

Compact, Few-Cycle, CEP-Stable OPCPA Systems

Few-cycle pulses in a compact footprint

Industrial-grade pump:
up to 480 W, 20 mJ

High repetition rate, up to MHz

High-contrast variable-bandwidth seed
source for CPA and OPCPA systems

CEP stabilization option



Specifications

Center wavelength ¹⁾	800 nm	1050 nm	1600 nm	2000 nm
Pump source	CARBIDE or PHAROS			
Pump power	20 – 480 W			
Pump pulse energy	0.2 – 20 mJ			
Repetition rate	1 kHz – 1 MHz			
Conversion efficiency ²⁾	> 7%	> 6%	> 10%	> 9%
Pulse duration ^{2) 3)}	< 10 fs / < 15 fs	< 40 fs / < 300 fs	< 40 fs	< 25 fs
CEP stability, 1 h ^{2) 4)}	< 250 mrad			
Temporal contrast	$\geq 10^{10} : 1$, from –500 to –50 ps $\geq 10^9 : 1$, from –50 to –15 ps $\geq 10^6 : 1$, from –15 to –5 ps		n/a ⁵⁾	
Long-term power stability, 8 h ^{2) 6)}	< 1.5%			
Pulse-to-pulse energy stability, 1 min ^{2) 6)}	< 1%			

¹⁾ Typical wavelengths, other wavelengths are available. For custom inquiries, contact sales@lightcon.com.

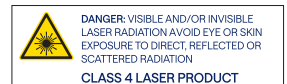
²⁾ Typical values. For custom inquiries, contact sales@lightcon.com.

³⁾ Uncompressed pulses available for seeding larger amplifiers.

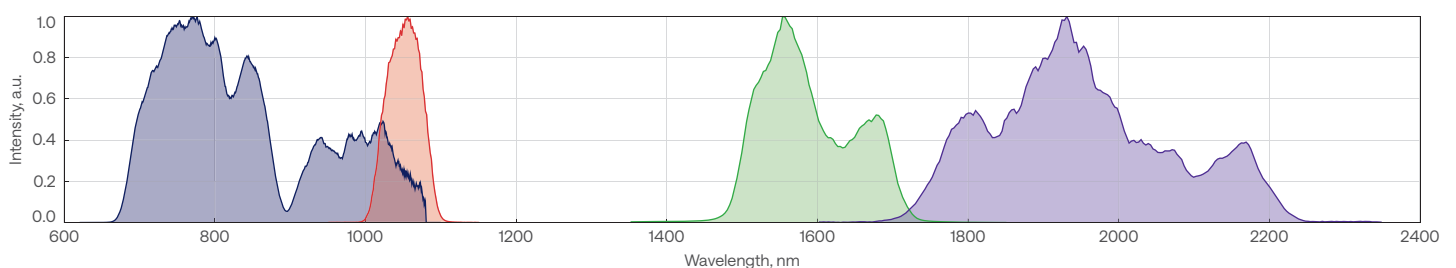
⁴⁾ CEP values calculated from unaveraged, single-shot measurements.

⁵⁾ Although the pulse contrast is not quantified, the identical OPA architecture is already validated at 800 nm and 1050 nm.

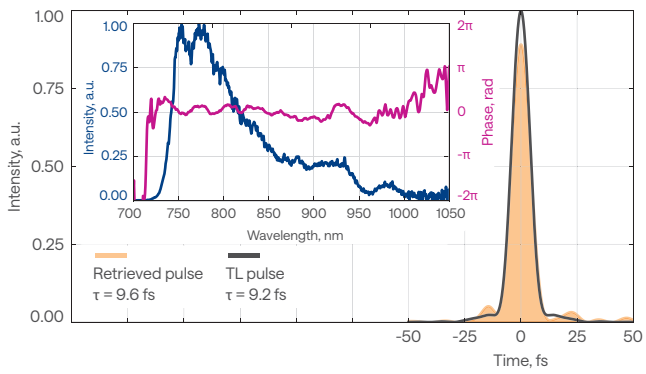
⁶⁾ Expressed as normalized root mean squared deviation (NRMSD).



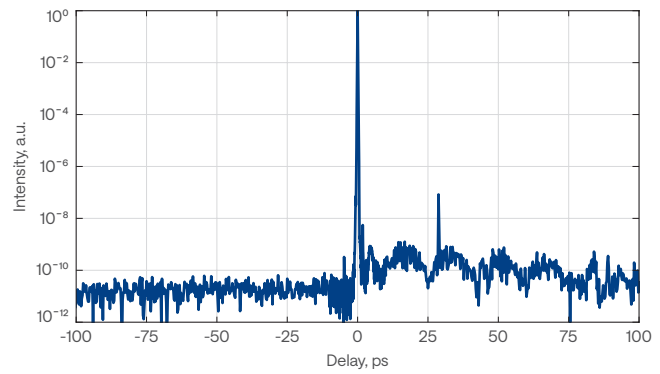
ORPHEUS-OPCPA example spectra of four models



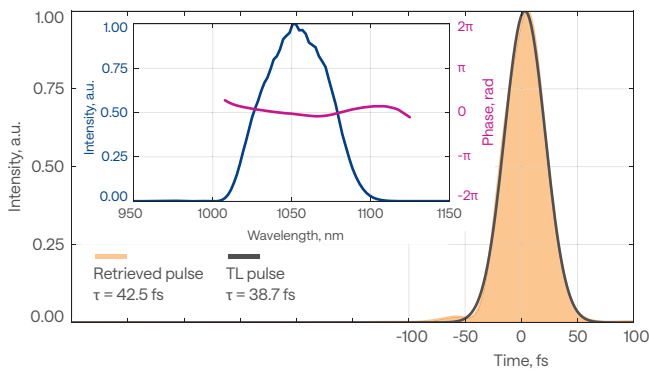
ORPHEUS-OPCPA temporal pulse profile at 800 nm



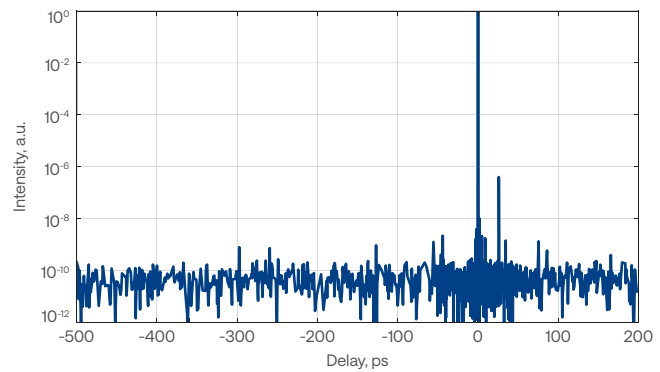
ORPHEUS-OPCPA pulse contrast measurement using a high-dynamic-range third-order autocorrelator at 800 nm



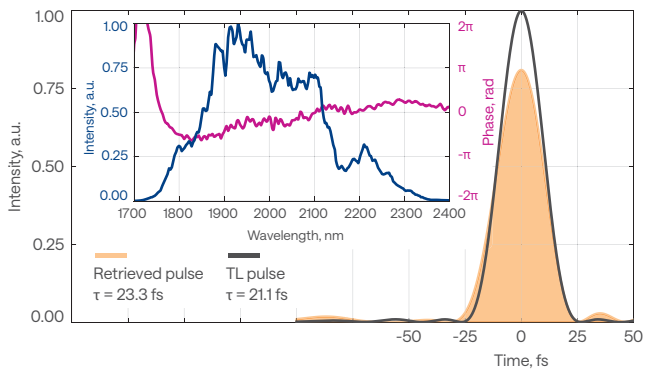
ORPHEUS-OPCPA temporal pulse profile at 1050 nm



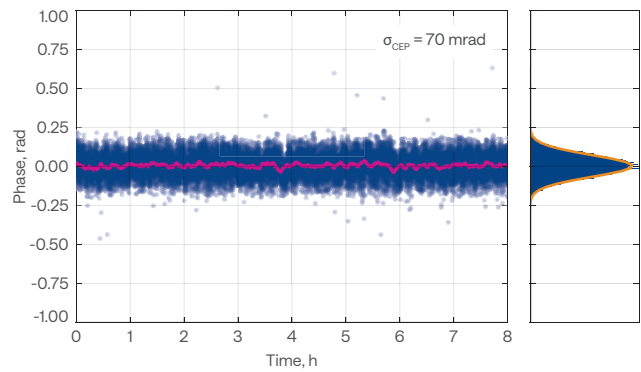
ORPHEUS-OPCPA pulse contrast measurement at 1050 nm



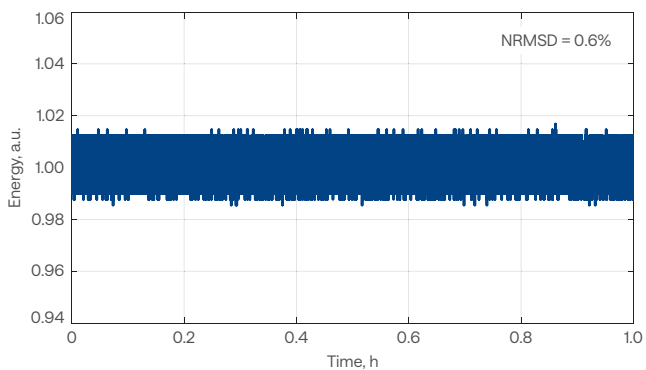
ORPHEUS-OPCPA temporal pulse profile at 2 μ m



ORPHEUS-OPCPA CEP stability at 2 μ m



ORPHEUS-OPCPA pulse-to-pulse energy stability at 2 μ m



ORPHEUS-OPCPA long-term output stability at 2 μ m

