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Effects of chiral three nucleon forces on elastic scattering MASAKAZU TOYOKAWA, Kyushu University, KOSHO MINOMO, MICHIO KOHNO, RCNP, Osaka University, MASANOBU YAHIRO, Kyushu University — An important current issue in nuclear physics is to clarify the roles of the three-nucleon force (3NF). Recently, two-nucleon force (2NF) and 3NF were systematically and clearly defined by chiral effective field theory, although a phenomenological 3NF was known to reduce cross sections of nucleus-nucleus elastic scattering largely at backward angles [1]. In this talk, we investigate the roles of chiral-3NF in nucleon-nucleus and nucleus-nucleus scattering. The optical potential calculated from chiral 2NF is found to be close to that from Bonn-B 2NF. We then introduce the chiral-3NF effects to the local G-matrix (Melbourne interaction) [2] constructed from Bonn-B 2NF. Chiral 3NF makes the folding potential less attractive and more absorptive. These effects reduce cross sections at backward angles particularly for AA scattering. The novel property for the imaginary part is originated in the enhancement of tensor correlations due to chiral 3NF.

[1] T. Furumoto et.al. Phys.Rev.C 79, 011601(R)(2009).
[2] K. Amos et.al. Adv.in Nucl.Phys.Vol.25, p. 275.(2000).

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