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Relativistic nucleon-nucleon interaction in chiral effective field theory

Motivated by the successes of relativistic theories in studies of atomic/molecular and nuclear systems and the strong need for a covariant chiral force in relativistic nuclear structure studies, we develop a new relativistic scheme to construct the nucleon-nucleon interaction in the framework of chiral effective field theory.

In this talk, I will highlight the relativistic effects of chiral nuclear force up to leading order, which includes all spin structures needed to describe the nuclear forces. The description of the $^1S_0$ and $^3P_0$ phase shifts is comparable with the traditional chiral force up to next-to-leading order (NLO). This encourages us to step further along this line and to study the chiral force at NLO, where the two-pion-exchange (TPE) contributions will be shown.

Mercredi 30 Mai 2018, 11h30

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