

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Phase slip in large array superconducting anti-dot thin films¹

WEI-LI LEE, HSIANG-HSI KUNG, TING-HUI CHEN, CHIA-TSO HSIEH, CHICHIH HO, KENG-HUI LIN, WEN-TAU JUAN, Institute of Physics, Academia Sinica — Phase slip is one of the most intriguing phenomena in superconducting nanostructure, which gives rise to a finite resistance below superconducting transition temperature. By using a special technique we developed previously for the preparation of a monolayer polymer/nanosphere hybrid, we fabricated a series of large array niobium antidot thin films with niobium line width ranging from about 36 nm to 90 nm. From the resistance and magnetization measurement, we found that the transition width decreases with increasing magnetic field applied along the normal direction of the antidot thin film, which becomes more significant in samples with smaller niobium line width. We argue that this phenomenon provides an evidence for the existence of thermal activated phase slip effect that was discovered for the first time in superconducting antidot thin film structure. Detailed results and analysis will be discussed.

¹This work is supported by the Academia Sinica nano program.

Wei-Li Lee
Institute of Physics, Academia Sinica

Date submitted: 01 Nov 2012

Electronic form version 1.4