Contribution ID: **11**   Type: **not specified**

Hyperon-nucleon interaction and baryonic contact terms in SU(3) chiral effective field theory

Sunday, 27 October 2013 17:40 (20 minutes)

We present results for hyperon-nucleon interactions at next-to-leading order in SU(3) chiral perturbation theory. The potential includes contributions from one- and two-meson exchange diagrams as well as contact terms with SU(3) symmetric low-energy constants. These results provide a new basis for studies of hypernuclei or hyperons in nuclear matter. In more detail we explain the construction of the four-baryon contact Lagrangian within SU(3) chiral perturbation theory up to order q^2 in a covariant power counting. The constructed terms are invariant under charge conjugation, parity transformation, Hermitian conjugation and local chiral transformations. Terms including Goldstone bosons as well as external fields are considered. Furthermore we derive the leading order six-baryon contact terms in the non-relativistic limit and study their contribution to ΛNN three-body contact forces.

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Track Classification: Parellel A