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Thermal photon emission from nearly equilibrated relativistic heavy-ion collisions[1] CHUN SHEN, The Ohio State University, CHARLES GALE, McGill University, ULRICH HEINZ, The Ohio State University — Photons are believed to be clean and penetrating probes of the medium created in ultra-relativistic heavy-ion collisions. The thermal photon spectra and their anisotropy are known to be very sensitive to the thermalization time, the specific shear viscosity, the equation of state of produced matter, and the initial state fluctuations [1]. Previous computations of photon emission spectra have been mostly carried out in a fully thermalized and chemical equilibrated medium evolving dynamically under the influence of an equation of state with a first order phase transition. But in realistic hydrodynamic simulations, the evolving system always slightly deviates from thermal equilibrium. In the hadronic phase, it also breaks the chemical equilibrium due to its fast expansion rate. In this work, we study how the off-thermal equilibrium and partial chemical equilibrium in the hadronic phase affect the yields and the azimuthal anisotropies of produced thermal photons in heavy-ion collisions at RHIC energy. We compare our calculations with measurements by the PHENIX experiment.

[1] M. Dion, J. F. Paquet, B. Schenke, C. Young, S. Jeon and C. Gale, "Viscous photons in relativistic heavy ion collisions," Phys. Rev. C 84, 064901 (2011)

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