

Experiments of Few-Nucleon Scattering and Three-Nucleon Forces

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Understanding the nuclear properties from bare nuclear forces is one of the main topic in nuclear physics. Recently the importance of three-nucleon forces (3NFs), which appear when more than two nucleons interact, has been indicated in various nuclear phenomena, such as few-nucleon scattering, binding energies of nuclei, and equation of state of nuclear matter.

Few-nucleon scattering at intermediate energies ($E \gtrsim 60$ MeV/nucleon) is one attractive approach to investigate the dynamical aspects of 3NFs, such as momentum, spin and iso-spin dependences^{1,2}. In this system rigorous numerical calculations in terms of Faddeev theory based on bare nuclear potentials are available. Direct comparison between the calculations and precise data enables us to extract the effects of 3NFs quantitatively.

With the aim of clarifying the roles of 3NFs in nuclei experimental programs of few-nucleon scattering are in progress at RIKEN, RCNP, and CYRIC³. In the workshop, recently obtained data are presented together with the theoretical predictions.

References

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2. S. Nemoto *et al.*, Phys. Rev. C **58**, 2599 (1998).
3. See for example, K. Sekiguchi *et al.*, Phys. Rev. C **89** 064007 (2014).