

Spin thermoelectric effects in transport through strongly correlated double quantum dot systems

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Thermoelectric effects in spin-polarized transport through two capacitively connected quantum dots strongly coupled to two ferromagnetic reservoirs are investigated theoretically by means of finite-U slave boson technique.

We consider behaviour of such basic thermoelectric coefficients as heat conductance κ , thermopower S and thermoelectric figure of merit ZT , with particular emphasis on the spin related effects due to ferromagnetism of the leads. Especially, when spin accumulation in the external leads becomes relevant, a spin thermoelectric effect arises that can be described by introducing spin counterparts to the thermoelectric parameters mentioned above, such as spin thermopower S_s and spin figure of merit $Z_s T$. We show the influence of the geometry of the system and the exchange field resulting from the ferromagnetic electrodes on the effectiveness of thermally-driven spin current generation.