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Coherent Manipulation of a Single Magnetic Atom Using Polarized Single Electron Transport in a Double Quantum Dot WENXI LAI, Dr, WEN YANG, collaboration tutor — We consider theoretically a magnetic impurity spin driven by polarized electron tunneling in a double quantum dot transport. Spin blockade effect and spin conservation in the system make the magnetic impurity to sufficiently interact with each transported electron. This effect yields the nanomagnet coherently driven by a single electron which carries information about the magnetic impurity spin. The present scheme may develop all electrical manipulation of manomagnets by means of single electrons, which is significant for the implementation of scalable logical systems in information processing.

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