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**Diffusive spin-charge dynamics in an external electric field**  
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versity of Maryland — We study the dynamics of a spin density injected into a  
two-dimensional electron system with generic spin-orbit interactions. We generalize  
the spin-charge diffusion equation formalism by including the effects of a uniform  
electric field. Within this approach, we study the coupling between spin and charge  
and we determine the charge (spin) profile induced by a non-uniform, periodic spin  
(charge) density in the presence of the external electric field. We determine the  
optimal range of parameters for observing the spin-charge coupling effects.

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