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Quantum spin Hall effect - Wikipedia

Spin Hall Effect And Spin

The spin Hall effect (SHE) is a transport phenomenon predicted by Russian physicists Mikhail I. Dyakonov and Vladimir I. Perel in 1971. It consists of the appearance of spin accumulation on the lateral surfaces of an electric current -carrying sample, the signs of the spin directions being opposite on the opposing boundaries.

Spin Hall effect - Wikipedia

The Spin Hall Effect consists in spin accumulation at the lateral boundaries of a current-carrying conductor, the directions of the spins being opposite at the opposing boundaries, see Fig. 1. For a cylindrical wire the spins wind around the

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The spin Hall effect, first proposed 40 years ago 1, is an unusual class of phenomena in which flowing particles experience orthogonally directed, spin-dependent forces—analogous to the...

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Spin Hall Effect in the Presence of Spin Diffusion - NASA/ADS

Electrically induced electron-spin polarization near the edges of a semiconductor channel was detected and imaged with the use of Kerr rotation microscopy. The polarization is out-of-plane and has opposite sign for the two edges, consistent with the predictions of the spin Hall effect. Measurements of unstrained gallium arsenide and strained indium gallium arsenide samples reveal that strain ...

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Quantum spin Hall effect - Wikipedia

Specifically, these semimetals with strong spin-orbit coupling, broken inversion symmetry and novel spin texture are predicted to exhibit a large spin Hall effect that can efficiently convert the charge current to a spin current.

[1812.02113] Observation of Spin Hall Effect in Weyl ...

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Spin Hall effects are a collection of relativistic spin-orbit coupling phenomena in which electrical currents can generate transverse spin currents and vice versa. Although first observed only a...

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Although the spin Hall effect was predicted over three decades ago, it received little attention until studies on the intrinsic nature of its ferromagnetic cousin, the anomalous Hall effect (an additional contribution to the Hall resistivity in magnetic materials), led to the prediction of a similar large spin Hall effect in strongly spin-orbit coupled materials [2, 3].

Physics - Viewpoint: Spin Hall effect goes electrical

the spin-Hall effect (SHE) is the generation of a transverse spin-polarization current alone in response to an electric field in a paramagnetic medium with spin-orbit interactions and in the absence of a magnetic field.

Spin-Hall effect and spin-Coulomb drag in doped semiconductors

Hall effects, in general, are transport phenomena, in which an applied field on the particles results in a motion perpendicular to the field. Unlike the traditional Hall effect and its quantum versions, in which the effect depends on the electrical charge, the spin Hall effect is driven by the spin state of the particles.

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