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Suppression of the Hanle effect in organic spintronic devices[1] ZHIGANG YU, SRI International — We study carrier spin transport under a transverse magnetic field in organic structures [1]. In organics, carriers are localized polarons and charge transport is via polaron hopping. Spin transport, however, can utilize the exchange coupling between localized polarons, which can be much faster than polaron hopping and rapidly increases with the carrier density. Consequently, a much stronger magnetic field is needed to modify spin polarization and observe the Hanle effect than estimated from the carrier mobility, which can help understand recent Hanle measurements in organic spin valves. The exchange-induced spin transport also greatly mitigates the conductivity mismatch between ferromagnets and organics, enabling spin injection into organics. [1] Z. G. Yu, Phys. Rev. Lett. 111, 016601 (2013).

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