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## **Analysis of semiconductor components as temperature sensors for cryogenic investigation of SRF materials**

*Monday 9 October 2023 18:00 (5 minutes)*

Temperature mapping systems have been used for many years to detect local heating in an SRF cavity surface or materials sample. They require a large number of temperature sensors. Most often, low-cost Allen-Bradley resistors are used for this purpose. Since they have poor sensitivity and reproducibility above 4 K, sensor alternatives that combine the precision of Cernox sensors with the low-cost of Allen-Bradley resistors would be highly desirable. In this work various semiconductor components that exhibit a temperature dependent electrical response, such as diodes and LEDs were analyzed with respect to sensitivity, reproducibility and response speed in a temperature range between 6.5 K and 22 K. In this range, many diodes and LEDs were found to be more sensitive than Cernox sensors. However, in some components the response time was slow –possibly due to poor thermal contact.

### **Speed Talks**

Normal

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