Contribution ID: **9** Type: **Poster**

Heavy dilepton in nucleus nucleus collision at LHC energy

We present a study of $\tau^+\tau^-$ lepton pair production in Pb + Pb collisions at $\sqrt{s_{NN}}$ = 5.5 TeV. The larger mass of tau lepton compared to electron and muon leads to considerably small hadronic contribution to the $\tau^+\tau^-$ pair invariant mass (M) distribution relative to the production from thermal partonic sources. The quark–anti-quark annihilation processes via intermediary virtual photon, Z and Higgs bosons have been considered for the tau lepton production.
The contribution from Drell–Yan process is found to dominate over thermal yield for $\tau^+\tau^-$ pair mass from 4 to 20 GeV at the LHC energy.
We also present the ratio of τ lepton pair yields for nucleus–nucleus collisions relative to yields from p + p collisions scaled by number of binary collisions at LHC energies as a function τ lepton pair inavariant mass.
The ratio is found to be significantly above unity for the mass range 4 to 6 GeV.
This indicates the possibility of detecting $\tau^+\tau^-$ pair from quark–gluon plasma (QGP) in the mass window 4 to 6 GeV.

Primary author: Mrs MAJUMDER, Sarbani (Bose Institute)

Co-authors: Dr MOHANTY, Bedangadas (NISER, Bhubaneswar); Prof. ALAM, Jan-e (VECC, Kolkata.); Dr RAY, Rajarshi (Bose Institute, Kolkata); Prof. GHOSH, Sanjay (Bose Institute, Kolkata.)

Presenter: Mrs MAJUMDER, Sarbani (Bose Institute)