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Measurements of Chiral Heat Current in Graphene in the Quantum Hall Regime SEUNG-GEOL NAM, Department of Physics, Pohang University of Science and Technology, Korea, E.H. HWANG, SKKU Advanced Institute of Nanotechnology, Sungkyunkwan University, Suwon, Korea, HU-JONG LEE, Department of Physics, Pohang University of Science and Technology, Korea — Heat transport measurements can offer a new window to probe the low-energy physics in quantum-Hall systems, which cannot be provided by the electronic transport measurements. In this presentation, we report chiral heat transport measurements in monolayer graphene in the integer quantum Hall regime. We inject charge carriers at a higher temperature than the system bulk and measure the thermoelectric voltage corresponding to the local electron temperature at a distance from the injection point. We find that in graphene heat transport at the edge in the quantum Hall regime is chiral and its direction is dependent on both the carrier type and the magnetic field direction. Measured thermoelectric signals in unipolar regions can be understood by the Mott relation, but a severe deviation of the signals from the Mott relation is found at a p-n junction. Thermoelectric signal decays with distance from the heater and saturates with increasing heating power even though it increases linearly at low powers, which indicates that a part of heat is transferred out of the edge current.

Seung-Geol Nam
Dept of Physics, Pohang University of Science and Technology, Korea

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