

Abstract Submitted
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Development of semi-rigid coaxial cables for application to low temperature experiments AKIHIRO KUSHINO, Asahikawa National College of Technology, SOICHI KASAI, COAX CO., LTD. — Fast signal readout with low noise is essential for spectrometric research. Superconducting spectrometers operating below $\sim 1\text{K}$ are promising with their high spectral resolution, detection efficiency and counting rate. Cables connecting these spectrometers and electronics at high temperature must be coaxial and have low thermal conductance in order to reduce heat into low temperature. We have developed thin semi-rigid coaxial cables using low thermal conductivity alloys, CuNi, SUS and NbTi, for both center and outer conductors. The outer conductor is seamless and separated from the center conductor by a PTFE electrical insulator. We have assembled an adiabatic demagnetization refrigerator (ADR) at the 2nd stage of a GM cryocooler, which enables to cool the coaxial cables below 1K, and have measured low thermal conductance and performance of the cables at high frequencies up to $\sim 5\text{ GHz}$.

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