Liu, Jia; Cheng, Jie
A quantum dot spin qubit with thermal bias.

Summary: Temperature effect on the spin manipulation and spin injection in a quantum dot is investigated with the help of master equation method. Results show that the magnitude and the direction of the temperature difference between the source and drain leads have great impact on the spin store, writing, and reading processes. In practical devices, the thermal bias is quite general and then our results may be useful in quantum information processing and spintronics.

Keywords: thermal bias; spin injector; quantum information processing; quantum dot
doi:10.1007/s11128-014-0873-0