

ИНФОРМАЦИИ О ДОКУМЕНТЕ

Adiabatic quantum pump in the presence of external ac voltages

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Аннотация (English): We investigate a quantum pump which in addition to its dynamic pump parameters is subject to oscillating external potentials applied to the contacts of the sample. Of interest is the rectification of the ac currents flowing through the mesoscopic scatterer and their interplay with the quantum pump effect. We calculate the adiabatic dc current arising under the simultaneous action of both the quantum pump effect and classical rectification. In addition to two known terms we find a third novel contribution which arises from the interference of the ac currents generated by the external potentials and the ac currents generated by the pump. The interference contribution renormalizes both the quantum pump effect and the ac rectification effect.

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