26th National Symposium on Cryogenics and Superconductivity

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Development of cryostat for calibration of cryogenics temperature sensors

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Content :

Authors are developing a cryogenic temperature sensor calibration facility, which will calibrate cryogenics temperature sensors in the range of 1.6 K to 300K. The calibrated temperature sensors will be used to measure temperature in setups for characterization of super-conducting radio frequency (SCRF) cavities. The particular design, based on measurement in helium vapor environment with suitable instrumentation system, is expected to give good dynamic performance.

Summary :

Accurate measurement of temperature in cryogenic temperature range is an important requirement for experimentation. Authors are developing a cryogenic temperature sensor calibration facility, which will calibrate cryogenics temperature sensors in the range of 1.6 K to 300K. The calibrated temperature sensors will be used to measure temperature in setups for characterization of super-conducting radio frequency (SCRF) cavities. The particular design, based on measurement in helium vapor environment with suitable instrumentation system, is expected to give good dynamic performance.

This paper describes the adopted design aspects of the cryostat & its suitability in mounting of the delicate sensors and associated thermalisation in cryogenics temperature range. The specific apparatus for calibrating cryogenics temperature sensors can be used both in saturated vapor pressure environment as well as comparator with standard sensor. The cryostat will be able to provide calibration of cryogenics temperature sensors to an accuracy of better than +/- 10mK by controlling the thermal environment.

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