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[302] Multi-pass optical cavity for the measurement of the hyperfine splitting in muonic hydrogen

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The measurement of the hyperfine splitting (HFS) in muonic hydrogen at the ppm level by means of pulsed laser spectroscopy allows for extraction of the Zemach radius of the proton at the per mille level. This measurement, ongoing at the Paul Scherrer Institute, features a novel laser system to excite the HFS transition at $6.8 \mu\text{m}$. To increase the transition probability, we will use a multi-pass optical cavity, which enhances the average light fluence on the muonic atoms. In this talk, we will present the principle of the experiment, the cavity requirements and the current state of the optical design. Work supported by SNF project 200021_165854 and ERC CoG. #725039.

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