The Charge and Spin Thermoelectric Properties across Double Quantum Dots Serially Coupled to Ferromagnetic Leads: The Case of Parallel Magnetic Configuration

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ABSTRACT

In this article, the charge and spin thermoelectric properties of double quantum dots system connected to ferromagnetic leads with collinear magnetic configurations will be studied in the linear response regime. Our results are calculated in a strong interdot coupling regime by taking into consideration all parameters affecting the system such as interaction between dots and their coupling to the leads, intradot Coulomb correlation energy and spin-polarization on the leads. It is found that in the parallel magnetic configuration, the thermoelectric efficiency can reach a large value around the spin-down resonance levels when the tunneling coupling between the quantum dots and the leads for the spin-down electrons are small, which leads to the pure spin Seebeck contribution. As a result, this system can generate a spin-polarized current. The value of the spin figure of merit is enhanced by increasing the spin-polarization and decreasing the correlation energy**.**

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