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Spin Polarization through Series Coupled Aharonov-Bohm Rings with Double Quantum Dots ERIC HEDIN, YONG JOE, JIM CUTRIGHT, Dept. of Physics & Astronomy, Ball State University — Two co-planar Aharonov-Bohm (AB) rings with a quantum dot (QD) embedded in each arm are coupled together in series. The energy levels of the four QD's are Zeeman-split by means of an external magnetic field applied parallel to the plane of the rings, introducing up to 8 transmission resonances, including Fano-type resonances. The tight-binding formalism is used to calculate the electron transmission through the device as a function of energy and other system parameters. The differential spin polarization is determined from the transmission through the spin-split QD energy levels and shows the degree of polarization that is attainable with such a multiply-connected nano-device.

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