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DeeMe experiment to search for muon to electron conversion at J-PARC MLF

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The DeeMe experiment is planned at J-PARC Materials and Life Science Experimental Facility (MLF). The experiment aims to search for the muon to electron conversion in the nuclear field, which is one of the charged lepton flavor violation (cLFV) processes. While the processes are forbidden in the Standard Model (SM) of particle interactions, some theories beyond the SM predict the existence of cLFVs at observable branching ratios. Therefore, the experimental signature would be a clear evidence of new physics. Our goal is to measure the process with a single event sensitivity of 1 times; 10⁻¹³ or 2 times; 10⁻¹⁴ for a graphite or silicon carbide target, which is one or two orders of magnitude better than the current upper limits 7 times; 10⁻¹³ for a gold target by the SINDRUM-II experiment at PSI and 4.6 times; 10⁻¹² for a titanium target by the experiment at TRIUMF. In this talk, the current status of the preparation for the DeeMe experiment will be reported.

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