

Hyperfine splitting in the ground state of muonic hydrogen: an overview of the FAMU project

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A brief overview of the recent progress in the research program of the FAMU collaboration is presented, with particular emphasize on the development of a mathematical model of the multi-pass optical cavity, needed for the optimization of the experimental set-up for the measurement of the hyperfine splitting in the ground state of the muonic hydrogen atom by laser spectroscopy methods. The specificity of the model is related to the fact that a pulsed laser and a pulsed muon source will be used in the experiment that makes the time distribution of the laser energy in the cavity as important as the spatial distribution. The preliminary analysis shows that the optimized parameters of a cavity with realistic characteristics will guarantee the required efficiency of the experimental method.

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