

Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Development of Rb atomic magnetometer for EDM experiment with ^{129}Xe spin maser AKIHIRO YOSHIMI, RIKEN Nishina Center, KOICHIRO ASAHI, TAKESHI INOUE, MAKOTO TSUCHIYA, MAKOTO UCHIDA, TAKESHI FURUKAWA, Tokyo Institute of Technology — We have been investigating the frequency stability of the low-frequency nuclear spin maser with ^{129}Xe aiming at EDM (permanent Electric Dipole Moment) experiment. One of the main sources for this frequency instability comes from the field fluctuation of the applied static magnetic field in a relatively long time scale. The present stability 30 nG of the applied field $B_0 = 30$ mG in a time scale of 10^4 s should be suppressed in order to perform EDM experiment. We have been preparing for introduction of magnetometer to stabilize the magnet current to produce the B_0 field. This magnetometer utilizes NMOE (Nonlinear Magneto Optical Effect) in Rb atom. The expected sensitivity of this type of magnetometer achieves the order of pG. We will report on systematic measurement of NMOE in Rb atom with different type of Rb cells using a tunable external-cavity diode laser, and on present status for the development of this type of magnetometer.

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Date submitted: 02 Jul 2009

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