

Plenary Talk

PV IX Fri 9:00 Audimax

Renaissance of nuclear physics at the LHC — ●LAURA FABBINETTI for the ALICE-Collaboration — Technische Universität München, München, Germany

High energy LHC experiments provide a unique laboratory for nuclear and hadron physics studies that have a wide breadth of possible applications to astrophysics. This talk will report on recent and truly interdisciplinary studies carried out within the ALICE collaboration. On the one hand, we can address the formation process and properties of light anti-nuclei that constitute a pivotal ingredient in searches

for dark matter in cosmic rays. On the other hand, we have carried out high precision studies of kaon-nucleon, hyperon-nucleon and hyperon-hyperon interactions and properties of (anti)hypernuclei that are fundamental to study the equation-of-state of neutron stars. As case in points we will highlight the recent measurement of the $^3\bar{H}e$ absorption cross section and its impact for the indirect search of dark matter and the unprecedented measurements of the p- Σ , p- ϕ p- Ξ , p- Ω and p- Λ interactions and the consequences for the equation of state of hyperon stars. The perspectives for the upcoming Run 3 and Run 4 campaigns at the LHC will also be discussed.