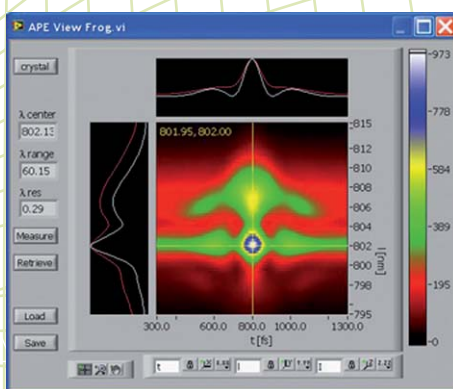


A P E

# FROG - Option for **PULSE CHECK**



Crystal change



Measured FROG raw data

## FULL LASER PULSE CHARACTERIZATION

All APE **PulseCheck** autocorrelators can now be modified to acquire FROG data of femtosecond pulses. While the standard autocorrelator provides temporal pulse characterization (autocorrelation), the FROG option offers access to the frequency domain of the ultrafast pulses, so that they can be fully characterized in time and frequency. The phase information can be calculated from the measured FROG raw data with the integrated retrieval software.

## FUNCTIONALITY

The FROG option for **PulseCheck** autocorrelators extends the simplicity and real-time effect of the autocorrelator to obtaining FROG data. The same instrument is used; it is adapted to the FROG measurement by changing a crystal and possibly a mirror and running appropriate software on a PC connected to the autocorrelator. The technique for attaining the needed spectral resolution is simple: the SHG crystal in the **PulseCheck** acts as a spectral filter. As a result, the ability to acquire FROG data is added to the standard autocorrelator without the need for a separate spectrometer. Additionally, this is a single-detector method that allows an extremely broad spectral range to be covered with high sensitivity.

Complete pulse characterization in one instrument

No spectrometer needed

High sensitivity

Broad spectral coverage (VIS to mid-IR) by choice of crystals

Pulse width range 20 fs to 1 ps

Cost efficient add-on solution for standard autocorrelator

Ultrafast Pulse Diagnostics

Wavelength Conversion

Pulse Management

Acousto-optics

**Your Partner in Ultrafast**

## COMPONENTS of the FROG - Option

- a specific crystal which is easily exchangeable with the standard crystal of the autocorrelator
- a mirror (depending on configuration)
- PC data acquisition software

## DESCRIPTION

After setting the needed measurement parameters:

- wavelength range
- resolution
- pulse length range

the sequential measurement of the FROG raw data takes place.

The crystal turns in small steps each covering a new spectral element. After each turn another autocorrelation trace is recorded.

The resulting intensity matrix is shown as a FROG pattern. It can be transferred to a PC where a FROG pulse retrieval software calculates the phase.

## SPECIFICATIONS

Pulse length range	20 fs ... 1 ps*
Wavelength range	410 nm ... 2 $\mu\text{m}$ *
Spectral resolution	0,1 nm (for pulses > 1 ps) ... 10 nm (for pulses < 30 fs)
Sensitivity ( $P_{AV} * P_{PEAK}$ )	< 1 W <sup>2</sup>
Laser repetition rate	> 1 kHz

\* Several FROG crystals required

### Distributors

see APE website [www.ape-berlin.com](http://www.ape-berlin.com)

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