from $\text{p-Pb}$ collisions. Strangeness enhancement is observed which increases with centrality and with the strangeness content of the hyperon.

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Heavy-ion collisions at ultrarelativistic energies at CERN SPS allow us to probe the phase diagram of nuclear matter far beyond what has been previously possible at lower energy accelerators. The main aim of these studies is to find evidence for the phase transition from hadronic matter to the quark-gluon plasma (QGP), a new state of matter consisting of deconfined quarks and gluons.

A number of signatures have been proposed to identify the QGP and have been investigated by a large experimental program carried out both at the BNL AGS and at the CERN SPS in the last years (for a recent review see [1]). Several experimental evidences (e.g., the $J/\Psi$ suppression observed by NA50 [2]) have a natural explanation in a QGP scenario, however an unambiguous evidence of the onset of the phase transition has not yet been achieved.

An enhanced production of strange and multistrange baryons and anti-baryons in nucleus-nucleus collisions with respect to proton-nucleus collisions has been suggested as a signature of the deconfined phase [3, 4]. In particular the production of multistrange baryons and antibaryons are predicted to be more sensitive probes of the onset of the QGP phase [5].

If a QGP phase is formed, the system will reach the thermal and chemical equilibrium in a few fm/$c$—a time comparable with the fireball lifetime. The strangeness phase space rapidly saturates by strange quark pairs created mainly by gluon-gluon interactions. On the other hand, strangeness can also be enhanced in a hadronic scenario where multistrange baryons and antibaryons are created in a sequence of rescatterings which gradually increase the strangeness content of the fireball. It is estimated however that