

Post-compression of high-peak power pulses in a compact bulk multi-pass cell for attoscience

Post-compression in bulk multi-pass cells (MPCs) is a very cost- and space efficient method for creating ultrashort pulses in the femtosecond regime. We present such a setup that compresses the output of a 200 kHz, 34 W, 300 fs Yb amplifier to 31 fs, with a peak power in the Gigawatt range, setting a new record value for bulk-MPCs. A detailed investigation of the input parameters and a thorough characterization of the output pulses are performed. Long-term power and spectral stability are presented. The post-compression setup also preserves the beam quality despite operation at high peak-power. The demonstrated ultrafast source is a very promising driver for attoscience applications. As a proof of concept, this setup has been used for high harmonic generation in argon and neon.

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