

Abstract Submitted  
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**Ferromagnetic resonance driven by current-induced torque in uniform ferromagnetic micro-structures** H. KUREBAYASHI, D. FANG, University of Cambridge, J. WUNDERLICH, Hitachi Cambridge Laboratory, K. VYBORNÝ, L.P. ZARBO, Institute of Physics, ASCR, R.P. CAMPION, A. CASIRAGHI, B.L. GALLAGHER, University of Nottingham, T. JUNGWIRTH, Institute of Physics, ASCR, A.J. FERGUSON, University of Cambridge, EU GRANTS FP7-214499 NAMASTE COLLABORATION — We show that the recently demonstrated current induced torque (CIT) [A. Chernyshov, et al. Nat. Phys. 5, 656 (2009)] can excite magnetisation dynamics in micro-bars of uniform ferromagnetic semiconductors. Due to the combined effects of the spin-orbit and exchange interactions, a microwave current injected into (Ga,Mn)As (or (Ga,Mn)(As,P)) micro-bars generates an oscillating effective magnetic field. By using a sensitive electrical detection technique, we accurately measure the magnitude and direction of driving fields for samples under different strain. We confirm the observation of a field with the symmetry of the Dresselhaus spin-orbit interaction and observe an additional field with the symmetry of the Rashba spin-orbit interaction. Our work demonstrates a new scalable FMR technique which provides a sensitive method to study the nature of current-induced torques and to perform magnetic characterisation of uniform ferromagnetic micro-structures.

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