Contribution ID: **234** Type: **Poster**

Magnetometry for a next generation neutron EDM experiment

Tuesday, October 18, 2016 5:58 PM (1 minute)

Experiments searching for the electric dipole moment of the neutron (nEDM) require a stable and homogeneous main magnetic field. Statistical errors in such experiments can be dominated by fluctuating magnetic fields if the relevant magnetic-field parameters cannot be measured with sufficient precision and accuracy. Improvements in nEDM sensitivity are thus not possible without improving the magnetometry systems that measure the magnetic field parameters. In addition, systematic errors in nEDM experiments strongly depend on the profile of the magnetic field, since many such errors are related to magnetic-field gradients. We report on our strategy to suppress statistical and systematic errors in our next-generation nEDM experiment using magnetometers based on Hg, Cs [1,2], and 3He[3,4].

[1] S. Afach, G. Ban, G. Bison, et al. Highly stable atomic vector magnetometer based on free spin precession. Opt. Exp. 23 (17):22108–15, 2015.
[2] Z. D. Grujic, P. A. Koss, G. Bison, and A. Weis. A sensitive and accurate atomic magnetometer based on free spin precession. Eur. Phys. J. D, 69(5), 2015.
[3] H.-C. Koch, G. Bison, Z.D. Grujić, et al. Design and performance of an absolute 3He/Cs magnetometer. Euro. Phys. J. D, 69 (8), 2015.
[4] H.-C. Koch, G. Bison, Z.D. Grujić, et al. Investigation of the intrinsic sensitivity of a 3He/Cs magnetometer. Euro. Phys. J. D, 69 (11), 2015.

*for the nEDM collaboration.

Primary author: Dr BISON, Georg (Paul Scherrer Institut)

Presenter: Dr BISON, Georg (Paul Scherrer Institut)

Session Classification: Poster Session