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Experimental Considerations in Measuring the Thermal Conductivity of SrTiO_3

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Poster Presentation 35

**EXPERIMENTAL CONSIDERATIONS IN MEASURING THE THERMAL
CONDUCTIVITY OF SrTiO_3**

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The temperature dependence of the thermal conductivity of SrTiO_3 has been previously measured down to 1.5 K. In order to extend such measurements to lower temperatures, where quantum effects may become clearer, the first stage of our experiment has involved the design and construction of a He-3 cryostat capable of cooling various samples (*e.g.*, Strontium Titanate and other quantum paraelectrics) to temperatures close to absolute zero (~ 0.5 K). Our design involves He-3, vacuum pumps, pressure gauges, and valving manifold systems, along with an insertable sample stick and outer dewar. Moreover, for thermal conductivity measurements we must take into consideration all the other materials that are thermally linked to our sample: resistors, wires, epoxies, copper blocks. We will describe the experimental considerations, based on the heat and electronic transport properties, that have guided us in choosing the materials that are in contact with the SrTiO_3 samples.