

# Second Harmonic Generation FROG

## Complete Pulse Characterization with pulseCheck and FROG Option

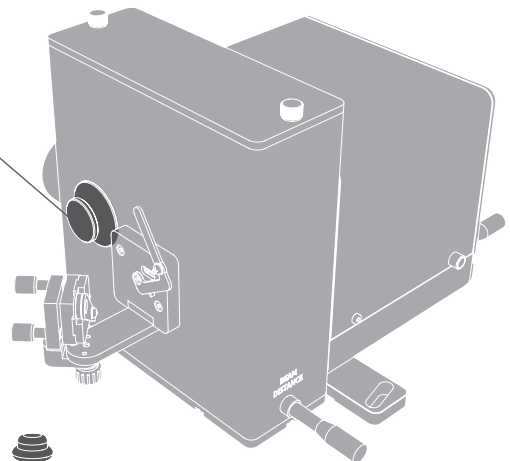
- Second Harmonic Generation FROG is the most popular spectrometer-less Frequency Resolved Optical Gating method. The pulseCheck autocorrelators by APE optionally integrate FROG, giving access to complete pulse characterization. The addition of a special nonlinear crystal module and dedicated software opens the door to complete spectral and temporal pulse characterization.



### Crystal Module

#### FROG Setup:

1. Crystal Module within pulseCheck
2. Replacement Focus Mirror
3. FROG Software Upgrade



VIS I  
420-550



VIS II  
550-700



NIR  
700-900



IR I  
900-1200



IR II  
1200-1600



Ext. IR I  
1800-2200

*Different crystal modules for various wavelength ranges\*.*

- Complete pulse characterization with Second Harmonic Generation FROG
- Different crystal modules available to cover wavelengths from 420 - 2200 nm
- FROG trace data processing and visualization with included software
- Pulse width ranges from as low as 20 fs up to 6 ps
- High spectral resolution up to 0.1 nm
- Available for the pulseCheck autocorrelator series\*\*

\* See appendix for configuration details (page 34)

\*\* Except for pulseCheck SM models; Required laser rep. rate >10 kHz

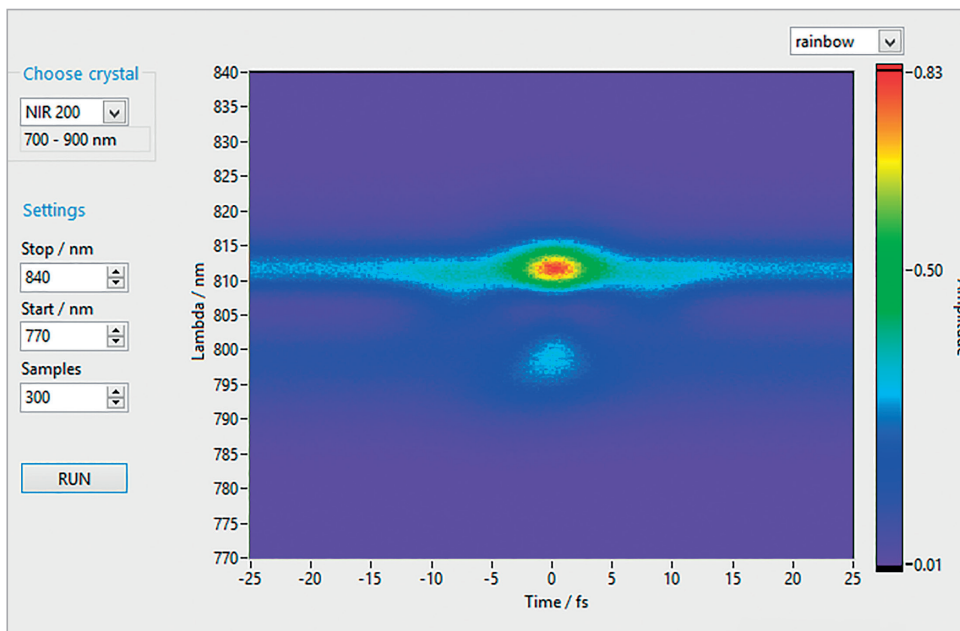
## ... FROG Pulse Characterization Software

### FROG Trace

- The software provides the laser pulse intensity as a function of time and frequency (wavelength). This is visualized in form of the common FROG trace diagram.
- With the implemented phase matching routine from pulseCheck, it only is a matter of seconds to automatically find the required phase matching tuning angle.

### Wavelength and Pulse Coverage

- The various crystals available guarantee coverage of wavelengths from 420 nm right up to 1600 nm, of pulse widths from 20 fs to 6 ps, and a spectral resolution starting as high as 0.1 nm.
- The FROG option is designed for laser repetition rates above 10 kHz and is available for the pulseCheck autocorrelator series (except for SM models).



Software interface FROG for pulseCheck

# Appendix FROG Crystals

FROG Crystal	Wavelength Range	Pulse Width Range	Spectral Resolution
VIS-I-200	420 ... 550 nm	200 ... 6000 fs	0.1 nm
VIS-I-50	420 ... 550 nm	50 ... 200 fs	0.3 nm
VIS-I-20	420 ... 550 nm	20 ... 70 fs	1 nm
VIS-II-150	550 ... 700 nm	150 ... 2000 fs	0.1 nm
VIS-II-50	550 ... 700 nm	50 ... 200 fs	0.3 nm
VIS-II-20	550 ... 700 nm	20 ... 60 fs	2 nm
NIR-200	700 ... 900 nm	200 ... 5000 fs	0.1 nm
NIR-50	700 ... 900 nm	50 ... 500 fs	0.2 nm
NIR-20	700 ... 900 nm	20 ... 50 fs	3 nm
IR-I-150	900 ... 1200 nm	150 ... 900 fs	0.2 nm
IR-I-60	900 ... 1200 nm	60 ... 200 fs	1 nm
IR-I-30	900 ... 1200 nm	30 ... 60 fs	5 nm
IR-II-100	1200 ... 1600 nm	100 ... 700 fs	0.5 nm
IR-II-50	1200 ... 1600 nm	50 ... 100 fs	2 nm
IR-II-30	1200 ... 1600 nm	30 ... 50 fs	9 nm
Ext. IR-I-50	1800 ... 2200 nm	50 ... 200 fs	19 nm

## Similar Products

Mini TPA - Compact and tuning-free  
 Mini PD - Routine tasks with a fixed wavelength range  
 Carpe - First choice for multiphoton microscopy  
 Spider - Complete pulse characterization  
 waveScan - High resolution spectrometer  
 peakDetect - Pulse quality monitoring

## Contact

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