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【304】Thin-Disk Laser for the Measurement of the Hyperfine-Splitting in Muonic Hydrogen

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The magnetic (Zemach) radius of the proton can be determined from the ground-state hyperfine splitting (HFS) of muonic hydrogen (bound state between muon and proton). At PSI, Switzerland, we aim to measure this HFS at the ppm level by means of laser spectroscopy.
Since a high laser fluence at an unusual wavelength (6.8 micrometer) is required to excite the HFS, a novel laser system will be developed. Its back bone is a thin-disk laser insensitive to thermal lens effects, delivering single-frequency pulses at 1030 nm with hundreds of mJ which will be converted to 6.8 micrometer via non-linear conversion stages. We will present results related to the thin-disk laser development.
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