

# Direct Photons as an Evidence for the QGP Formation in Heavy-Ion Collisions

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Relativistic heavy-ion collisions experiments such as ALICE at the LHC, PHENIX, and STAR at BNL can provide us with information about the Quantum Chromodynamics (QCD) theory and Quark-Gluon Plasma (QGP) formation at extreme density and temperature conditions. Photons are produced in heavy ion collisions in two ways: direct ones result from the quark-gluon Compton scattering and quark-antiquark annihilation, on the other hand, the indirect which can out of the hadrons decay such as pions. However, these thermal photons resulting from electromagnetic interactions in the medium of collision are of interest to examine the quark-gluon plasma formation. As these photons do not interact with the color charges of the dense media, hence they give details about the evolution of the collision of heavy ions. Direct photons classified into prompt, thermal, and non-thermal depending on their transverse momentum value. Finally, depending on the data from electromagnetic and even hadronic calorimeters, spectrum of the direct photons can be calculated through the subtraction method.