Interactions between spin polarized current and local spin systems: A Quantum Mechanical Approach FATIH DOGAN, Dept. of Physics, University of Alberta, Edmonton, AB, Canada, LUCIAN COVACI, Dept of Physics, University of British Columbia, Vancouver, BC, Canada, WONKEE KIM, FRANK MARSIGLIO, Dept. of Physics, University of Alberta, Edmonton, AB, Canada — In this talk, we present the first fully quantum mechanical calculation of the spin flip interaction between spin polarized current and local spin systems. Dynamics of local spins will be illustrated as many electrons pass through the chain. The talk will focus on the description of the approach, density matrix formalism used in the calculations and the behavior of the system for different configurations. The interplay between electron-spin and spin-spin interaction, effect of domain walls, limiting cases for interaction strengths, spin degree of freedom, and comparison to LLG model will be presented.

Fatih Dogan
Dept. of Physics, University of Alberta, Edmonton, AB, Canada