

Abstract Submitted  
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**Multiple I/O variation of transmission through a double-ring nanoscale structure** ERIC HEDIN, JOEL STOCK, Biola University — A tight-binding model of the Schrodinger equation is used to analyze the electron transmission properties of a nano-scale double-ring structure (with six embedded quantum dots per ring). The structure's transmission is studied with inputs at 3 different sites and outputs at 4 different sites. A high degree of variation in the system performance is observed, based on the specific choice of input/output positions. This system can also provide a model for a molecular naphthalene structure. A primary emphasis of the analysis of this system is the dependence of transmission to a particular output site as a function of coupling to other output sites. Interference between conduction paths produces transmission variation with both negative and positive dependence on output coupling strengths to other output leads. Magnetic flux through the ring structure also plays a role in the transmission properties through the Aharonov-Bohm effect.

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