

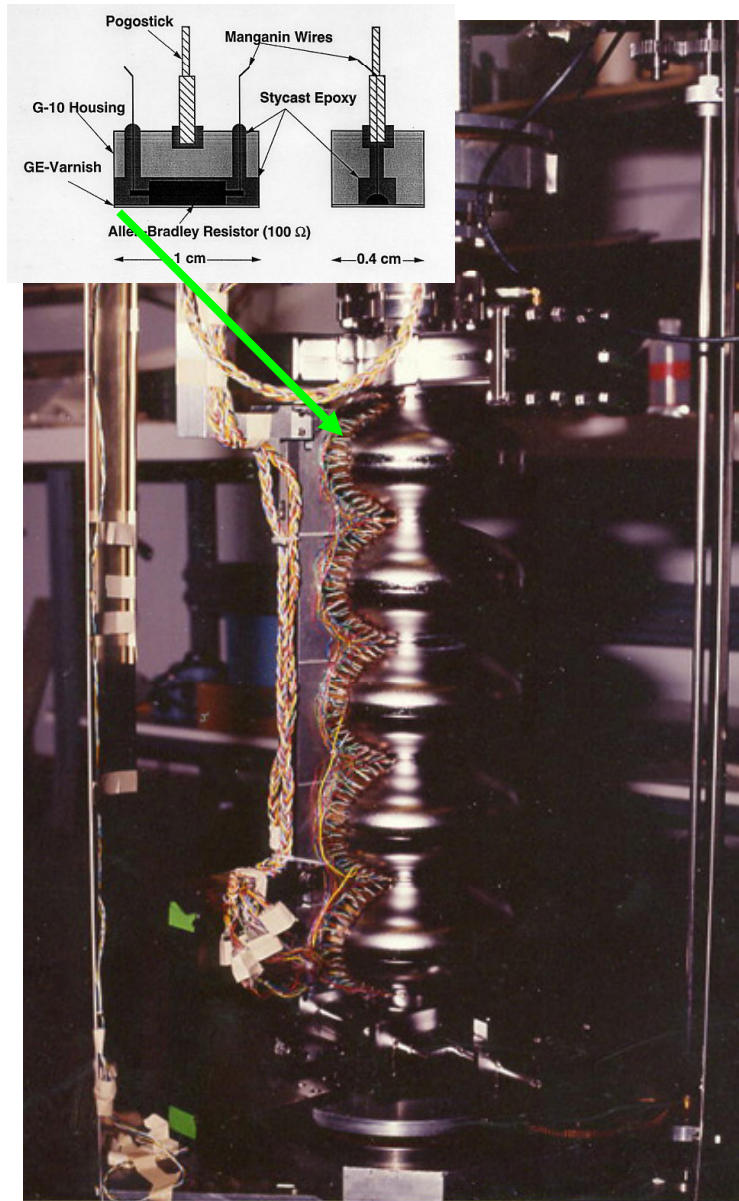
"Quench Detection in 9-Cell ILC Superconducting Cavities Using Second Sound in He-II"

Zach Conway, Don Hartill, Eric
Smith and Hasan Padamsee

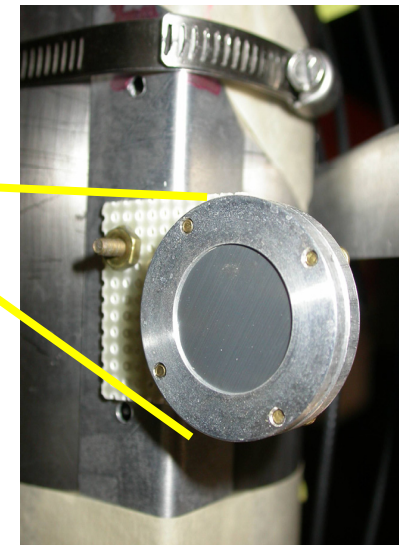
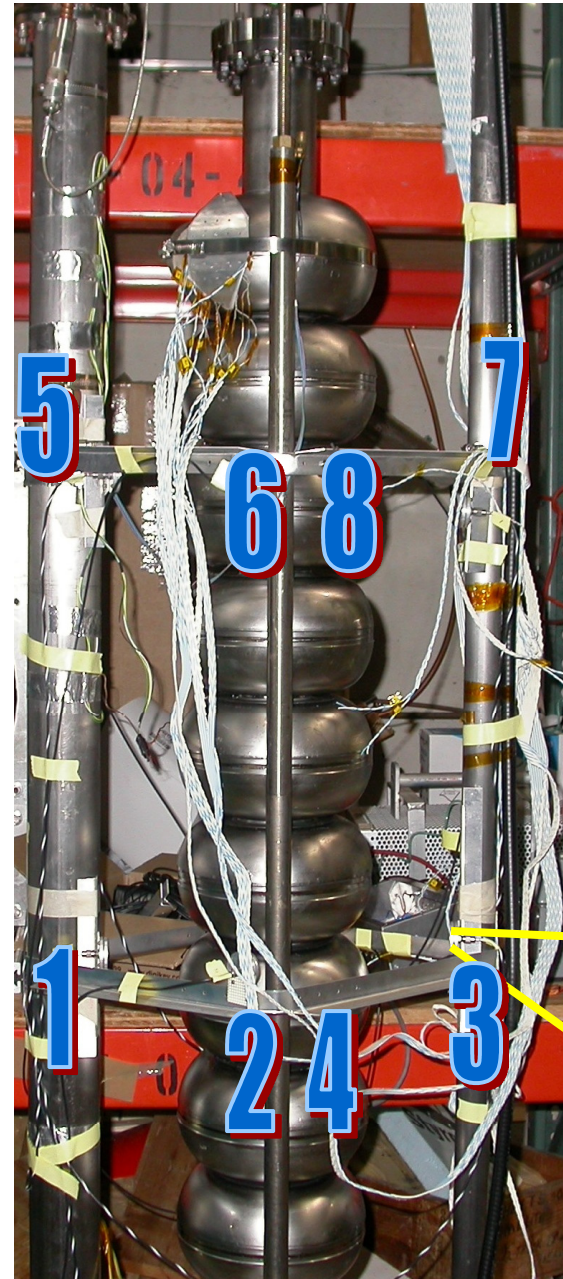
What is 2nd Sound Quench Detection?

- 2nd Sound
 - Temperature wave propagation in superfluid helium due to large heat burst
- With well-known velocity, 20 m/sec at 1.8 K
- Use time delay to determine distance to quench spot
- Triangulate location of quench spot with information from 3 detectors

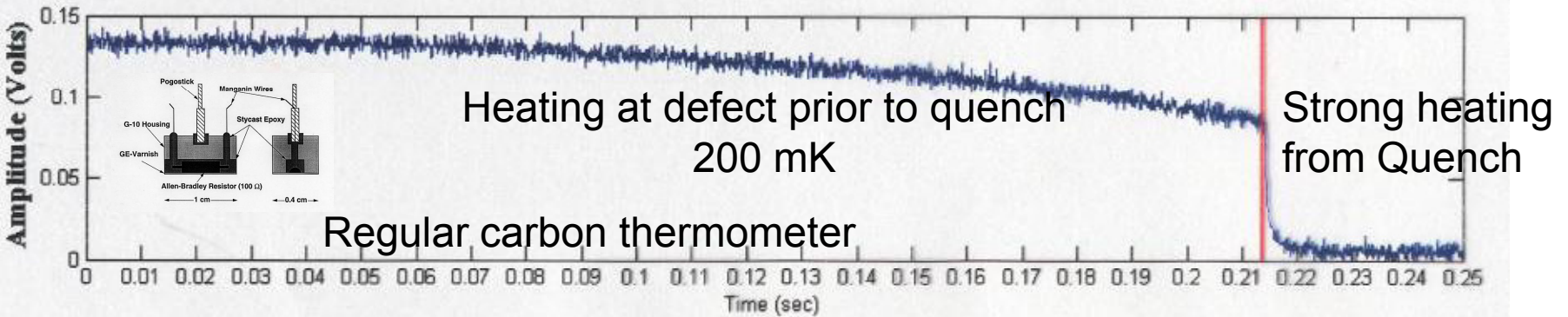
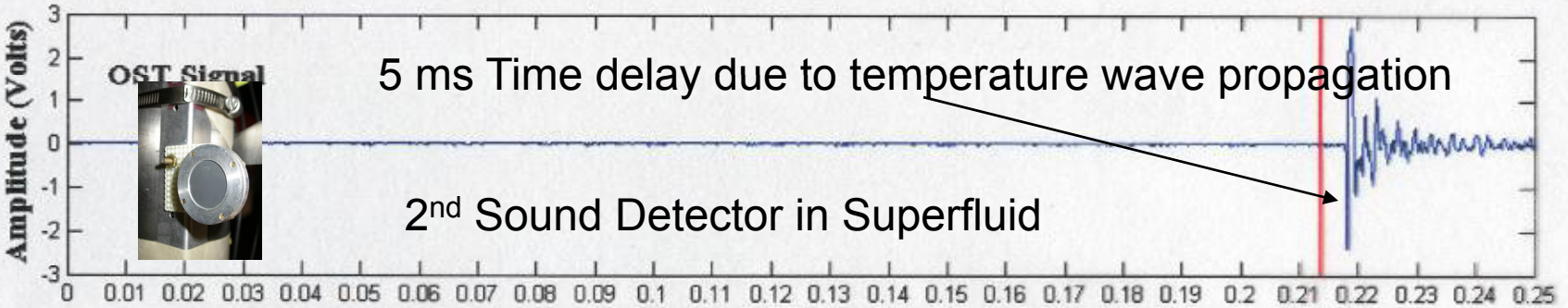
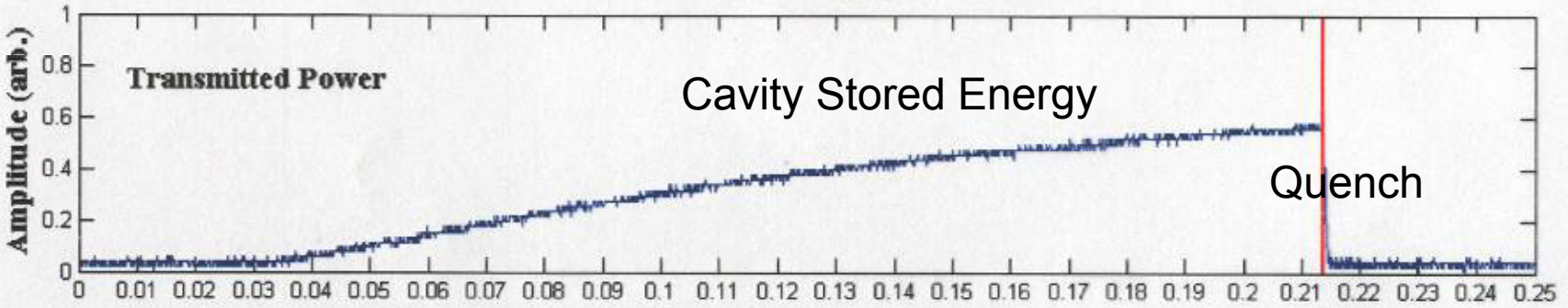
- 100 rotating thermometers

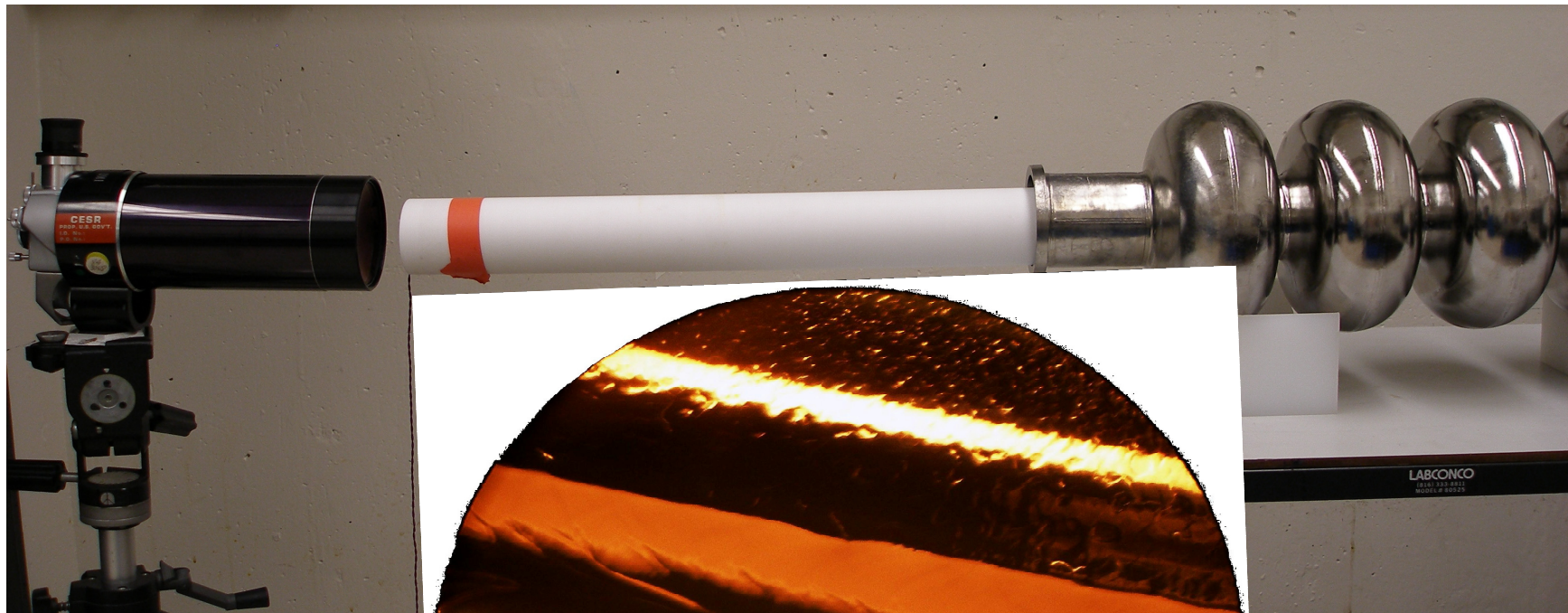


- 8 Superfluid 2nd Sound Detectors



Thermometer 22 Event
6 torr 1.6 K





Weld Defect located by
questar
100 micron Pit in heat
affected zone of ebeam weld

2nd Sound location

Material Defect Found in Single Cell with 2nd Sound Detection and Inspection

