

Title	Phase-stable single-pass cryogenic amplifier for high repetition rate few-cycle laser pulses
Authors	Akira Ozawa ¹ , Waldemar Schneider, Theodor W Hänsch, Thomas Udem and Peter Hommelhoff ¹
Publication	Akira Ozawa <i>et al</i> 2009 <i>New J. Phys.</i> 11 083029
Abstract	We demonstrate cryogenic Ti:sapphire single-pass amplification of sub-7 fs laser pulses with 80 MHz repetition rate. We amplify the output of a broadband Ti:sapphire oscillator by more than a factor of two, re-compress the pulses down to sub-7 fs, and show that the rms carrier-envelope phase jitter stays below 70 as after amplification. The amplified output exceeds 2 MW of peak power and 1 W of average power. In addition, we demonstrate amplification of ~200 fs, 75 MHz oscillator pulses up to 1.6 W with a gain of four. This work opens a new way to explore phase sensitive and highly nonlinear phenomena at the full oscillator repetition rate. As a first example, we demonstrate white light generation in a bulk crystal at the full oscillator repetition rate.
Laser Quantum Product	venteon power
Institute	Max-Planck-Institut für Quantenoptik, Hans-Kopfermann-Strasse 1, D 85748 Garching, Germany