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A spin-influenced hopping theory for transport in molecular semiconductors\fs20[1] CHANG-QIN WU, Department of Physics, Fudan University, Shanghai 200433, China — We investigate the influence of charge carrier's spin interaction on the hopping transport in molecular semiconductors. By considering the quenching of the spin correlation after the carrier's incoherent jump between molecules, we obtain the carrier's hopping rate that contains explicitly the contribution of carrier's spin interaction. As a consequence, the rate is modulated by applied magnetic field, leading to the magnetoresistance with a general feature of a Lorentzian-shape saturation at large fields and an ultrasmall-field component, which explains well the related experiments observed in organic semiconducting materials.

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