Contribution ID: **180** Type: **Talk**

Masses and spectral functions for anti-D mesons in nuclear matter and partial restoration of chiral symmetry

Monday, 25 September 2017 18:10 (20 minutes)

We investigate the in-medium masses of a $\bar{D}$ (0^-) meson and a $\bar{D}_0^*$ (0^+) meson, and spectral functions for $\bar{D}$
and $\bar{D}_0^*$
meson channels in nuclear matter.
These mesons are introduced as chiral partner in the chiral symmetry broken vacuum,
hence they are useful to explore the partial restoration of the broken chiral symmetry in nuclear matter.
We consider the linear sigma model to describe the chiral symmetry breaking and to see a qualitative tendency of changes of $\bar{D}$ mesons at low density.
Our study
shows that the loop corrections to $\bar{D}$ and $\bar{D}_0^*$ meson masses
provide a smaller mass splitting at finite density than that in vacuum, whose result indicates a tendency of the restoration of the chiral symmetry.
We investigate also the spectral function for $\bar{D}_0^*$ meson channel, and find
three peaks.
The first peak which corresponds to the resonance of $\bar{D}_0^*$ meson is broadened by collisions with nucleons in medium, and the peak position shifts to
lower mass due to the partial restoration of chiral symmetry as the density increases.
The second peak
is identified as a threshold enhancement which shows a remarkable enhancement as the density increase. The third peak is Landau damping.
The obtained properties of $\bar{D}$ and $\bar{D}_0^*$ mesons in nuclear matter will provide useful information for experiments.

Primary author: SUENAGA, Daiki (Nagoya University)

Co-authors: YASUI, Shigehiro (Tokyo Institute of Technology); Prof. HARADA, Masayasu (Nagoya University)

Presenter: SUENAGA, Daiki (Nagoya University)

Session Classification: Hadrons in matter including hypernuclei

Track Classification: Hadrons in matter including hypernuclei