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Microwave oscillation generation in a Co/Cu/Co nano-contact without external magnetic field[1] KWUN HUNG CHEUNG, XIN XIAO, HONG WEN JIANG, UCLA Physics Department — Using spin-transfer-torque effect to generate microwave oscillation at zero magnetic- field is of recent interest. Here, we report the observation a resistive oscillation at microwave-frequencies ranging from 1.5 to 3 GHz in a nano-contact formed on a Co/Cu/Co tri-layer structure without any external field. The observed oscillation modes have frequencies that are much higher than that reported in other similar experimental systems [1,2]. We have studied the evolution of the oscillation as a function of the DC excitation current and the effect of a small in-plane field. Micromagnetic simulations support the notion that the oscillation is as a result of the translational motion of a vortex-core underneath the nano-contact, due the competition of the circular Orstead field and the spin-transfer torque, both induced by the DC current passing through the nano-contact. The work was supported by the Western Institute of Nanoelectronics (WIN). [1] M. R. Pufall et al., Phys. Rev. B 75, 140404(R) (2007). [2] Q. Mistral et al, Phys. Rev Lett. 100, 257201 (2008).

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