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INPP Seminar | Low Transverse Momentum Direct Photon Measurements with the PHENIX Experiment, Feb 11

Ohio University College of Arts & Sciences

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The Institute of Nuclear and Particle Physics (INPP) presents Veronica Canoa Roman of Stony Brook on "Low Transverse Momentum Direct Photon Measurements with the PHENIX Experiment", on Tuesday, Feb. 11, at 4 p.m. in Edwards Accelerator Lab, Roger W. Finlay Conference Room.

Veronica Canoa Roman

Abstract: Direct photons are a unique probe to study the properties of the medium created in heavy ion collisions. The low tranverse momentum (p_T) direct photons are of special interest since thermal photons are supposed to be dominant, while at high p_T direct photons come from initial hard scattering (pQCD). PHENIX has made a comprehensive measurement of direct photon yield in Au+Au and p+p collisions with different methods and discovered a large excess in Au+Au collisions at 200 GeV as compared to the p+p baseline at low p_T. Such excess of direct photons has been interpreted as thermal radiation from the QGP and hadron-gas medium. Following recent evidence for collective behavior of charged particle production from small systems like p+A, d+Au, and 3He+Au, PHENIX has made systematic measurements of direct photons with different collision energies and system configurations. It has been found that the low p_T direct photon yield d(gamma)/d(eta) is proportional to a scaling called (d(N_charge)/d(eta))^(alpha). This behavior holds for beam energies measured both at RHIC and at the LHC in large-on-large systems, while data from small systems suggest an onset of QGP formation at low d(N_charge)/d(eta).

In this talk, I will report recent measurements of thermal photon and related observables.