APCTP SEMINAR

Towards QCD-based description of dense baryonic matter

Yuki Fujimoto

University of Tokyo

October 14th (Thu.) 16:00 (KST)
Online via ZOOM

The equation of state (EoS) of dense baryonic/quark matter is the crucial ingredient for understanding neutron stars. In this talk, I particularly focus on the perturbative QCD (pQCD) calculation of the EoS; pQCD was previously thought to be inapplicable at realistic densities because it is plagued by the large scale variation uncertainty. I introduce our recent analysis of the EoS calculated within the hard dense(thermal) loop perturbation theory, which is the pQCD framework with the resummation [Fujimoto & Fukushima, 2011.10891]. I discuss the scheme for resumming the hard dense loops, which turns out to reduce the uncertainty compared with the conventional pQCD estimate. Our result apparently extends the applicability of the QCD-based EoS down to densities realized inside neutron stars and infers a smooth matching with the baryonic EoS. Also, the violation of the conformal limit in the speed of sound is also discussed.

■ ZOOM Webinar
1) Please register through this ZOOM link
   https://us06web.zoom.us/meeting/register/tZ0rf--srTIvHNHVtb9juMjHgDpaY9heckNx
2) Join the webinar with a link generated after the registration
3) Please rename your profile - E.g. **Full name (affiliation)**

■ Contact information
1) Host: Matti Jarvinen (matti.jarvinen@apctp.org)
2) Office: Research Support Team (ra@apctp.org)