

Smart Nonlinear Photonics – From ultrashort pulse processing to multidimensional control & applications

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We report on the experimental customization of coherent supercontinuum using an actively-controlled photonic chip to prepare and tailor patterns of femtosecond pulses and tailor nonlinear fiber propagation [1]. Our results and potential perspectives are discussed in the framework of efficient optical wave-packet shaping compatible with demanding applications such as smart imaging.

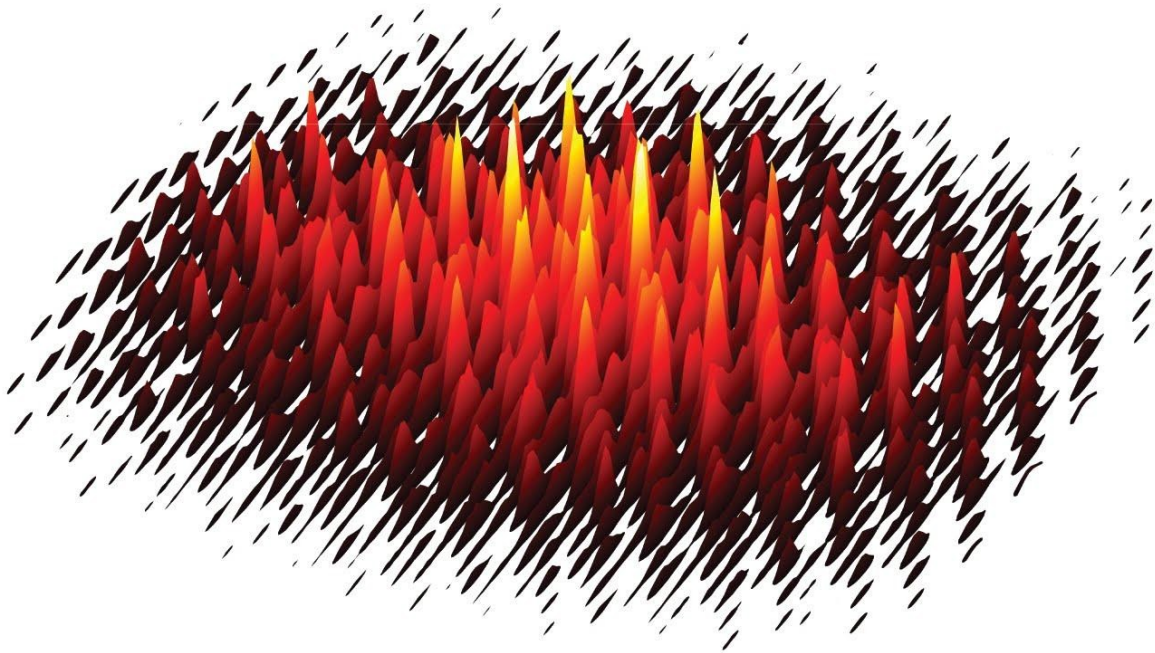


Fig. 1: Example of experimentally recorded Frequency-Resolved Optical Gating (FROG) trace of an optical signal generated via an integrated system for the control of nonlinear fiber propagation: Pattern of 32 femtosecond pulses (90 fs duration) individually separated by 1 ps.

- [1]. Wetzel, B.; Kues, M.; Roztocki, P.; Reimer, C.; Godin, P. L.; Rowley, M.; Little, B. E.; Chu, S. T.; Viktorov, E. A.; Moss, D. J.; Pasquazi, A.; Peccianti, M.; Morandotti, R Customizing supercontinuum generation via on-chip adaptive temporal pulse-splitting. *Nature Communications* 2018, 9, 4884