

Coherence, stability and flow in organic polariton condensates

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Abstract

Strong light-matter coupling occurs when the light-matter interaction becomes so strong that it must be treated non-pertubatively. Polaritons, the resulting mixed light-matter particles, can then exhibit a number of distinct phenomena. Organic molecules are attractive in this context, because they readily allow for polariton condensation at room-temperature as a result of their large exciton binding energy. We will discuss a number of distinct observations in these organic polariton condensates such as the spontaneous onset of spatial coherence, the presence repulsive interactions and polariton flow, the presence of vortices and density currents and the strong dependence of condensate behaviour on the pump profile, which can lead to the presence of modulation instabilities.