



Contribution ID: 286

Type: **not specified**

Recent progress on extended Skyrme functionals

Thursday, 6 September 2018 14:00 (25 minutes)

Any given finite-range two-body interaction can be developed by means of a simple Taylor series in momentum space.

This is the basic idea presented by Skyrme in its original paper. Truncating the Taylor series at second order in gradients, we obtain the standard Skyrme interaction (N1LO). In this talk I will discuss the truncation at 4th and 6th order in gradients and the new family of extended Skyrme interactions (N2LO/N3LO). The reason of considering the additional terms of the series is motivated by the lack of flexibility of current Skyrme functionals in reproducing nuclear observables at the desired level of accuracy.

Motivated by the previous work done by UNEDF collaboration, I will present the main new features of the extended Skyrme functionals and the new fitting strategy developed to avoid the appearance of spurious finite-size instabilities.

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Session Classification: Nuclear Structure and Dynamics (SALONE BOLOGNINI)