

Electromagnetic radiation from nuclear collisions at RHIC energies

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The spectra of real and virtual photons produced in the relativistic collisions of heavy nuclei at RHIC energies are calculated, with the behavior of the hot and dense strongly interacting system being modeled with relativistic hydrodynamics [1]. Several different sources are considered, and their relative importance is compared. Specifically, we include jet fragmentation, jet-plasma interactions, the emission of radiation from the thermal medium and from primordial hard collisions [2]. For the first time, the jet energy loss and the emission of electromagnetic radiation - both evaluated in the AMY formalism [2] - is integrated consistently with the realistic time-evolution provided by the hydro modeling. We obtain results in quantitative agreement with the spectra, the nuclear modification factor (R_{AA}^γ), and the azimuthal anisotropy (v_2^γ) measured for photons by the PHENIX collaboration [3]. We analyze and isolate the effects of flow on the electromagnetic signal. Predictions for high p_T lepton pair measurements are also presented.

References

[1] P. F. Kolb and U. Heinz, nucl-th/0305084. [2] S. Turbide, C. Gale, S. Jeon and G. D. Moore, Phys. Rev. C **72**, 014906 (2005). [3] S. Turbide, C. Gale, E. S. Frodermann, and U. Heinz, to be published.