

## Development of 17T-NMR system for measurement of polarized HD target

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Polarization target for using hadron experiment is developing and studying in RCNP, Osaka University. LEPS group have studied hadron photo-production experiment of the  $\phi$ , K,  $\eta$ , and  $\pi^0$  mesons by using linear polarized Back Scattering Compton (BCS)  $\gamma$ -ray and no polarized target with energies of  $E_\gamma=1.5 \sim 2.9$  GeV. An experiment for measuring a complete set of spin observables is expected to give important information. Especially, to investigate the nucleon hidden structure and hadron photo production dynamics, polarized target is required in the future of hadron experiment in LEPS

This polarization target is polarized high magnetic field and ultra low temperature. Hydride Deuterium (HD) molecule is used as polarized material. This HD polarization target is produced in RCNP and transported to LEPS beam-line in SPring-8 by truck. Polarization is measured by NMR method in RCNP at the production, on the way of transportation and in SPring-8 at the experiment. In the past, NMR measurement was performed by magnetic field sweep in our group. But this method had a risk and some trouble because we have to drive the super conduction magnet many time and consume a lot of LHe. Polarization growing is required high magnetic field of 17 T and low temperature of 10 mK. Since NMR measurement is not performed this term, we can obtain the polarization information of growing. No body knows the growing curve of polarization of the target. I have developed frequency NMR system working on 17 T. This system enable us to monitor the polarization growing in production term.

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