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Polarized proton target for radioactive ion beam experiments SATOSHI SAKAGUCHI, Kyushu University, TOMOHIRO UESAKA, RIKEN Nishina Center, TAKASHI WAKUI, CYRIC, Tohoku University, TOMOMI KAWA-HARA, KENICHIRO TATEISHI, SERGEY CHEBOTARYOV, EVGENIY MIL-MAN, HIDEYUKI SAKAI, RIKEN Nishina Center — The world of atomic nuclei is enriched by the strong spin-dependent interaction in nuclear force. For studying roles of such interactions, one of the best approaches is the direct reaction of spin-polarized light ions. From more than half century ago, a number of scattering experiments using polarized proton/deuteron beams have been performed in all over the world. A polarized target for radioactive-ion beam experiments will enable us to apply this powerful approach to the field of unstable nuclei. At RIKEN and CNS, Univ. of Tokyo, we have constructed a solid polarized proton target based on a unique polarizing method. The target has an advantage of the operation under a low magnetic field of 0.1 T, which allows the detection of low-energy recoil protons in the inverse kinematics. Currently achieved polarization is about 20%. The target has already been applied to RI-beam experiments at intermediate energies such as 70–200 MeV/nucleon. In this talk, we will introduce the overview of the polarized target system and present status of the experimental programs such as study of spin-orbit interaction in proton elastic scattering and determination of spin-orbit splitting by (p,2p) knock-out reaction. New physics opportunities expected with low-energy beams will also be covered.

> Satoshi Sakaguchi Kyushu University

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