

UCLA NUCLEAR PHYSICS SEMINAR

Study of global and local polarization of Lambda and anti-Lambda hyperons in Pb-Pb collisions in ALICE at the LHC

Presented by: Debojit Sarkar, Wayne State

The system created in relativistic nucleus-nucleus collisions may possess large orbital angular momentum leading to the global polarization of particles perpendicular to the reaction plane. The local asymmetries in the velocity fields due to anisotropic flow can also generate vorticity and particle polarization along the beam direction. In parity-violating weak decays of hyperons, the momentum direction of the decay baryon is correlated with the hyperon spin. This feature makes the hyperons suitable candidates to measure the polarization and thus estimate the local and global vorticity of the system created in relativistic heavy-ion collisions. In this talk, the recent experimental measurements of the local and global polarization of the Lambda and anti-Lambda hyperons in Pb-Pb collisions in ALICE will be presented. A comparison of the ALICE results with the previous STAR measurements will be shown, and the collision energy dependence of the hyperon polarization will be discussed. Also, the comparison of the measured local polarization with the hydrodynamic model calculations involving thermal and shear-induced vorticity will be discussed.

Tuesday • Jul 27, 2021 • 10 AM

Via Zoom

UCLA