Measuring the initial temperature through photon to dilepton ratio

Jajati K. Nayak, **Jan-e Alam**, **Sourav Sarkar** and **Bikash Sinha**

Variable Energy Cyclotron Centre
1/AF Bidhan Nagar, Kolkata, India, *jajati-quark@veccal.ernet.in*

The ambiguities in the (experimental) determination of the various input parameters such as the initial temperature, thermalization time, equation of state, transition temperature, freeze-out temperature etc., are reflected in the transverse momentum p_T) spectra of photons and dileptons obtained from various theoretical calculations. Many of these uncertainties get canceled in the ratio, $R_{em}(p_T)$ of the p_T spectra of photons to lepton pairs. R_{em} has been evaluated with different initial conditions and is observed to reach a plateau beyond a certain value of transverse momentum. We argue that the value R_{em} in the plateau region can be used to estimate the initial temperature of the system.