



## Coherent $e^+e^-$ production at very low transverse momenta in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV and U+U collisions at $\sqrt{s_{NN}} = 193$ GeV at STAR

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Recent ALICE collaboration measurements[1] showed a significant excess in  $J/\psi$  yield at very low transverse momenta ( $p_T < 0.3$  GeV/ $c$ ) in the peripheral Pb+Pb collisions at  $\sqrt{s_{NN}} = 2.76$  TeV. The same behavior of the  $J/\psi$  production is observed at STAR in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV. These results are interpreted as coherent photoproduction of  $J/\psi$  at the moment. The coherent photoproduction scenario may also suggest there is an excess of photoproduced electron-positron production at the very low  $p_T$  in peripheral collisions. It would be very interesting to investigate the electron-positron pair production in the full mass region ( $M_{ee} < 4\text{GeV}/c^2$ ) at very low  $p_T$  in heavy-ion collisions in different centrality bins. If the coherent photoproduction mechanism is confirmed, the coherently photoproduced  $e^+e^-$  pairs accompanying violent hadronic collisions may provide a novel probe of the hot and dense nuclear matter.

In this talk, we will present  $e^+e^-$  invariant mass spectra in very low  $p_T$  in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV and U+U collisions at  $\sqrt{s_{NN}} = 193$  GeV. The  $p_T$  spectra from different mass regions (0.4-0.76, 1.2-2.6, and 2.8-3.2 GeV/ $c^2$ ) will be reported. The structure of  $t$  ( $t = p_T^2$ ) distributions of these mass regions and comparisons with that in ultra-peripheral collisions will be shown. The centrality dependence of the  $e^+e^-$  productions will be shown. Physics messages will be discussed.

[1] J. Adam et al. (ALICE Collaboration), Phys. Rev. Lett. 116, 222301 (2016).

### List of tracks

Heavy-flavour (open and hidden)

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