

IMPLEMENTATION OF A SPINTRONICS FULL ADDER

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In this paper a novel technique has been proposed for the implementation of the spintronics FULL ADDER using the concept of magnetic resonant tunneling diode. Both the quantum well(QW) and the injector are made of dilute magnetic semiconductor which exhibit giant Zeeman splitting(GZS) on application of magnetic field. The field in the injector region is to be kept ON always at a fixed value to give a constant desired GZS. The field in the QW is switched on and off and it acts as one of the input bits. A gate is provided around the QW region so that shifting of the energy levels in the well is possible by application of gate bias which acts as the second input bit. The spin of the electron is taken to be the 3rd input bit while the current is the output. In the paper the principle for realization of the sum and carry has been elaborated. It has also been proved that any logic function with three bit input can be realized with the help of magnetic RTD by proper control of the device structure parameters.

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