

Abstract Submitted  
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**Spin torque nano-oscillator achieved with point contact current injection** XUEYUAN SHE, MEHDI KABIR, LINQIANG LUO, MIRCEA STAN, Univ of Virginia — Spin torque devices can be used to generate microwave signals without capacitors and resistors normally required by traditional circuits, making such devices ideal in nanoelectronic designs. The limited power output ( $\sim 5\text{nW}$ ) of a single spin torque device makes it necessary to connect multiple devices in parallel to achieve a desired power level. The size of each individual spin torque nano-oscillator (STNO) is therefore critical to many proposed applications that depend on using a large array of such device. Instead of directly fabricating devices at tens of nanometers in diameter, we successfully achieve the behavior of a 50 nm STNO using a current injected through a point contact to the top layer of a much larger (500 nm), in-plane magnetized device. The point contact is achieved with a conductive AFM tip. This result provides evidence that patterning with mechanical indentation, which creates point contacts at a similar size, is a possible way to fabricate STNO arrays.

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