

Magnetotransport of low dimensional electrons at 9mK

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- Low temperature environment is essential for observation of quantum mechanical phenomena where the thermal excitation of the sample system must be suppressed.
- Important features of our dilution refrigerator:
 - Base temperature 9mK
 - Cooling power 600 μ W at 100mK
 - DC to microwave electrical characterization

- We have used the quantum Hall effect to calibrate the system.
- High mobility two-dimensional electrons confined at the GaAs/Al_xGa_{1-x}As heterojunctions, as well as quantum well systems in InAs/Al_xGa_{1-x}Sb.
- Electron density $\sim 3.48 \times 10^{11} \text{ cm}^{-2}$
- Mobility $\sim 620,000 \text{ cm}^2/\text{V-s}$
- The dilution refrigerator system is also used for quantum transport characterization of Quantum Point Contact and Single Electron Transistor.

