

Abstract Submitted  
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**Electron spin exchange coupling in semiconductor quantum dot pairs**<sup>1</sup> J.M. LAFORGE, G.M. STEEVES, University of Victoria — Semiconductor quantum dots possess characteristics such as energy state spacing and a reduction of environmental interaction that make them appealing candidates for holding quantum information. Electron spin qubits within semiconductor quantum dots can interact with each other through tunneling exchange coupling. Similar experiments using coupled quantum wells and molecular bridged quantum dots have used Time Resolved Faraday Rotation (TRFR) optical techniques to probe and excite spin-states within the sample. TRFR is therefore a natural choice for further studies of electron spin states in semiconductor quantum dots. Dynamic control over the spatial separation of two adjacent quantum dots will allow us to study the spatial dependence of spin exchange coupling between dot pairs efficiently. Temporal control over the exchange coupling and its affect on the spin-state dynamics will also be explored.

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