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High Power 1 TW Ti:sapphire Laser at 1 kHz for High Energy High Harmonic Generation

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We demonstrated 1 TW Ti:sapphire laser system at 1 kHz, which uses a cavity-mode-adjustable regenerative cavity as pre-amplifier for adjustable beam waist to match the beam mode in subsequent multi-pass amplifier. The compressed pulses with power of 25 mJ in 27.1 fs, which corresponds to 0.92 TW, were realized under the pump power of 108 W with cryogenically cooling. The result will pave a way to generation of high energy XUV attosecond source based on HHG at high repetition rate.

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