

Poster:

Universal short-time response and formation of correlations after quantum quenches

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The short-time evolution of two distinct systems, the pump and probe experiments with femtosecond lasers in semiconductors and the sudden quench of cold atoms in an optical lattice, is found to be described by the same universal response function. This analytic formula at short time scales is derived from the quantum kinetic theory approach observing that correlations need a certain time to be formed. The influence of a finite trapping potential is derived and discussed as well as Singwi-Sjölander local field corrections. The quantum kinetic equation allows to understand how two-particle correlations are formed and how the screening and collective modes are build up.

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