

# 50<sup>th</sup> RAP Seminar

The 50th Seminar on RIKEN Center for Advanced Photonics

Language: Japanese

Date: **Feb.16 (Fri) 16:00 - 17:00, 2018**

Location: **W319, 3F, Cooperation Center, Wako Campus, RIKEN**  
(理研 和光キャンパス 研究交流棟 3階会議室 W319)

Title: **New precision measurement of muon's anomalous magnetic moment and electric dipole moment with ultra-cold muon beam**

極冷ミュオンビームによる新しいミュオン異常時期能率・電気双極子能率の精密測定

Speaker: **Prof. Tsutomu MIBE**

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Muon's anomalous magnetic moment ( $g-2$ ) and electric dipole moment (EDM) of muon are sensitive to new particles and/or interactions beyond the standard model of particle physics (SM). Such contributions appear in quantum loop diagrams. The previous measurement of  $g-2$  at BNL suggested an excess over the SM prediction at a significance of 3 standard deviations. A new independent measurement is long awaited. EDM offers a unique opportunity in searching for time reversal symmetry breaking beyond the SM.

A new experiment at J-PARC measures  $g-2$  and EDM of positive muon simultaneously by utilizing ultra-slow muons accelerated to 300 MeV/c and a compact muon storage ring without focusing electric field. This measurement will be complementary to the previous BNL E821 experiment and upcoming FNAL E989 experiment with the muon beam at the magic momentum 3.1 GeV/c in a 14 m-diameter storage ring. Several new technologies such as an intense Lyman-alpha laser system, laser-ablation on silica aerogel sheet, and a muon accelerator are developed to realize the experiment.

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