

## **Nuclear matter and nuclei in parity doublet model**

*Tuesday, 27 June 2017 17:30 (20 minutes)*

Dense nuclear matter is closely related to heavy ion collisions, nuclear structure, compact stars, etc. We discuss the properties of isospin asymmetric dense matter in an extended parity doublet model [1]. We are especially interested in the role of the delta baryon in dense matter to investigate a transition to delta matter [2]. In addition, we are also interested in the origin of the nucleon mass in dense matter. In the parity doublet model the nucleon mass gets, in addition to the mass from spontaneous chiral symmetry breaking, an additional contribution from the chiral invariant mass. Therefore, it is important to estimate the chiral invariant mass portion of the nucleon mass compared to that from chiral symmetry breaking in dense matter. We also study nuclear structure in the parity doublet model to see if there is any physical observable sensitive to the chiral invariant mass [3].

References:

- 1) Y. Motohiro, Y. Kim, M. Harada, Phys. Rev. C92 (2015) 025201
- 2) Y. Takeda, Y. Kim and M. Harada, arXiv:1704.04357 [nucl-th].
- 3) W. -G. Paeng, et al, in preparation

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