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Direct photon results from PHENIX at RHIC

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Direct photons are a very important probe to study the properties of the medium created by heavy ion collisions, since they are produced throughout the collision history and carry out information about the medium at the point of their production, without strong interaction. While high p_T direct photons originating from initial hard scattering serve as a test for pQCD, low p_T photons contain rich information about a hot and dense QCD medium produced in the collisions. In particular, thermal photons are of keen interest since they allow us to directly access to the thermodynamic properties of the medium. Their contribution is expected to be very large typically below $3\text{GeV}/c$. PHENIX has observed for the first time an enhanced yield below $3\text{GeV}/c$ in Au+Au as expected, but v_2 of the enhanced yield is unexpectedly large. The mechanism to produce a large direct photon yield with a large v_2 is not understood yet. PHENIX has made systematic measurements of direct photons with different collision energies and species. These systematic measurements could help understand photon production mechanism in the hot QCD medium. In this presentation, we will report the latest status of the direct photon measurements.

Primary author: Dr YAMAGUCHI, Yorito (RIKEN)

Presenter: Dr YAMAGUCHI, Yorito (RIKEN)

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