OPCPA

Optical Parametric Chirped Pulse Amplification Systems

FEATURE OVERVIEW

- Customizable light sources for applications requiring the shortest pulses and extreme peak and average powers
- Wavelengths from 800 nm to 3 µm (Mid-IR extensions available)
- Peak powers up to > 5 TW
- Pulse duration down to 6.5 fs
- Repetition rates: 100 Hz to 200 kHz
- CEP stability < 250 mrad even in multi-TW peak power systems

Optical parametric chirped pulse amplification is the only currently available laser technology simultaneously providing high peak and average power, as well as few-cycle pulse duration required by the most demanding scientific applications.

LIGHT CONVERSION's answer to these demands is a portfolio of cutting-edge OPCPA products that are based on years of experience in developing and manufacturing Optical Parametric Amplifiers and Femtosecond Lasers.

OPCPA system delivering 5.5 TW peak power (6.6 fs, 36 mJ) pulses.

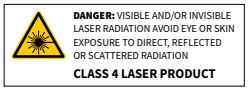
Built for ELI-ALPS in collaboration with Ekspla.

ORPHEUS | OPCPA

Pumped by PHAROS or CARBIDE Lasers

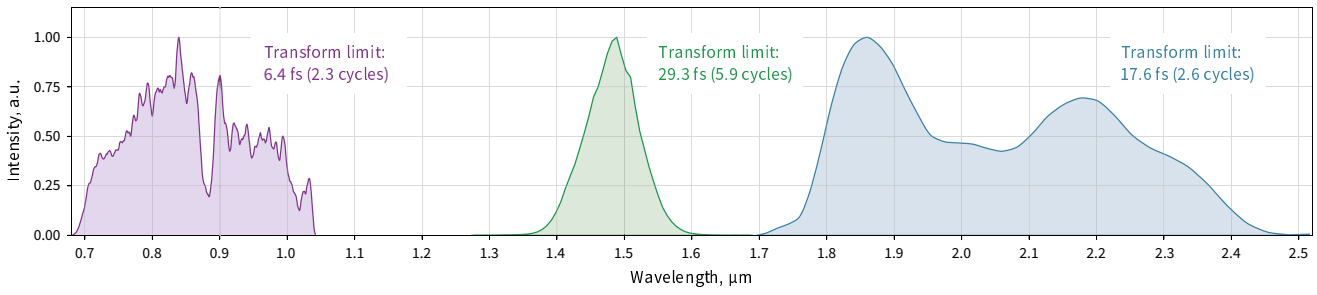
Benefitting from the industrial-grade stability and reliability of the PHAROS and CARBIDE series lasers, ORPHEUS-OPCPA delivers few-cycle, CEP-stable pulses in a package as compact as our standard parametric amplifiers. The different ORPHEUS-OPCPA models all use the same base architecture to produce CEP-stable, few-cycle pulses in one of the four wavelength ranges. ORPHEUS-OPCPA is available in versions with pulse compressors for direct use in applications, or, when intended as seed sources for larger amplifiers, versions delivering background-free pulses with near-single-cycle bandwidths, excellent spectral phase coherence, and CEP stability.

ORPHEUS-OPCPA-HR

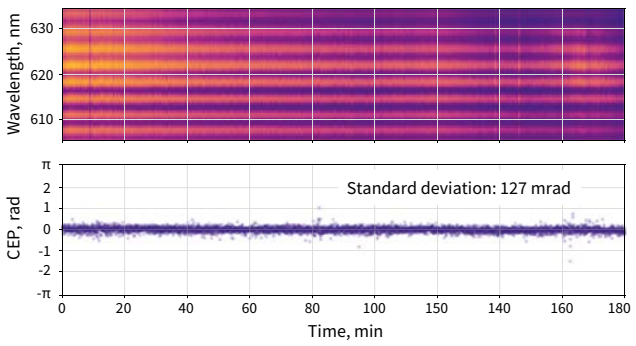


CONFIGURATIONS EXAMPLES

Wavelength		800 nm	1.6 µm	2 µm	3 µm
Pulse duration (compressed)		< 10 fs	< 40 fs	< 25 fs	< 45 fs
Transform-limited pulse duration (uncompressed, for seeding larger amplifiers)		< 6 fs	< 30 fs	< 15 fs	< 35 fs
	Repetition rate	**Pulse energy / Output power**			
ORPHEUS-OPCPA	10 kHz	120 µJ / 1.2 W	240 µJ / 2.4 W	180 µJ / 1.8 W	120 µJ / 1.2 W
ORPHEUS-OPCPA-HE		0.55 mJ / 5.5 W	1.1 mJ / 11 W	0.8 mJ / 8 W	0.5 mJ / 5 W
ORPHEUS-OPCPA-HR	100 kHz	25 µJ / 2.5 W	55 µJ / 5.5 W	40 µJ / 4 W	30 µJ / 3 W
ORPHEUS-OPCPA-HP		100 µJ / 10 W	220 µJ / 22 W	150 µJ / 15 W	120 µJ / 12 W

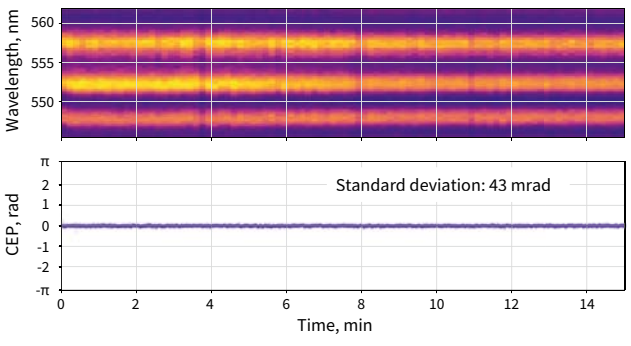


Example spectra of three models of ORPHEUS-OPCPA



ORPHEUS-OPCPA CEP stability (800 nm, 100 kHz version)

All CEP values calculated from unaveraged, single-shot measurements!



ORPHEUS-OPCPA CEP stability (3 µm, 1 kHz version)

All CEP values calculated from unaveraged, single-shot measurements!