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Spin Torque in Magnetic Tunnel Junctions ALAN KALITSOV, IOANNIS THEODONIS, NICHOLAS KIOUSSIS, Department of Physics, California State University, Northridge, CA 91330-8268, WILLIAM BUTLER, University of Alabama, Department of Physics and Astronomy Tuscaloosa, AL 35487-0209 — The effect of current-induced switching in the orientation of magnetic moments has attracted much attention both experimentally[1] and theoretically in the past several years due to its potential application to spin electronics. The origin of the current-induced switching is the spin torque due to the local exchange interactions between the conduction electrons and the magnetic moments. Using a simple tight-binding Hamiltonian[2] for the magnetic metal-insulator-magnetic metal tunneling junction and the Keldysh formalism for the non-equilibrium Green functions, we have calculated the spin torque and the tunneling current in non-collinear magnetic junctions. We have studied the effect of the bias voltage, the thickness of the barrier and the angle between the magnetizations of the ferromagnetic electrodes on the spin torque and the tunneling current.

1. E. Myers, D. Ralph, J. Katine, R. Louie, R. Buhrman, Science **285,** 867 (1999).

2. C. Caroli, R. Combescot, P. Nozieres, D. Saint-James, J. Phys. C: Solid St. Phys., **4**, 916 (1971).

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Alan Kalitsov
Department of Physics, California State University
Northridge, CA 91330-8268

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