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Direct photon measurement by the PHENIX experiment at RHIC

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Direct photons are an excellent tool to understand the properties of the quark gluon plasma created in heavy ion collisions. Since they are color-blind, photons carry directly the information of the system at their production time towards the detectors. The direct photons at mid-rapidity would carry convoluted information from the early to late stages of collisions, while those at forward rapidities could provide important constraints to the gluon PDF, as they are directly sensitive to the gluon density.

For Au+Au collisions at 200 GeV, PHENIX has measured a large yield of low momentum direct photons which suggests early emission at high temperatures.
On the other hand, a large azimuthal anisotropy, which hints a later emission when the collective flow of the matter is fully developed, was also found. This apparent tension could be better understood by the measurements at various collision systems and energies.

In this talk, I will present recent PHENIX results on low pT direct photons measured at mid rapidity for Au+Au at 39, 62.4 and (newest dataset) 200 GeV, as well as Cu+Cu at 200 GeV. In addition the analysis status of the 2016 d+Au dataset over a wide rapidity range will be presented.

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