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How does an electron flip a magnetic moment? FRANK MARSIGLIO, WONKEE KIM, University of Alberta — A magnetic moment is incapable of flipping a magnetic moment unless some damping mechanism is present. On the other hand a spin current can flip a moment, as we will demonstrate in this talk. A variety of quantum effects will be illustrated, using an easy-to-understand semiclassical treatment. Finally, resorting to strictly quantum mechanics, the time evolution of a spin current/magnetic moment system can be determined; the problem is similar to the standard 4th year textbook problem of a particle scattering off a square barrier/well. In this case the "barrier/well" responds, i.e. the moment 'flips.' We outline how one can monitor the 'flip' as a function of time.

Frank Marsiglio
University of Alberta

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