Supplemental Material to the paper "Quantum interference and structure-dependent orbital-filling effects on the thermoelectric properties of quantum dot molecules"

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(Dated: June 4, 2015)

I. DOUBLE QUANTUM DOT

Figure S shows the electrical conductance (G_e), Seebeck coefficient (S) and power factor (PF) of DQD as functions of V_g at different temperatures. Physical parameters are the same as those for Fig. 5. For DQD, the four G_e peaks correspond to $\epsilon_1 = E_0 - t_{LR}$, $\epsilon_2 = E_0 + t_{LR} + \frac{U_0 + U_{LR}}{2} - \frac{1}{2}\sqrt{(U_0 - U_{LR})^2 + 16t_{LR}^2}$, $\epsilon_3 = E_0 - t_{LR} + \frac{U_0 + 3U_{LR}}{2} + \frac{1}{2}\sqrt{(U_0 - U_{LR})^2 + 16t_{LR}^2}$ and $\epsilon_4 = E_0 + U_0 + 2U_{LR} + t_{LR}$. The G_e spectrum shows a mirror-symmetry behavior with respect to the middle of the Coulomb gap. Due to the symmetry of DQD structure, the PF spectrum also shows the mirror symmetry. The maximum PF occurs at either orbital-depletion $(N \leq 1)$ or orbital-filling $(N = 4)$ condition for DQD. Note that unlike G_e and PF, S does not show the mirror symmetry.
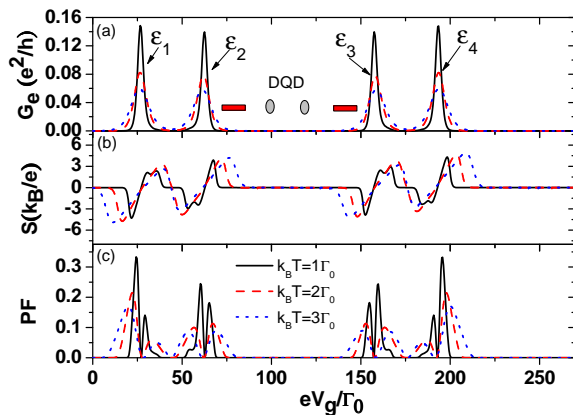

Figure S 1: Electrical conductance (G_e), Seebeck coefficient (S) and power factor of DQD as functions of QD energy $(E_\ell = E_0 = E_F + 30\Gamma_0 - eV_g)$ for different temperatures. Other physical parameters are the same as those of Fig. 5.

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