

## Kapitza resistance between metals and $^3\text{He}$

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At ultralow temperatures, the thermal contact between liquid helium and solids is still not fully understood. In many experiments, the thermal boundary resistance shows a weaker temperature dependence than expected from acoustic mismatch theory, suggesting that additional heat-transfer mechanisms, possibly involving magnetic channels, may be important.

In this talk, I will present measurements of the thermal boundary resistance between liquid  $^3\text{He}$  and small metal foils or wires using a compact experimental cell with extremely low parasitic heat leaks, down to a few fW. A SQUID-based current-sensing noise thermometer is used to detect the temperature rise of the sample under heater powers of only a few pW.

The set-up allows systematic studies of heat transport across a well-defined  $^3\text{He}$ –metal interface, including the effects of magnetic impurities and of the helium surface boundary layer, for example after  $^4\text{He}$  preplating. I will also discuss prospects for field-dependent measurements, superfluid  $^3\text{He}$  studies, and future heat-exchanger design.