

Lepton $g-2$ and High Precision Test of QED - From 1947 to Present -

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The anomalous magnetic moment of the electron (called electron $g-2$) has played the central role in testing the validity of quantum electrodynamics since its discovery in 1947. For the test it is necessary to know the value of the fine structure constant α measured by some methods, such as atom interferometry, quantum Hall effect, ac Josephson effect, neutron wavelength, muonium hyperfine structure, and so on. Unfortunately, none of these α 's is good enough to test QED to the extent made possible by the latest progress in measurement and theory of the electron $g-2$. As a matter of fact, the best α available at present is one obtained from theory and measurement of electron $g-2$ assuming that QED is valid, which is an order of magnitude more precise than any other α . This talk reviews the progress of theory and experiment of $g-2$ up to the latest development, and discuss possible implications for the foundation of quantum mechanics.

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The Colloquium will be given in Japanese.

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