

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Resonant manipulation of spin current with a double-barrier structure C. S. CHU, Department of Electrophysics, National Chiao Tung University, L. Y. WANG, Department of Electrophysics, National Chiao Tung University, C. S. TANG, Physics Division, National Center for Theoretical Sciences, L. Y. WANG TEAM, C. S. TANG COLLABORATION — In this work, we consider a Rashba-type narrow channel consisting of two AC-biased finger-gates (FG) that orient perpendicularly and lie above the narrow channel. It is shown recently that such a gate configuration can give rise to dc spin current [1]. The dc spin current can be greatly enhanced by an optimal choice of the separation between the FGs. With the introduction of a double-barrier structure in between the FGs, we can explore the interplay between the dc spin current generation and the resonant levels in the double-barrier structure. Our results show that the direction of the dc spin current can be monitored by the chemical potential alone. No charge current, however, is generated in this configuration. [1] L. Y. Wang, C. S. Tang, and C. S. Chu, cond-mat/0409291

C. S. Chu
Department of Electrophysics, National Chiao Tung University

Date submitted: 01 Dec 2004

Electronic form version 1.4