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Spin angular momentum absorption at the magnetic phase transition of Permalloy antiferromagnetic surface oxidized layers LAMPRINI FRANGO, GUILLAUME FORESTIER, STEPHANE AUFFRET, SPINTEC, Univ. Grenoble Alpes / CNRS / INAC-CEA, F-38000 Grenoble, France, SERGE GAMBARELLI, SYMMES, Univ. Grenoble Alpes / INAC-CEA, F-38000 Grenoble, France, VINCENT BALZ, SPINTEC, Univ. Grenoble Alpes / CNRS / INAC-CEA, F-38000 Grenoble, France, SPINTEC, UNIV. GRENOBLE ALPES / CNRS / INAC-CEA, F-38000 GRENOBLE, FRANCE TEAM, SYMMES, UNIV. GRENOBLE ALPES / INAC-CEA, F-38000 GRENOBLE, FRANCE COLLABORATION — We report an alternative mechanism for the physical origin of the temperature-dependent ferromagnetic relaxation of Permalloy (NiFe) thin films. By use of spin pumping experiments we demonstrate that the peak in the temperature-dependence of the NiFe damping can be understood in terms of enhanced spin angular momentum absorption at the magnetic phase transition of antiferromagnetic surface oxidized layers. These results suggest a new direction for the understanding of a least understood physical question, opening pathways for further investigations.

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