Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

The measurement of the Meissner effect of small superconductors by using of nano-SQUIDs LONG WU, LEI CHEN, XIAOYU LIU, HAO WANG, XIAOLEI WU, ZHEN WANG, Shanghai Institute of Microsystem and Information Technology(SIMIT) — The nano-SQUID (Superconducting QUantum Intereference Device) is considered one of the most sensitive magnetic sensors for the characterization of mesoscopic or microscopic magnetic property. Therefore, it can be used to measure the Meissner effect of small superconductors that cannot be measured by the commercial MPMS (Magnetic Property Measurement System). Here we demonstrate the measurement of the Meissner effect of a single indium particle (of 47 μm in diameter) and niobium particle (of 25 μm in diameter) by using of a nano-SQUID. By ramping the magnetic field slowly, we were able to observe a sharp Meissner effect transition of the small supercoductors which were greatly broadened in the commercial MPMS. In addition, the magnetic flux noise of our nanoSQUID measurement system is characterized and discussed.

LONG WU
Shanghai Institute of Microsystem and Information Technology(SIMIT)

Date submitted: 08 Nov 2016 Electronic form version 1.4