Strangeness nuclear physics with HADES

L. Fabbietti

Technische Universität München, Excellence Cluster Universe

The understudying of the properties of strange hadrons in nuclear matter at different densities is one of the goal of the HADES experiment. The strategy adopted consists in first pinning down the vacuum properties of short and long-lived strange hadrons to then analyse the nuclear environment at normal ($\rho = \rho_0$) and subnormal ($\rho > 2\rho_0$) densities. The different nuclear environment have been realised by employing either proton- or pion-induced reactions (low densities) or heavy ions collisions (high densities) for beam kinetic energies around GeV measured with HADES. The study of the hadron properties in vacuum includes the exclusive measurement of the possible production mechanisms, to try to understand the dynamic of the hadron formation. Within the nuclear environment, the kinematic variables are measured for different colliding systems and either compared to reference measurements or to transport calculation, to unravel the behaviour of the hadrons. The selection of results that will be presented in this talk include the study of the Kaon and antikaon interaction with nucleons in vacuum and within nuclear matter, Ξ production in proton-induced reactions, production of strange resonances or non-strange resonances coupling to strange final states and study of the Λ-proton interaction via the femtoscopy method.