Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

**Mutual synchronization of two spin transfer oscillators coupled through their self-emitted microwave currents** V. CROS, R. LEBRUN, Unit Mixte CNRS/Thales, Univ. Paris-Sud, Univ. Paris-Saclay, Palaiseau, France, S. TSUNEGI, Spintronic Research Center, AIST, Tsukuba, Japan, P. BORTOLOTTI, Unit Mixte CNRS/Thales, Univ. Paris-Sud, Univ. Paris-Saclay, Palaiseau, France, H. KUBOTA, Spintronic Research Center, AIST, Tsukuba, Japan, M. ROMERA, Unit Mixte CNRS/Thales, Univ. Paris-Sud, Univ. Paris-Saclay, Palaiseau, France, K. YAKUSHIJI, A. FUKUSHIMA, Spintronic Research Center, AIST, Tsukuba, Japan, J. GROLLIER, Unit Mixte CNRS/Thales, Univ. Paris-Sud, Univ. Paris-Saclay, Palaiseau, France, S. YUASA, Spintronic Research Center, AIST, Tsukuba, Japan, UNIT MIXTE DE PHYSIQUE CNRS/THALES COLLABORATION, SPINTRONICS RESEARCH CENTER, AIST COLLABORATION — Here, we demonstrate the mutual synchronization of two vortex STOs through electrical coupling. We describe how in using a delay line, we can optimize the locking range of the synchronization. We also evidence that the coupling efficiency is tuned by the nonlinear parameters of STOs but also more originally through the ratio between the two components of spin transfer torques. This represents a definite advantage of our vortex-STNOs for their future implementation in large arrays of synchronized STOs. We find that the linewidth of the two synchronized STOs decreases by a factor 2 and the output power increases by factor 4 ($\sim$ 1.6 W) compared to non -interacting STOs. These results provide a solid basis towards the efficient synchronization of multiple STOs. EU FP7 grant (MOSAIC No. ICT-FP7-317950 is acknowledged.

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Date submitted: 02 Dec 2015 Electronic form version 1.4