

Abstract Submitted  
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**Universal spin pumping with rf magnetic fields** S. M. WATTS, C. H. VAN DER WAL, B. J. VAN WEES, MATERIALS SCIENCE CENTER, UNIVERSITY OF GRONINGEN, PHYSICS OF NANODEVICES TEAM — A new method for generating spin accumulation in metals or semiconductors is by application of an rf magnetic field [1], similar to the spin battery effect induced by a ferromagnet in resonance [2]. A dc spin accumulation is produced that is in general a small fraction of  $\hbar\omega$ , where  $\omega$  is the rotation frequency of the rf field. When a resonant dc magnetic field is also applied the spin accumulation can be enhanced towards the universal value  $\hbar\omega$ . In addition, spin diffusion into an adjacent region without fields can dramatically enhance spin accumulation at the interface. We discuss the application of this method to produce spin accumulation in semiconductor or metal spin electronic devices without the necessity of either ferromagnetic electrodes or charge currents.

[1] S. M. Watts *et al.*, submitted to PRL

[2] A. Brataas *et al.*, Phys. Rev. **B** 66 (2002).

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