Dynamics of coherent excitons in resonantly driven semiconductors

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In this talk we address the non-equilibrium properties of the exciton superfluid generated when a semiconductor is illuminated by laser pulses resonant with a bright excitonic energy. This transient state is characterized by coherent oscillations of the complex superfluid condensate that induce a subgap excitonic sideband in the time-resolved ARPES spectrum [1]. The lifetime of the exciton superfluid is also discussed by considering different effects like intervalley scattering [2], phonon-induced decoherence [3], and excited-state self-consistent screening [4,5].

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