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Measuring proton electric form factor in $0.006(\text{GeV}/c)^2 < Q^2 < 0.07 (\text{GeV}/c)^2$ with e-p scattering¹ YIMIN WANG, Massachusetts Institute of Technology MIT, A1 COLLABORATION AT MAINZ MICROTRON COLLABORATION — The proton charge radius puzzle is the discrepancy between the smaller values from the muonic hydrogen spectroscopy and the larger radius previously established by electron-proton scattering and hydrogen spectroscopy. This puzzle has motivated new experiments of all three methods and re-analysis of previous experiments' data during the past couple of years. Regardless of those new results, the puzzle has not been fully settled yet on a consensus in the community. In late 2019, the PRad experiment observed a smaller radius than all previous electron-proton scattering experiments and is compatible with the one from muonic hydrogen spectroscopy. Besides, it also raised a discrepancy of the proton electric form factor in Q^2 range from $0.02 (\text{GeV}/c)^2$ to $0.06 (\text{GeV}/c)^2$ from previous scattering experiments. I will present an on-going electron-proton scattering experiment of the A1 collaboration at the Mainz Microtron, which had data-taking runs in early 2020. This experiment uses a windowless gas jet target and circularly movable spectrometers, aiming to measure proton electric form factor in $0.006 (\text{GeV}/c)^2 \leq Q^2 \leq 0.07 (\text{GeV}/c)^2$, covering the region with the discrepancy. This work is partially supported by DOE grant DE-FG02-94ER40818 and NSF grant 2012114.

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