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Electronic Properties of Strongly Interacting Electrons

Present Expertise:

- flux growth of very high purity crystals of copper oxides
- microwave measurements of low frequency, low temperature electronic properties
- DC transport and bulk magnetic properties



Present Facilities:

- crystal growth lab equipped for flux growth and ceramics
- microwave apparatus from 0-100 GHz
- Quantum Design SQUID magnetometer
- cryogenic apparatus – 1.2 K He cryostat, dilution fridge

Future Projects and Infrastructure - materials

Growth of a much wider range of transition metal oxide crystals is possible with the use of a floating-zone image furnace

- **wide range of ruthenates, manganates...**
- **growth of substrates of oxide films**



Future Projects and Infrastructure - STS

Use of low temperature scanning tunneling microscopes is now revolutionizing the study of electronic properties by allowing for spectroscopy of electronic states with atomic resolution.

Eg.

- electronic properties of atoms and molecules attached to surfaces**
- electronic properties of single impurities in a host material**
- studies of materials with nanometre-scale phase separation**

