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**Transport of exciton-polariton condensation in semiconductor microcavity at BEC-BCS crossover** JUNG-JUNG SU, YOSHIHISA YAMAMOTO, National Institute of Informatics, Japan; E. Ginzton Laboratory, Stanford University — We study the transport properties of exciton-polariton condensation in the microcavity at the BEC-BCS crossover. Exciton-polariton (EP) is the quasiparticle of exciton and photon that can condense at a temperature as high as room temperature due to its extreme lightness. So far intense studies of this intriguing condensation have been limited to the photoluminescence (PL) measurement, mostly at the lower density BEC regime. When increasing density, the condensate enters the EP BCS regime in which the fermionic nature of electron and hole inside of exciton becomes important. This electron-hole nature is more prominent in the transport than in the PL measurements. We propose a transport measurement scheme of creating indirect-excitons in semiconductor bilayer which is embedded in the planar microcavity filled with photons. Leads are attached to the two sides of the bilayers to perform transport measurements. We present the different features of tunneling conductance signature for EP condensation in the BCS and in the BEC regime.

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