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Photoelectric devices with quantum coherence. SU SHANHE, Beijing CSRC — A phtotoelectric device consisting of a three-level system contacted with two fermionic baths and a photon bath is built. Making the Born-Markov approximation, the equation of motion for the density operator in a Lindblad-like form is derived. We obtain the coherence and the efficiency of the system under the steady-state condition. Results show that quantum coherence can enhance the photoelectric conversion efficiency. The efficiency at maximum power can be larger than the CA efficiency bound with the existence of coherence.

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