

Abstract Submitted  
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**Giant enhancement of microwave emission in magnetic tunnel junction oscillators by orientating in-plane field**<sup>1</sup> Z.M. ZENG, K.H. CHEUNG, H.W. JIANG, Department of Physics & Astronomy, UCLA, CA 90095, P. UPADHYAYA, P. KHALILI AMIRI, K.L. WANG, Department of Electrical Engineering, UCLA, CA 90095, J.A. KATINE, Hitachi Global Storage Technologies, San Jose, California 95135 — Recently spin-transfer nano-oscillators (STNOs) have attracted considerable attention because they are tunable over a wide frequency range by varying the applied DC current or magnetic field. One main challenge for practical applications is to boost the relative low emitted power. MgO-based STNOs have exhibited a capability to deliver much larger power. However, they often show multiple emission peaks or broad linewidths. It is necessary to suppress the additional peaks and to reduce the central peak linewidth. In this talk, we present our microwave measurements in MgO-based STNOs as a function of in-plane field orientation. At an optimal orientation, emitted power of a single peak is largely enhanced, together with a significantly narrowed linewidth. The experiment shows that the understanding of intrinsic features of the oscillators as a function of in-plane orientation is important for optimizing the performances of MgO-based nano-oscillators. [1] see for example, S. I. Kiselev, et.al., Nature 425, 308 (2003).

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