

The FAMU experiment: measurement of the ground state hyperfine splitting of muonic hydrogen

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The main goal of the FAMU experiment is a precise laser spectroscopy measurement of the ground state of the muonic hydrogen (μp 1S). From the measurement of the μp 1S hyperfine splitting, precise information about the magnetic structure of the proton can be extracted. The structure of atomic systems is described by quantum electrodynamics (QED) up to an extremely high precision allowing for high-precision experimental tests. The hyperfine splitting in muonic hydrogen represents a case where the accuracy of QED calculations exceeds those of the known values of fundamental physical parameters. Hence, the FAMU experiment provides a unique possibility for the measurement of the low energy proton structure with higher accuracy than what can be achieved in nuclear or high-energy physics experiments. In this contribution, the status of the FAMU experiment will be presented.

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