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**Spin Hall effects from mesoscopic ferromagnetic NiFe thin films**

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— The spin Hall effect (SHE) and inverse spin Hall effect (ISHE) have been explored primarily in nonmagnetic heavy metals such as Pt. In this work, we probe SHE/ISHE from mesoscopic ferromagnetic NiFe (Py) films in nonlocal lateral structures. The structure consists of a Py spin injector/detector (F1), a Cu channel, and a second Py stripe (F2) where SHE/ISHE occurs. Low-resistance AlOx layers are placed at all interfaces. For SHE, a charge current passes through F2, and a nonlocal voltage is detected between F1 and Cu. For ISHE, a charge current is injected from F1 into Cu, and the nonlocal voltage is measured between two ends of F2. The in-plane magnetic field is applied perpendicular to F1/F2 stripes. For both measurements, the nonlocal signal for large positive field is different from that of large negative field owing to the SHE/ISHE. Using a simple model, the apparent spin Hall angle (assuming long Py spin diffusion length) of Py is estimated to be 0.010 at 295K and 0.017 at 4.5K.

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