

Abstract Submitted  
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**DC spin current generation: adiabatic versus nonadiabatic regime** L. Y. WANG, Department of Electrophysics, National Chiao Tung University, C. S. TANG, Physics Division, National Center for Theoretical Sciences, C. S. CHU, Department of Electrophysics, National Chiao Tung University, L. Y. WANG TEAM, C. S. TANG COLLABORATION — We study a dc spin current (SC) generation in the adiabatic regime and compare it with the nonadiabatic result. The SC generation configuration is an AC-biased finger-gate (FG) that orients transversely to and locates atop of a Rashba-type narrow channel. The dynamical variation in the spin-orbit interaction (SOI) gives rise to two time-varying potentials that have different spatial profiles. It is the time variations and the spin dependencies of these two potentials that cause the generation of a dc SC. By comparing the results from adiabatic and nonadiabatic calculations, we aim to identify the respective characteristics and the condition of adiabaticity in such a SC generation configuration.

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