

Proton mass and the EoS for compressed baryonic matter

Wednesday, 14 November 2012 17:40 (30 minutes)

While hadronic matter at high temperature and zero density can be assessed by lattice QCD and experiments, so is being understood well, little is known of the EoS of matter at high density and very low temperature. The QCD phase diagram for low temperature and high density is in fact a more or less uncharted domain. I will discuss how to first probe the density regime just above the saturation density with RIB machines of the KoRIA type, then go to the temperature and density regime of FAIR that overlaps with the conditions met in merging and/or collapse of massive stars that could be measured in gravity wave and then ultimately to unravel that in which hadronic phase and strong-coupled quark phase coexist, giving rise to massive stars of ~ 2.4 times solar mass. In this consideration, the effect of unbreaking chiral symmetry on the proton mass plays an important role. This development offers a promising new field of research for the Korean heavy-ion and astrophysics communities in conjunction with the construction of the RIB accelerator KoRIA and the establishment of the IBS (Institute for Basic Science).

Keywords

proton mass, CBM, EoS, compact stars, KoRIA/IBS

Primary author: Prof. RHO, Mannque (CEA Saclay and Hanyang University)

Presenter: Prof. RHO, Mannque (CEA Saclay and Hanyang University)

Session Classification: Plenary IC (Chair Sourendu Gupta)