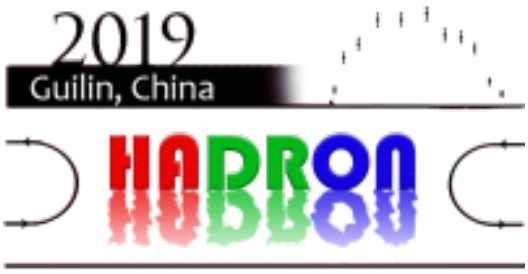

Contribution ID: **65** Type: **Leading parallel**

Dense nuclear matter based on a chiral model with parity doublet structure

Sunday, 18 August 2019 16:15 (25 minutes)

I will summarize our recent works on the study of nuclear matter based on a chiral model with parity doublet structure.
In our model, we construct a chiral model including four light nucleons, N(939), N(1440), N(1535) and N(1650) based on the parity doublet structure.
We first determine the model parameters by fitting them to available experimental values of masses, widths and the axial charges including the results of lattice analyses.
Next, we apply this model to symmetric nuclear matter and neutron star matter in a mean field approximation. We find that model parameters are restricted by requiring that the saturation properties: saturation density, binding energy, incompressibility and the symmetry energy at normal nuclear density, are satisfied. We also find that model parameters are further constrained by the tidal deformability which was recently measured by the observation of neutron star merger.

References:
T. Yamazaki and M. Harada, Phys.Rev. D99 (2019) no.3, 034012
T. Yamazaki and M. Harada, arXiv:1901.02167

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Session Classification: Session 7: Hadrons in hot and nuclear environment including hypernuclei

Track Classification: Session 7: Hadrons in hot and nuclear environment including hypernuclei