Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Spin transfer and the role of spin-motive-forces for spin valves and domain walls[1] STEWART BARNES, Physics Dept., Univ. of Miami — The interaction of magnetic domains with electrical currents has potentially far reaching applications for spintronics. The requirements of energy conservation are reflected by spin- (smf) and electro-motive-forces (emf) [1] . For spin-valves and domain walls this smf redistributes the currents between the different possible conduction channels in a manner that significantly modifies the dynamics and introduces magnetic relaxation. Our Berry phase approach to domain walls [1,2] has been extended to spin-valves. The results are consistent with the requirements of angular momentum and energy conservation but differ in a number of important ways from those obtained when the Sloncewski torque transfer term is added to the Landau-Liftshitz equations with either Gilbert or Landau-Liftshitz relaxation [3].
[1] S. E. Barnes and S. Maekawa: Phys. Rev. Lett. **98**, 246601 (2007)
[2] S. E. Barnes and S. Maekawa: Phys. Rev. Lett. **95**, 107204 (2005).
[3] See e.g., Concepts in Spin Electronics, ed. by S. Maekawa (Oxford Press, 2006).

[1]A collaboration with J. Ieda and S. Maekawa.

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Date submitted: 14 Dec 2007 Electronic form version 1.4