QUARK MATTER 2015
Sep. 27 – Oct. 3, 2015 Kobe, Japan

Contribution ID: **75** Type: **Poster**

Photon production from the quark-gluon plasma using (3+1) dimensional anisotropic dissipative hydrodynamics

Tuesday, 29 September 2015 16:30 (2 hours)

We calculate the medium photon production due to Compton and annihilation processes by taking into account the (3+1)-dimensional anisotropic hydrodynamics of the quark gluon plasma (QGP) expected to be formed in relativistic heavy ion collisions. The anisotropic hydrodynamics equations describe the full spatiotemporal evolution of the transverse temperature, spheroidal momentum-space anisotropy parameter and the associated threedimensional collective flow of the matter. We have taken the momentum-space anisotropy also into account in the computation of the photon production rate finally. We present the predictions for high-energy photon yields as a function of transverse momentum and rapidity. We conclude that high-energy photon production is extremely sensitive to the assumed level of initial momentum-space anisotropy of the quark-gluon plasma. As a result, it may be possible to experimentally constrain the early-time momentum-space anisotropy of the quark-gluon plasma generated in relativistic heavy ion collisions using high energy photon yields.The sensitivity of the results on the initial condition is also discussed.

On behalf of collaboration:

NONE

Primary author: Dr BHATTACHARYA, Lusaka (Kent State University)

Co-authors: Dr STRICKLAND, Michael (Kent State University); Dr RYBLEWSKI, Radoslaw (The H. Niewodniczanski Institute of Nuclear Physics)

Presenters: Dr STRICKLAND, Michael (Kent State University); Dr RYBLEWSKI, Radoslaw (The H. Niewodniczanski Institute of Nuclear Physics)

Session Classification: Poster Session

Track Classification: Electromagnetic Probes