

An Antidamping Spin Orbit Torque Originating From The

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An Antidamping Spin Orbit Torque

antidamping spin-orbit torque as well as its microscopic modelling. We expect the Berry curvature spin-orbit torque to be of comparable strength to the spin-Hall-effect-driven antidamping torque in ferromagnets interfaced with paramagnets with strong intrinsic spin Hall effect. I n one interpretation discussed in the literature so far, current-

An antidamping spin-orbit torque originating from the ...

An antidamping spin-orbit torque originating from the Berry curvature. Observation of an anti-damping spin-orbit torque originating from the Berry curvature - Supplementary infromation -. H....

An antidamping spin-orbit torque originating from the ...

Of particular importance are the antidamping components of these current-induced torques acting against the equilibrium-restoring Gilbert damping of the magnetization dynamics. Here, we report the observation of an antidamping spin-orbit torque that stems from the Berry curvature, in analogy to the origin of the intrinsic spin Hall effect.

An antidamping spin-orbit torque originating from the ...

An additional mechanism such as antidamping spin-orbit torque resulting from the interface or the crystalline structure of Py thin films needs to be considered. The authors gratefully acknowledge the Thin Film XRD at the Department of Physics, IIT Delhi. D.T. acknowledges support from the University Grants Commission, India.

Antidamping spin-orbit torques in epitaxial-Py(100)/β-Ta ...

The antidamping torque is only significant when both layers are simultaneously on-resonance, otherwise $\partial m_j / \partial t = 0$ and its effects are negligible. Damping is highest when the spin current can cross the spacer layer and be efficiently absorbed by the second FM layer.

Antidamping torques from simultaneous resonances in ...

By performing adiabatic harmonic Hall voltage measurements, we show that the transverse (fieldlike) and longitudinal (antidampinglike) spin-orbit torques are composed of constant and magnetization-dependent contributions, both of which vary strongly with annealing.

Fieldlike and antidamping spin-orbit torques in as-grown ...

Interestingly, upon strong disorder the spin torque develops an antidamping component (i.e.,evenupon magnetization reversal) along the edges, which could enable current-driven manipulation of the antiferromagnetic order parameter.

Spin-orbit torque in two-dimensional antiferromagnetic ...

Of particular importance are the antidamping components of these current-induced torques acting against the equil.-restoring Gilbert damping of the magnetization dynamics. Here, the authors report the observation of an antidamping spin-orbit torque that stems from the Berry curvature, in analogy to the origin of the intrinsic spin Hall effect.

Large Damping-Like Spin-Orbit Torque in a 2D Conductive 1T ...

Spin-orbit torques (SOTs) allow the electrical control of magnetic states. Current-induced SOT switching of the perpendicular magnetization is of particular technological importance. The SOT...

Anomalous spin-orbit torque switching due to field-like ...

Key concepts in spin transport in FM/NM systems Interaction of a spin polarized current with a magnetic layer Spin transfer torque (STT): AD and FL components STT on domain walls Spin pumping STT-induced magnetization dynamics Spin-orbit coupling and spin-orbit torques (SOT) Spin Hall and Rashba effects SOT measurements Three-terminal SOT magnetic tunnel junctions

Introduction to spin torques and spin-orbit torques in ...

Of particular importance are the antidamping components of these current-induced torques acting against the equilibrium-restoring Gilbert damping of the magnetization dynamics. Here, we report the observation of an antidamping spin-orbit torque that stems from the Berry curvature, in analogy to the origin of the intrinsic spin Hall effect.

CiteSeerX — An antidamping spin-orbit torque originating ...

In addition to the out-of-plane Oersted torque expected from current flow in the metallic NbSe2 layer, we also observe an in-plane antidamping torque with torque conductivity $\sigma_S \approx 103$ ($\hbar/2e$)(Ωm) $^{-1}$ and indications of a weak field-like contribution to the out-of-plane torque oriented opposite to the Oersted torque.

Spin-Orbit Torques in NbSe2/Permalloy Bilayers | Nano Letters

By performing adiabatic harmonic Hall voltage measurements, we show that the transverse (field-like) and longitudinal (antidamping-like) spin-orbit torques are composed of constant and...

(PDF) Field-like and antidamping spin-orbit torques in as ...

We demonstrate spin-orbit torque (SOT) driven multi-state magnetization switching in Co/Pt Hall crosses in the presence of varying externally applied in-plane (IP) bias fields from room temperature (RT = 295 K) to 360 K. ... An antidamping spin-orbit torque originating from the Berry curvature. Nat. Nanotechnol., 9 (2014), p. 211.

Spin-orbit torque induced multi-state magnetization ...

of-plane antidamping torque with a spin torque conductivity as strong as 1/3 of that of WT e 2, demonstrating that the breaking of bulk inversion symmetry in the spin-generation material is not a...

(PDF) Layer-dependent spin-orbit torques generated by the ...

In one interpretation discussed in the literature to date, the current induced switching at the ferromagnet/paramagnet interfaces1,2originates from an anti-damping component of the spin-orbit torque (SOT)1,3{24at the broken space-inversion-symmetry interface, and in another,2,23,25the spin-Hall effect (SHE)26{32in the paramagnet combines with the anti- damping spin-transfer torque (STT)33{36in the ferromagnet.

Observation of an anti-damping spin-orbit torque ...

Antidamping spin-orbit torque driven by spin-flip reflection mechanism on the surface of a topological insulator: A time-dependent nonequilibrium Green function approach Farzad Mahfouzi,1,* Branislav K. Nikolic, 2 and Nicholas Kioussis1 1Department of Physics, California State University, Northridge, California 91330-8268, USA

Antidamping spin-orbit torque driven by spin-flip reflection ...

Our observations are consistent with theoretical proposals of antidamping-like torques from interfacial spin-orbit coupling such as the Rashba effect 42,43,44,45,46. Such interfacial spin-orbit torques have also been reported in the Pt | oxidized CoFeB system 47 .

Enhanced spin-orbit torques by oxygen incorporation in ...

$V_{mix}(H_{ext})$ has two components: an antisymmetric component due to the Oersted field-generated torque and a symmetric component that arises from the spin-orbit torque. The ST-FMR curves are fitted with symmetric and antisymmetric Lorentzian functions, according to (5, 9) $V_{mix}=c[V_S\Delta H^2\Delta H^2+(H_{ext}-H_{res})^2+V_A\Delta H(H_{ext}-H_{res})\Delta H^2+(H_{ext}-H_{res})^2]$ (2)