

## Prof. Juhn-Jong Lin/ Institute of Physics

Mesoscopic Physics, Nanophysics, Kondo Effect, Quantum Phase Transition Electron Dynamics on Helium

The **Low Temperature Mesoscopic Physics Laboratory** of Prof. Juhn-Jong Lin studies the quantum transport of low-dimensional structures and novel materials, the electron phase-coherence times, the electronic conduction properties of nanowires, and the Kondo effect and quantum phase transition.

**NCTU-RIKEN Joint Research Laboratory** – Established in December 2012, the NCTU-RIKEN Joint Laboratory aims at fostering bilateral collaborations between NCTU and RIKEN, Japan. Ultralow temperature and high magnetic field facilities are installed to study quantum condensed phases problems, including artificial low-dimensional structures and novel materials, quantum transport, Kondo effect, quantum phase transition, and electron dynamics on superfluid helium.

**Recent Publications** – (1) *Observation of strong electron dephasing in highly disordered  $Cu_{93}Ge_4Au_3$  thin films*, S. M. Huang, et al., PRL **99**, 046601 (2007). (2) *Direct observation of electron dephasing due to inelastic scattering from defects in weakly disordered AuPd wires*, Y. L. Zhong, et al., PRL **104**, 206803 (2010). (3) *Spin bottleneck in resonant tunneling through double quantum dots with different Zeeman splittings*, S. M. Huang, et al., PRL **104**, 136801 (2010). (4) *Large-scale mesoscopic transport in nanostructured graphene*, H. Zhang, et al., PRL **110**, 066805 (2013). (5) *Stick-slip motion of the Wigner solid on liquid helium*, D. G. Rees, et al., PRL **116**, accepted (2016). (6) *Observation of orbital Kondo effect due to tunneling two-level systems*, S. S. Yeh, et al., submitted. (7) *Complete experimental mapping of the quantum phase diagram for the two-impurity Kondo effect*, Y. R. Lai, et al., submitted. (8) *Ultralow  $1/f$  noise in a heterostructure of superconducting epitaxial cobalt-disilicide thin film on silicon*, S. P. Chiu, et al., submitted.

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