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Effect of strong coupling between photonics mode and molecular exciton on Franck-Condon blockade AMRIT POUDEL, LIANG-YAN HSU, MARK RATNER, Northwestern University — We present an open-quantum system approach based on density matrix to study the effect of strong coupling between photonics modes and excitons on Franck-Condon (FC) blockade in molecular systems. Recent experiments have demonstrated that strong coupling between cavity photon and molecular exciton leads to enhancement of exciton conductance in disordered organic molecular systems. Here we analyze the role of strong coupling between cavity photon and exciton on FC blockade at normal and Coulomb blockade regimes. We identify parameter regimes where strong coupling to photonics mode suppresses or enhances the FC blockade and propose relevant experiments for cavity induced FC blockade.

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