Search for muon EDM with ultra-cold muon beam at J-PARC

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— The J-PARC experiment E34 aims to measure the anomalous magnetic moment \((g-2)\) and electric dipole moment (EDM) of the positive muon with a novel technique utilizing an ultra-cold muons accelerated to 300MeV/c and a 66 cm-diameter 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 3.1GeV/c in a 14 m-diameter storage ring. The experiment aims to achieve the sensitivity down to 0.1 ppm for \(g\)-2, and \(10^{-21}\) e·cm for EDM. In this presentation, I’d like to discuss the technical achievements and prospects for realization of the experiment.