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K* Decay and the K*/K Ratio in Heavy Ion Collisions

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When relativistic heavy ions collide, a plasma of quarks and gluons (QGP) is created. This system cools down, expands and eventually reaches hadronization temperature, when a hadron gas is formed. During this phase, the constituents of the gas, among which are the K and K*mesons, can undergo further interactions and change their abundances with respect to predictions by statistical hadronization models. In a previous article [1], we studied the role of the cooling of the gas, the freeze-out temperature and the interaction cross sections on the K*/K* yield ratio. In the present work, we investigate the effect of the different reaction mechanisms on this ratio. Our analysis has shown that, out of all of the possible interaction mechanisms that the K*and K mesons can undergo in the hadron gas, only the K* decay and it's inverse mechanism are indeed necessary to be considered in order to describe the observed yield in several collision systems studied by the ALICE collaboration.

References

[1] Le Roux, C.; Navarra, F. S.; Abreu, L. M. Understanding the K*/K Ratio in Heavy Ion Collisions. Phys. Lett. B 2021, 817, 136284.

Auteurs principaux: Mme M. LE ROUX, Chiara (Instituto de Física da Universidade de São Paulo (IFUSP)); Prof. SILVEIRA NAVARRA, Fernando (Instituto de Física da Universidade de São Paulo (IFUSP))

Orateur: Mme M. LE ROUX, Chiara (Instituto de Física da Universidade de São Paulo (IFUSP))

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