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Precision Measurement of Muon Capture on the Proton - the MuCAP experiment. BERNHARD LAUSS, UC Berkeley, THE MUCAP COLLABORATION — PNPI-PSI-UC Berkeley-UI Urbana-Champaign-UC de Louvain-Boston University - UK Lexington-TU München. The goal of the MuCAP experiment is the determination of the singlet muon capture rate on the proton to 1%. Such a measurement would allow us to extract g_P, the induced pseudoscalar form factor of the proton, to a few percent. In comparison with the other weak form factors, the pseudoscalar one is known orders of magnitude worse. Moreover, the most precise experimental values are ambiguous, in mutual disagreement, and partially in conflict with theory. In contrast to the experimental situation, recent calculations within chiral perturbation theory agree and are accurate on the few percent level. A precise unambiguous measurement would thus provide a stringent test of the underlying accurate QCD relations. The MuCAP collaboration completed an improved setup last fall with the installation of a second wire chamber allowing for electron tracking to the decay muon vertex, and a continuous hydrogen high-Z purification system. We successfully operated our active muon-stop target, a time-projection chamber, in sub-ppm pure hydrogen over weeks and collected data, doubling the statistics of cleanly observed μ^--decay events of all previous experiments. We will discuss plans for the experiment and progress of the present analysis which should lead to a significant improvement on the current world data on g_P.

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