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J-PARC muon g-2/EDM experiment

The muon anomalous magnetic moment (g−2)_μ and electric dipole moment are sensitive to new physics beyond the Standard Model (SM). There is a discrepancy between the experimental value of the (g−2)_μ and the SM prediction at more than 5σ level. We aim to measure (g−2)_μ with a precision of 450 parts per billion and to search for electric dipole moment with a sensitivity of 1.5×10ˆ−21 e · cm in the initial phase with a diff erent method from the E821 at BNL and E989 experiment at Fermilab. To achieve unprecedented precision, we utilize high intensity proton beam at J-PARC and newly developed technique of reaccelerated thermal muon beam, which is produced by thermal muonium productions followed by laser ionization and linear acceleration. We report experimental approaches, current status of each component of our experiment, and future prospects.

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