

The MUonE detector at CERN

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The MUonE experiment at CERN has been proposed as a novel way to solve the muon anomaly puzzle, by a precise measurement of the differential cross section of the elastic scattering. This can be obtained by using the intense 160 GeV SPS muon beam onto atomic electrons of a light target. The project has been developing in the last few years by tests of increasing complexity. The first performance results will be presented, from analysis of the 2023 Test Run, which employed a minimal prototype setup, recording events in triggerless mode during a one-week data taking. The final test has been approved to be held in 2025, in a four-week run with a reduced setup of the full detector components, including three tracking stations, electromagnetic calorimeter, and new subdetectors: a spectrometer measuring the incoming muon momentum event-by-event, scintillator planes to probe the dependency on the muon arrival time, and a muon filter to identify the scattered muon. All the subdetectors will be operated by a newly developed DAQ system, with real-time processing and online selection based on FPGA at a frequency of 40 MHz. The status of the Phase-1 pilot run and the future plans will be presented.