Influence of the medium dispersion on the dynamics of an extremely compressed wave packet in solid-state dielectrics

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The development of sphere of ultrafast metrology is inextricably linked with the optics of pulses the duration of which is close to one period of optical oscillations. As is known, their propagation in a medium with material dispersion, is accompanied by periodic change in pulse parameters occured due to a phase shift between envelope and carrier frequency caused by the difference in phase and group velocities [1,2]. The results of the investigation of effect of the dielectric's material dispersion on the period of a single-cycle wave packet's oscillations is presented. The contribution of a nonlinear change in the phase and group velocity of a pulse to the change in the oscillation period of its peak electric field intensity for different carrier wavelength is considered.

[1] Krausz F and Ivanov M 2009 *Rev. Mod. Phys.* **81** 163

[2] Zaloznaya E, Kompanets V, Savvin A, Dormidonov A, Chekalin S and Kandidov V 2022 *Laser Phys. Lett.* **19** 075402