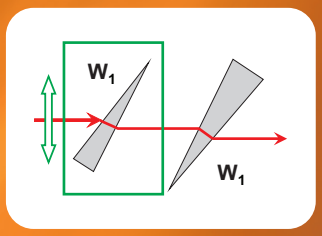
CEOWedges*

for side effect free tuning of Carrier Envelope Phase (CEP)

Side effects of current CEP tuning technology

- Group delay varies
- At intracavity use the repetition rate is changed
- Duration of the pulse changes

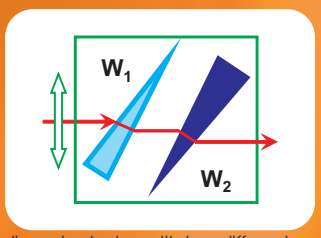


Current CEP tuning with two identical wedges (material and apex angle). One of the wedges are shifted.

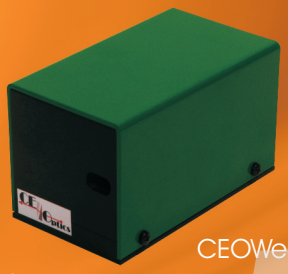
Our solution for izodispersive CEP tuning: CEOWedges*

Features

- Precise CEP alignment;
- No dispersion effects;
- Operates at Brewster angle;
- Keeps propagation direction;
- Simple to align and operate;
- Can be built into existing fs oscillators;
- High damage threshold;
- Ideal also for extracavity applications.



Isodispersive tuning with two different wedges. Both wedges are moved.



CEOWedges

The CEOWedges assembly consists of two thin wedge prisms made from appropriately chosen optical materials. Being shifted as a whole, the assembly allows changing the carrier envelope phase with no influence on neither the transit time nor the pulse duration, whereas relative shifting of the prisms enables adjustment of the former.

Intracavity applications: CEOWedges allows for intracavity carrier-envelope control with practically negligible impact on the cavity roundtrip time. This is particularly interesting when the laser repetition rate needs to be independently locked to an external frequency standard. Compared to a set of two silica wedges, the orthogonality of group and phase control is improved by almost two orders of magnitude, without noticeable side effects of spatial chirp or dispersion of the pulses. CEOWedges can be installed into existing and already operating femtosecond oscillators.

Extracavity applications: CEOWEdges ideal for precise carrier-envelope phase control in one arm of a femtosecond or even attosecond pump-probe experiment without inducing detrimental temporal shifts between the arms. Since CEOWEdges are able to accumulate large beam diameters and its damage thershold is determined by the bulk glasses, it can be inserted into high intensity laser beams even just prior the interaction or the target.

Frequency measurements and TelCom applications: By insertion of CEOWedges into a laser oscillator, the spectral position of the emitted frequency comb can be to high precision controlled without changing the comb frequency or the repetition rate of the oscillator.

Specifications

Accuracy of CEP tuning:	2π / 3.8 mm
Residual change of group delay[1]:	0.021 fs / mm
Residual change of group delay dispersion[1]:	0.13 fs^2 / mm
Spectral range in μm[2]:	0.6 – 1
Central wavelength[2]:	800 nm
Damage threshold[3]:	> 1 MW/cm^2 ; pulsed: > 20 J/cm^2
Clear aperture beam diameter in mm[4]:	8
Dimension in mm (L×W×H)[4]:	104 ×61 ×62

[1]: Other designs* are also availabe depending on the requested specifications of residual change of dispersion coefficients. Please contact CE Optics.

[2]: For other spectral range please contact CE Optics.

[3]: Determined by the bulk damage threshold of the glass applied.

[4]: Larger beam diameters available upon request.

AUNION TECH 昊量光电

Phone:021-34241961
Fax: 021-34241962
E-mail: info@auniontech.com