

Abstract Submitted
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Transport through double quantum dot with electron-LO-phonon interaction AKIHIRO YAMADA, RIN OKUYAMA, MIKIO ETO, Keio University — We theoretically study the transport through a serial double quantum dot (DQD) in the presence of electron-LO-phonon interaction. In contrast to the case of acoustic phonon,¹ the coherent coupling between an electron and an optical phonon, so-called polaron formation, has a small dissipation, which influences the transport properties markedly. We calculate the current through the DQD using the Keldysh Green function, as a function of the tuning of energy levels between the quantum dots, when the bias voltage is sufficiently large. The electron-phonon interaction is considered by the perturbation expansion. We find a subpeak structure of the current due to the polaron formation and evaluate elastic and inelastic components of the current.

¹P. Roulleau *et al.*, Nat. Commun. **2**, 239 (2011).

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