

## Mobility of Electrons on Helium Film Capillary Condensed on a Two Dimensionally Corrugated Surface of Dielectric Substrate

Ryoma Kobayashi<sup>a</sup> and **Hideki Yayama**<sup>a, b</sup>

<sup>a</sup>Department of Physics, Kyushu University, 6-10-1 Hakozaki, Fukuoka 812-8581, Japan

<sup>b</sup>LTLab, Inc., 2-15-2 Tonoharu, Fukuoka 813-0001, Japan

Electrical conductivity of electrons on helium film covering a two dimensionally corrugated dielectric substrate was measured in a temperature interval from 0.4 to 1.5 K by using a Corbino electrode. As the temperature decreases from 1.5 K, the electrical conductivity decreases and approaches gradually to zero around 0.4 K. This temperature dependence is different from that measured in 2D electron system on bulk liquid helium. In order to understand the effect of the dielectric substrate, the dependences of electrical conductivity on magnetic field were measured and the mobilities were evaluated in different temperatures. The results revealed that the mobility of electrons increases as the temperature decreases. Combining the data of electrical conductivity and the mobility, it is deduced that the decrease in conductivity as the temperature decreases is due to the decrease in number of mobile electrons.