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Development of muon LINAC for the muon $g-2$ /EDM experiment at J-PARC

The muon anomalous magnetic moment ($g-2$) and electric dipole moment (EDM) are one of the effective paths to beyond Standard Model of elementary particle physics. The E34 experiment aims to measure $g-2$ with a precision of 0.1 ppm and search EDM with a sensitivity to $10^{-21} e \cdot \text{cm}$ with high intensity proton driver at J-PARC and a newly developed novel technique of the ultra-cold muon beam. The ultra-cold muons, which are generated from surface muons by the thermal muonium production and laser ionization, are accelerated to 300 MeV/c by muon linear accelerator. The muon LINAC consists of RFQ and following three types of the RF cavities. The muon acceleration with RF cavity to this energy will be the first case in the world. This poster reports about status of the initial acceleration test with RFQ and the development of the RF cavities.

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