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Strangeness Production in the ALICE Experiment at the LHC

HAROLD JOHNSON, KIARA FENNER, AUSTIN HARTON, EDMUNDO GARCIA-SOLIS, Chicago State University, RON SOLTZ, Lawrence Livermore National Laboratory — The study of strange particle production is an important tool in understanding the properties of a hot and dense medium, the quark-gluon plasma, created in heavy-ion collisions at ultra-relativistic energies. This quark-gluon plasma (QGP) is believed to have been present just after the big bang. The standard model of physics contains six types of quarks. Strange quarks are not among the valence quarks found in protons and neutrons. Strange quark production is sensitive to the extremely high temperatures of the QGP. CERN's Large Hadron Collider accelerates particles to nearly the speed of light before colliding them to create this QGP state. In the results of high-energy particle collisions, hadrons are formed out of quarks and gluons when cooling from extremely high temperatures. Jets are a highly collimated cone of particles coming from the hadronization of a single quark or gluon. Understanding jet interactions may give us clues about the QGP. Using FastJet (a popular jet finder algorithm), we extracted strangeness, or strange particle characteristics of jets contained within proton-proton collisions during our research at CERN. We have identified jets with and without strange particles in proton-proton collisions and we will present a comparison of p_T spectra in both cases. This material is based upon work supported by the National Science Foundation under grants PHY-1305280 and PHY-1407051.

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