Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Development of an electric field application system with transparent electrodes towards the electron EDM measurement with laser-cooled Fr atoms[1] TAISUKE ISHIKAWA, SHUN ANDO, TAKAHIRO AOKI, HIROSHI ARIKAWA, KEN-ICHI HARADA, TOMOHIRO HAYAMIZU, TAKESHI INOUE, MASATOSHI ITOH, HIROKAZU KAWAMURA, KO KATO, KOSUKE SAKAMOTO, AIKO UCHIYAMA, YASUHIRO SAKEMI, Tohoku University — The permanent electric dipole moment (EDM) of elementary particles is a good probe for new physics beyond the standard model. Since the francium (Fr) atom has a large enhancement factor of the electron EDM and laser-cooled atoms can have long coherence times, we plan to utilize laser-cooled Fr atoms for the electron EDM search experiment. Besides, a strong electric field is one of key issues for the EDM experiment. Recently, we have embarked on a development of the electric field application system with transparent electrodes coated by tin-doped indium oxide (ITO). The ITO electrodes break the difficulty in the coexistence of electrodes with several cooling laser lights. The actual electric field applied to the atom is evaluated by measuring the dc Stark shift for the laser-cooled rubidium atoms. In this presentation, the present status of the electric field application system will be reported.

[1]This work is supported by Grants-in-Aid for Scientific Research (No. 26220705) and Tohoku University's Focused Research Project.

Taisuke Ishikawa
Tohoku University

Date submitted: 30 Jun 2014 Electronic form version 1.4