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

February 1, 2020

Categories: Events

Tags: INPP Seminar, Institute of Nuclear and Particle Physics, physics and astronomy events, Veronica Canoa Roman

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 transverse 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 $^3\text{He}+\text{Au}$, 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 $(d(N_{\text{charge}})/d(\eta))^\alpha$. 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 $d(N_{\text{charge}})/d(\eta)$.

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