

**ELECTRICAL AND HEAT CURRENTS IN NANOSCOPIC
SYSTEM WITH FERROMAGNETIC ELECTRODES OF
NON-COLLINEAR MAGNETIC MOMENTS**

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Thermoelectric properties of nanoscopic system composed of a single-level quantum dot attached to ferromagnetic electrodes are studied within the non-equilibrium Green function formalism based on the equation of motion. In general, magnetic moments of both electrodes are non-collinear and form an angle θ . Electrical and heat currents flowing through the system under temperature gradient and applied bias voltage are calculated in the non-linear regime. Both charge and heat currents strongly depend on the angle θ between the magnetic moments. The junction under consideration shows typical TMR effect and the charge current is maximal in parallel configuration. Similarly, the heat current is maximal when moments in both electrodes are parallel. However, the maximal efficiency of the system increases with θ . On the other hand, the efficiency calculated for parallel arrangement of the moments considerably decreases with increase of leads' polarization.

9.7 cm

13.4 cm

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