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High Repetition-rate, Two-cycle Driver for High-flux HHG

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We demonstrate a hybrid dual-stage nonlinear compression scheme allowing to compress 330 fs-pulses generated from a high-energy ytterbium-doped fiber amplifier down to 6.8 fs pulse duration, with an overall transmission of 61%. This high transmission is obtained by using a first compression stage based on a gas-filled multipass cell, and a second stage based on a large-core gas-filled capillary. The source output is fully characterized in terms of spectral, temporal, spatial, and short- and long-term stability properties. The system's compactness, stability, and high average power makes it ideally suited to drive high photon flux XUV sources through high harmonic generation.

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