



578th ASRC Seminar



Date: 13:15 ~ , 18 December

Location: Meeting room 302, ASRC Building

Speaker: Prof. Naohito Saitoh
(KEK / J-PARC)

Title: Measurements of Muon g-2 and EDM
with Ultra-Cold Muon Beam at J-PARC

We have proposed a new measurement of muon anomalous magnetic moment and electric dipole moment at J-PARC. The new measurement utilizes ultra-cold muon beam. The transverse dispersion of the beam is much less than its longitudinal momentum, i.e. $\Delta p_T/p_L \sim 1E-5$.

Such a muon beam can be stored in a static magnetic field with an effectively-zero focusing field. With this technique, the storage field can be much smaller than previous experiments. The proposed experiment will employ 3 T high precision field to store 300 MeV/c muon beam in the circular orbit of 33 cm in radius. Such smaller dimensions would be beneficial in the precision control as well as geometrical acceptance of the decay positron detector.

Our first goal is to improve the precision of muon g-2 down to 0.1 ppm, which is a factor of 5 improvement, and the search for the permanent electric dipole moment at the level of $1E-21$ e cm, which is two orders of magnitudes better sensitivity compared to the last measurement. Further improvements of both g-2 and EDM is also possible with future extension.

We discuss the current status of the project.

なお、今回のセミナーは、第38回「原子核ハドロン物理セミナー」を兼ねております。

セミナー内容は http://silver.j-parc.jp/hadron/hadron_seminar/index.html でご覧になれます。



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