Contribution ID: **149** Type: **Talk**

Λ and $\overline{\Lambda}$ global polarization at HADES and NICA energies using the core-corona model

Monday 12 July 2021 16:35 (20 minutes)

The polarization properties of Λ and $\overline{\Lambda}$ have received increasing attention over the last years due to the possibility to
link this observable to the properties of the medium produced in relativistic heavy-ion collisions. For semi-central collisions, the matter density profile in the transverse plane develops an angular momentum, which can be quantified in terms of the thermal vorticity. Under appropriate conditions, the latter can be transferred to spin degrees of freedom and be observed as a global polarization. The Beam Energy Scan (BES) at RHIC, performed by the STAR Collaboration has shown a trend for the Λ and $\overline{\Lambda}$ global polarization to increase as the energy of the collision decreases and that this increase is faster for $\overline{\Lambda}$s than for Λs. In addition, the HADES Collaboration has recently provided preliminary results on the Λ global polarization in Au+Au collisions at $\sqrt{s_{NN}} = 2.42$ GeV finding a non-vanishing result. In order to describe this behavior, we have developed the {\it core-corona model} where the source of Λs and $\overline{\Lambda}$s is taken as a high-density core and a less dense corona. We show that when the larger abundance of Λs compared to $\overline{\Lambda}$s coming from the corona is combined with a smaller number of Λs coming from the core compared to those from the corona, which happens for collisions with intermediate to large impact parameters, an amplification effect for the $\overline{\Lambda}$ polarization can occur, in spite of the intrinsic Λ polarization being larger than the intrinsic $\overline{\Lambda}$ polarization. This amplification is more prominent for lower collision energies. In this talk, I show that the model predicts that both the Λ and $\overline{\Lambda}$ polarization peak with different intensities and at different energies within the HADES/NICA energy range.

Preferred track

High-temperature QCD

Primary author: Prof. AYALA, Alejandro (Instituto de Ciencias Nucleares, Universidad Nacional Autonoma de Mexico)

Co-authors: Prof. TEJEDA-YEOMANS, Maria Elena (Universidad de Colima); Dr MALDONADO, Ivonne (UAS/ICN); Prof. DOMINGUEZ, Isabel (Universidad Autónoma de Sinaloa)

Presenter: Prof. AYALA, Alejandro (Instituto de Ciencias Nucleares, Universidad Nacional Autonoma de Mexico)

Session Classification: High-temperature QCD

Track Classification: High-temperature QCD