

ABSTRACT**METHOD AND DEVICE FOR THE SIMULTANEOUS COMPRESSION AND CHARACTERIZATION OF ULTRASHORT LASER PULSES**

The present invention relates to a method and a device for the simultaneous compression and characterization of ultrashort laser pulses. An embodiment of the method comprises applying predetermined spectral phases to the pulse to be characterized so as to perform a dispersion scan; applying a nonlinear process to the pulse to be characterized; measuring the resulting signal from the application of the predetermined spectral phases and nonlinear process; applying a numerical iterative algorithm to the measured signal to retrieve the spectral phase of the pulse to be characterized. A few cycle laser pulse may be negatively chirped with a pair of DCM, the controllable amount of positive dispersion may be provided by a pair of glass wedges, one of them being translated for dispersion or phase control, and the frequency spectrum may be measured as well as also frequency resolved the dispersion dependent second-harmonic of the signal being phase modulated.

Fig. 4