A tool to study Chiral Symmetry Restoration

- A broadened spectral function describes di-lepton enhancement from SPS at 17.3 GeV to top RHIC energy from STAR.
- The total baryon density does not change significantly from 17.3 to 200 GeV. This provides robust test for models incorporating vector-meson spectral function with smooth connection to QGP radiation.
- With precise spectrum and v_2 measurements over a broad beam energy range, di-leptons can test if vector mesons completely dissolve and if thermal radiation exists at the same mass range (qqbar→l+l-).
- Precise di-lepton measurements over a broad beam energy scan at RHIC, LHC and FAIR provides a unique opportunity to study Chiral Symmetry Restoration.
- Need RHIC upgrade BES-II high luminosity run to study one of the two fundamental issues in QCD
(Quark confinement and Chiral symmetry Restoration)