異分野基礎科学研究所

量子宇宙研究コアセミナー開催のお知らせ

“One particle measurements of the electron and positron magnetic moments: the most stringent tests of the Standard Model”

Date ： Sept. 30th, 2025　15：00～16：00

Venue ： Collaboration bldg. 3F Collaboration Room

Speaker ： Prof. Gerald Gabrielse

Trustees Professor and Director of the Center for Fundamental Physics at Northwestern University
Levenson Professor of Physics at Harvard University (emeritus)

【Abstract】

A new measurement underway in completely new apparatus seeks to greatly improve upon the 1 part in 10^{13} measurement of the electron magnetic moment that our research group announced in 2023. The motivation for making the most precise measurement ever made of a property of an elementary particle is to test the most precise prediction of the Standard Model of particle physics. A one-electron, relativistic, quantum cyclotron is realized to enable these measurements. Essential quantum methods include quantum non-demotion detection (QND), quantum jump spectroscopy, cavity-inhibited spontaneous emission, and quantum-limited detectors. The importance of a new measurement of the fine structure constant will be discussed as well.

問い合わせ先：異分野基礎科学研究所　量子宇宙研究コア

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