Joint annual meeting of Swiss and Austrian Physical Societies 2017



Contribution ID: 319

Type: Talk

[818] Spin Hall effect measured by magneto-optical Kerr microscopy

Friday 25 August 2017 13:15 (15 minutes)

The spin Hall effect in a current-carrying wire leads to the accumulation of spins at the outer edges of the wire. We detect this spin imbalance by magneto-optical Kerr microscopy and find that the Kerr rotation for Pt and W has opposite sign, as expected from the respective spin Hall angles. The measured spin accumulation scales linearly with the applied current density. In thickness-dependent measurements as well as in ab-initio calculations we find a spin diffusion length in Pt of 9 ± 2 nm, significantly larger compared to a Pt film that is in contact with a magnetic layer.

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Session Classification: Magnetism and Spintronics at the Nanoscale

Track Classification: Magnetism and Spintronics at the Nanoscale