SES14-2014-000056

Abstract for an Invited Paper
for the SES14 Meeting of
the American Physical Society

Electromagnetic structure of light nuclei from Chiral Effective Field Theory[1]

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In this talk, I present a number of calculations of electromagnetic observables for $A \leq 9$ nuclei, which account for two-body effects due to the coupling of external photons with pairs of interacting nucleons. Two-body electromagnetic currents have been recently derived from a chiral effective field theory that uses pions and nucleons as degrees of freedom. They include up to N3LO terms in the chiral expansion and consist of contact-like as well as one- and two-pion exchange operators. When used in combination with nuclear Hamiltonians that include two- and three-nucleon realistic potentials, two-body electromagnetic current operators are found to provide sizable contributions. These calculations reveal a rich nuclear electromagnetic structure where many-body effects are found to be important and not negligible in a careful interpretation of experimental data.

[1]NSF grant No. PHY-1068305