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Resonance Structure of Series Coupled Aharonov-Bohm Rings with Embedded Quantum Dots ERIC HEDIN, YONG JOE, Ball State University, Dept. of Physics & Astronomy — Series-coupled nanoscale Aharonov-Bohm (AB) rings with a quantum dot (QD) embedded in each arm have shown potential for generating spin-polarized current in conjunction with the Zeeman effect. In this presentation, an overview of the computational results obtained from analyzing the electron transmission through a multiple ring structure will be given, showing the possibility of obtaining either semiconductive or Ohmic current-voltage characteristics. Spin-polarized current as a function of system parameters is shown. In addition, the AB effect has been shown to modify the transmission band structure of the device. Further, the possibility of producing sharpened AB oscillations in the transmission output of the multiple-ring device is demonstrated.

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