

Abstract Submitted
for the DNP07 Meeting of
The American Physical Society

No-core shell model as effective theory: applications to light nuclei and cold atoms in harmonic traps¹ IONEL STETCU, Los Alamos National Laboratory — Systems with large two-body scattering lengths are of particular interest because they exhibit universal behavior. While such systems have become popular in atomic physics only in the last decade, in nuclear physics they have been investigated since its beginning. Hence, it is not surprising that techniques developed for solving the nuclear few-body problem are immediately applicable to such systems in atomic physics. In this talk, I will present an effective-field theory approach to constructing two- and three-body effective interactions in no-core shell model finite spaces, with applications to the description of light nuclei and cold atom gases in harmonic traps, and I will argue how the same renormalization techniques can be applied to both kinds of systems.

¹This research was supported by the U.S. Department of Energy under grant number DE-AC52-06NA25396.

Ionel Stetcu
Los Alamos National Laboratory

Date submitted: 29 Jun 2007

Electronic form version 1.4