

SIMILARITON BASED TECHNIQUE FOR DETERMINATION OF FEMTOSECOND PULSE DURATION

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We demonstrate a similaritonic technique of femtosecond pulse duration determination alternatively to classic autocorrelation method. The new technique is based on spectral properties of the nonlinear-dispersive (NL-D) similariton, generated in a single-mode fiber without gain. We studied the spectral peculiarities of NL-D similaritons, both numerically and experimentally. We experimentally checked that the spectral bandwidth of the similariton is proportional to the square root of the input pulse peak power and, thus, inversely proportional to the square root of the input pulse duration. In our study we investigated this property of the NL-D similariton, by testing it for various input pulse forms. This allowed us to state that the similaritonic technique of the pulse duration determination has the important advantage of measurements being independent from the pulse shape, compared to the autocorrelation method.