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## **Chirp measurement of ultrashort pulses by the use of train structured by similariton's superposition**

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We present a new method of chirp measurement of ultrashort pulses. This method uses nonlinear-dispersion similaritons [1] and their features to obtain the pulses with sinusoidal modulation. Promising results have been obtained for the method, using numerical modeling.

We model an analogue of Shack-Hartmann waveform sensor [2] in the time-frequency domain, which allows to insert spectrally compressed peaks [3] in the signal spectrum. The “distances” between peaks depend on the initial chirp of the signal. Afterwards, the tested pulse initial chirp is recovered by analyzing the dynamics of spectral compression peaks.

- [1] A. Zeytunyan, G. Yesayan, L. Mouradian, P. Kockaert, P. Emplit, F. Louradour, A. Barthélémy, “Nonlinear-dispersive similariton of passive fiber,” *J. Europ. Opt. Soc. Rap. Public.* **4**, 09009 (2009).
- [2] *B.C.Platt, R.Shack, (October 2001). "History and Principles of Shack-Hartmann Wavefront Sensing". J. Refractive Surgery 17 (5): S573–7. PMID 11583233.*
- [3] C.Finot, S.Boscolo, “Design rules for nonlinear spectral compression in optical fibers” *J. Opt. Soc. Am. B* **33**(4) 760-767 (2016)