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Investigation of transmission properties of a simple quantum Tesla valve

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We investigate theoretically the transmission properties of a single atom passing through simple Tesla valve structures operated in a quantum mechanical regime. Our simple structure were made up of a few static equiangular triangles that allow a high and low transmission efficiency in one direction and not the other. Our best value of the extinction ratio, the ratio between forward and backward transmission, of the quantum valve exceeded 50. The variation of extinction ratio in both classical and quantum regime were compared and discussed over changes in geometrical arrangement inside the valve.

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