

A nEDM measurement with a He-II spallation UCN source

Y. Masuda*

Institute of particle and nuclear studies, KEK, Oho 1-1 Tsukuba, Japan

yasuhiro.masuda@kek.jp

Baryogenesis is related with CP violation. The standard model of particle physics can't explain the baryon asymmetry in the universe. We need new physics. New physics predicts larger values of neutron EDM (nEDM) than the standard model, which are in 10^{-26} to 10^{-28} e cm. The state of art nEDM measurement at Grenoble shows the upper limit of 3×10^{-26} e cm. The statistical error is limited by UCN density and the systematic error geometric phase effect (GPE). We are constructing a nEDM apparatus shown in Fig. 1. We will use a He-II spallation UCN source to increase UCN density [1] and a ^{129}Xe co-magnetometer to reduce GPE [2]. Our goal is 10^{-27} to 10^{-28} e cm in the precision of nEDM. We have constructed the UCN source, a UCN polarizer and a Ramsey resonance apparatus. We will discuss results of our experiment, and also future possibilities of higher power proton beams.

**Tentative presenter.*

[1] PRL 108, 134801 (2012).

[2] PLA 376, 1347 (2012).

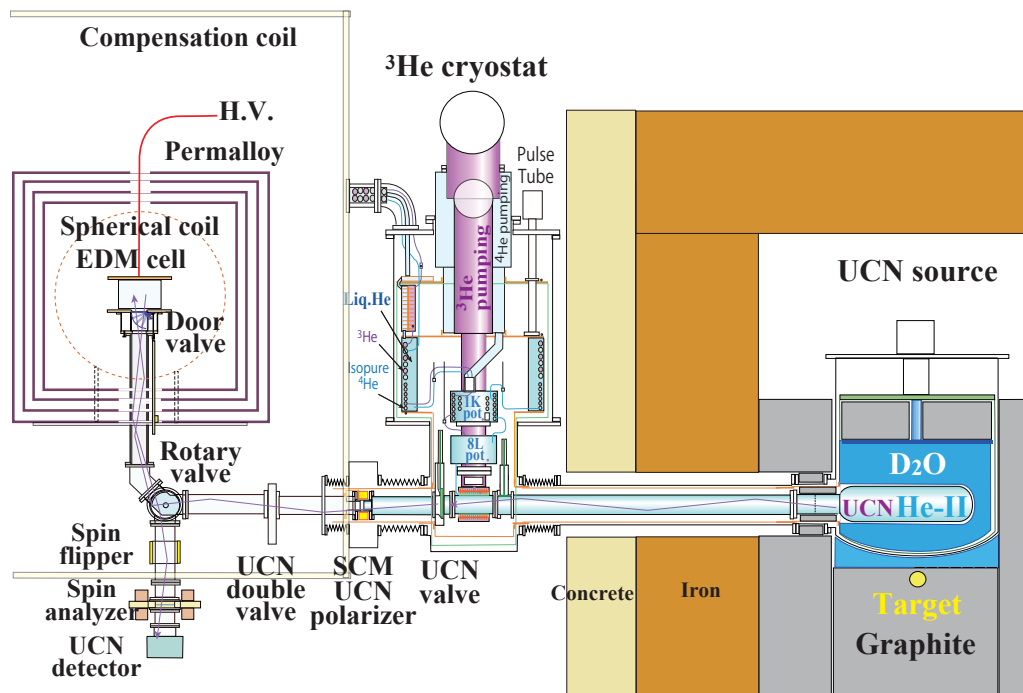


Fig. 1 Apparatus for nEDM measurement