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【380】 The principle and detection system for the measurement of the hyperfine splitting in muonic hydrogen

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Muonic hydrogen (mup) is a bound-state of a negative muon and a proton. Since a muon is 207 times heavier than an electron the energy levels of muonic hydrogen are very sensitive to the nuclear structure. By means of laser spectroscopy, we are aiming at the measurement of the ground-state hyperfine splitting (HFS) to extract the two-photon exchange contribution and the Zemach radius of the proton. This experiment is being conducted at Paul Scherrer Institute (PSI) and it requires designing a detector system capable of measuring the MeV-energy X-rays produced by the muonic atoms. In this talk we will introduce the principle of the HFS measurement and the simulations of the X-ray detection.

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