
INFINITE MATTER PROPERTIES AND ZERO-RANGE LIMIT OF NON-RELATIVISTIC FINITE-RANGE INTERACTIONS

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In this talk, I discuss some infinite matter properties of two finite-range interactions widely used for nuclear structure calculations, namely Gogny and M3Y interactions. I show that some useful informations can be deduced for the central, tensor and spin-orbit terms from the partial wave decomposition of the symmetric nuclear matter equation of state. I also show that the zero-range limit of both interactions coincide with a particular form of the N3LO Skyrme's interaction and emphasize from this analogy the benefits of N3LO (next-to-next-to-next leading order).