

# Staggered Exciton-Photon Lattice driven by SAW

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In this work we consider the behaviour of exciton polaritons in a micro-cavity where both the optical and excitonic components are manipulated by a periodic potential. Specifically, the excitons are localized in a moving SAW (surface acoustic wave). Due to the shifted potential profiles, one can observe a momentum-dependent coupling between the excitons and photons, which gives rise to the formation of an unusual dispersion with degenerate ground states at zero and non-zero momenta.

Using the SAW as a moving potential profile, we can investigate the evolution of the polariton condensate and study transition from regular BEC at  $k = 0$  to the condensation at nonzero- $k$ : with the movement of the SAW, the potential varies with time periodically.

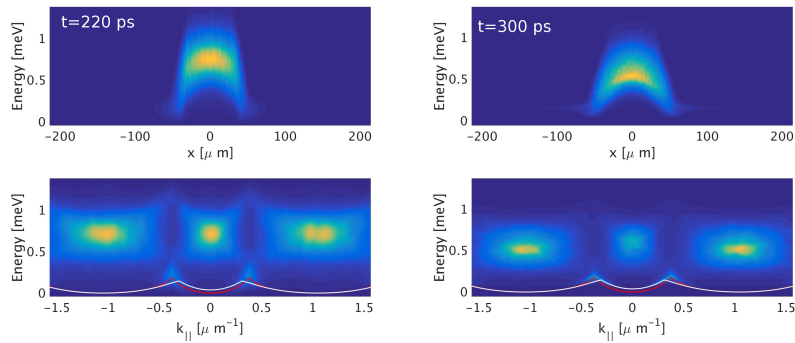


Figure 1: Polariton distribution in direct space (upper panels) and reciprocal space (lower panels) at different times. Moving SAW causes transition from  $k = 0$  to  $k \neq 0$  condensation.