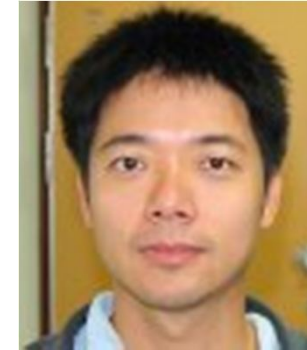


## Wang, Lu-Yao

Assistant Professor, Department of Physics

E-mail : 089948@mail.fju.edu.tw



### Education

Ph.D. Dept. of Electrophysics, National Chiao Tung University, R.O.C. 2008.

M.S. Dept. of Electrophysics, National Chiao Tung University, R.O.C. 1999

B.S. Dept. of Physics, Catholic Fu Jen University, R.O.C. 1997

I am a theoretical physicist and my main researches are spintronics and electron quantum transport in semiconductors.

Recently, my studies focus on the spin-Hall effect, namely electric current deriving the spin-polarized current, with and without magnetic field. [1-3] I also study the inverse spin-Hall effect, namely spin current generating the charge current.

[4] The possibility of the band engineering in the topological insulator is my current research interest.[5]

The spin-Hall effect generating the spin accumulation by a non-uniform driving electric field is presented theoretically in the figures. It is possible way to manipulate the spin current by full electric means.

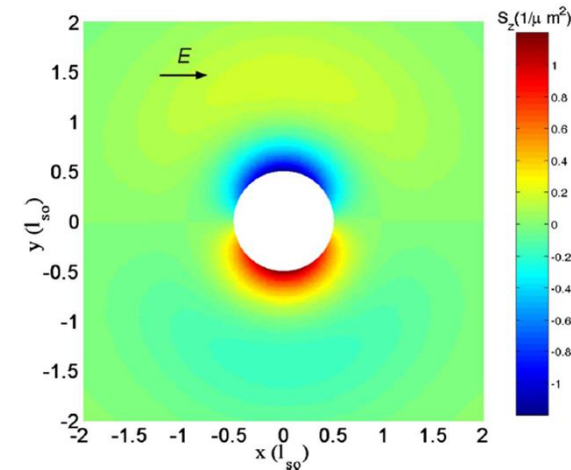


FIG. 1. (Color online) Spin accumulation  $S_z$  in the vicinity of a circular void (white circle).  $S_z$  is in unit of  $1/\mu\text{m}^2$ , void radius  $R_0 = 0.5l_{so}$ , and  $l_{so} = 3.76 \mu\text{m}$ . Dark arrow indicates the driving field direction.

**Selected publications**

- [1] L.Y. Wang, C.S. Chu, "Rashba-type spin accumulation near a void at a system edge", PHYSICAL REVIEW B, vol.84, 1253271(2011).
- [2] L.Y. Wang, C. S. Chu, A. G. Mal'shukov, "Spin generation in a Rashba-type diffusive electron gas by nonuniform driving field", Physical Review B, vol. 81, 1153121, (2010)
- [3] ] L. Y. Wang, C. S. Chu and A. G. Mal'shukov, Asymmetries in intrinsic spin-Hall effect in low in-plane magnetic field", Physical Review B, vol. 78, 1553021, (2008)
- [4] L. Y. Wang, A. G. Mal'shukov and C. S. Chu, "Nonuniversality of the intrinsic inverse spin-Hall effect in diffusive systems", Physical Review B, Vol. 85, 1652011 (2012)
- [5] R. Winkler, L.Y. Wang, Y.H. Lin, C.S. Chu, "Robust level coincidences in the subband structure of quasi-2D systems", Solid state communications, vol.152 , 2096 (2012)