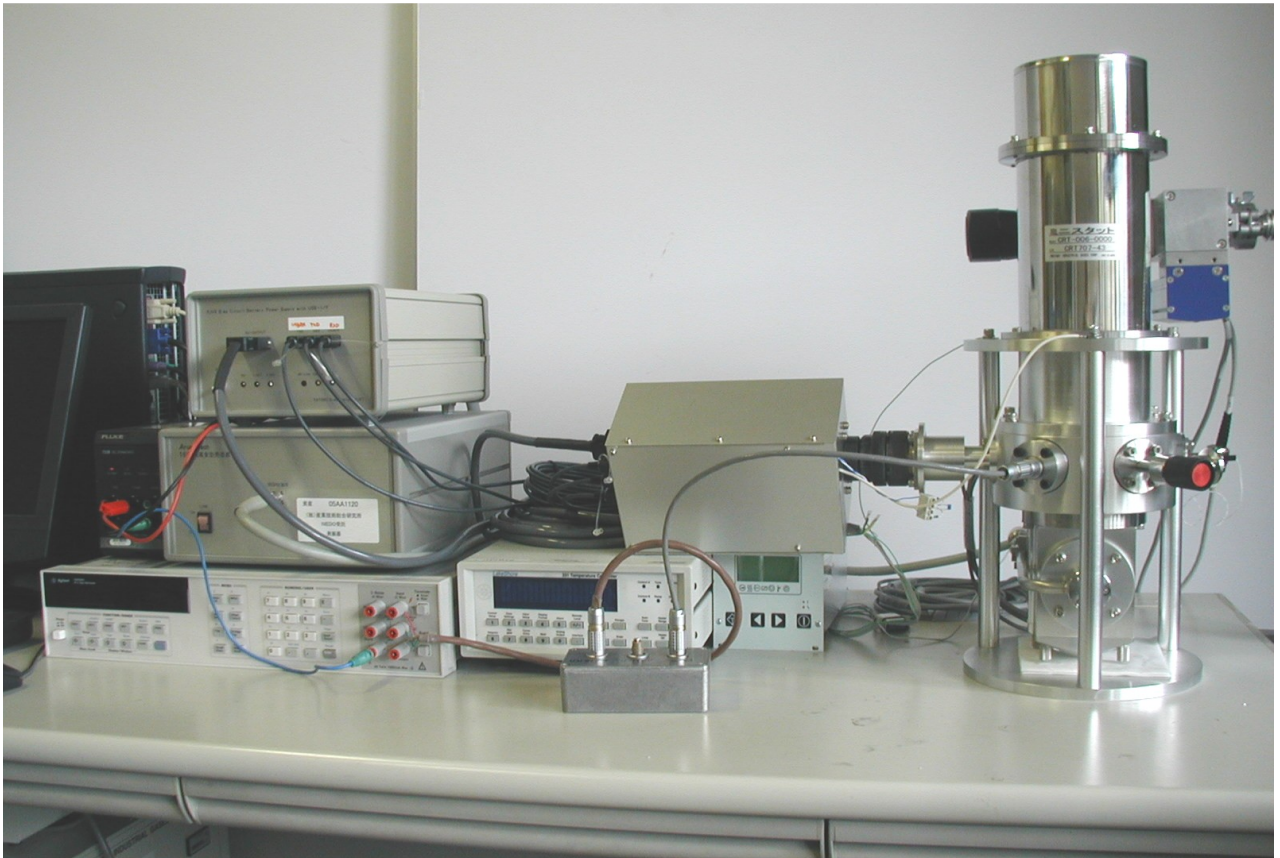


Liquid-He-Free Programmable Josephson Voltage Standard System for Calibration and Basic Research

IQUANTUM Corporation of Japan has launched a Programmable Josephson Voltage Standard (PJVS) system consisting of an all-NbN digital-to-analog converter chip, a compact two-stage G-M cooler, a specially-designed bias circuit, a microwave source with a rubidium frequency standard, and so on. The NbN films employed for the PJVS chips have a T_c above 15 K. This allows the chips to operate above 10 K, and permits a more compact and overall lower cost system than usual PJVS systems which employ chips made of Nb thin films ($T_c = 9$ K).

Photograph of a Liquid-He-Free PJVS System

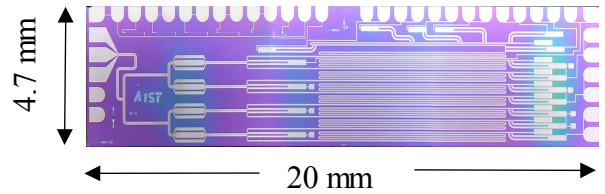


Features of Our System

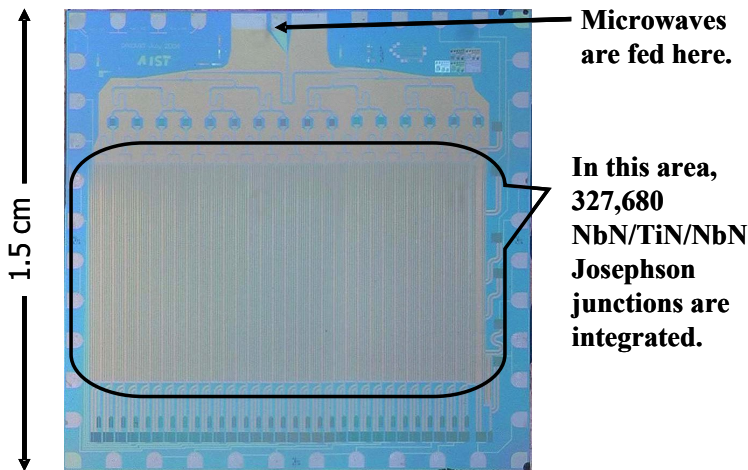
- All niobium nitride (NbN) technology.
- NbN/TiN_x/NbN Josephson junctions.
- NbN wirings and NbN coplanar waveguides.
- T_c of NbN films > 15 K.
- 1 V chip: 8-bit digital-to-analog converter.
32,768 junctions, 20 mm x 4.7 mm.
- 10 V chip: 11-bit digital-to-analog converter.
327,680 junctions, 15 mm x 15 mm.
- Designed microwave frequency: 16 GHz.
- Compact two-stage G-M cooler.
- Water-cooled compressor being operated with ac 100 V.
- Specially-designed bias current circuit.
- Turbo-molecular pump and dry pump.
- PC program for automatic measurements.

Maintenance

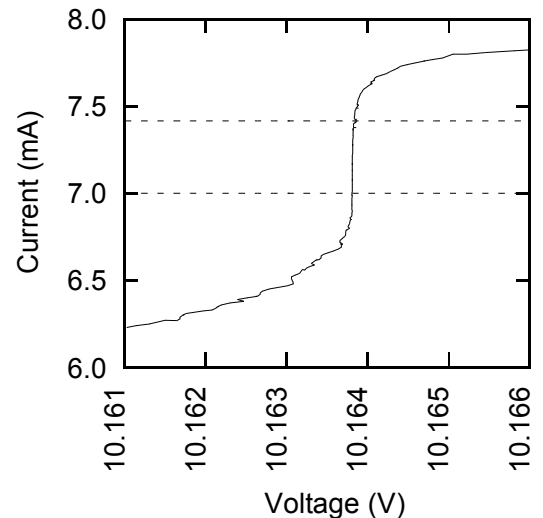
- G-M cooler: every 10,000 hr or every 5 year.
- Compressor: every 20,000 hr.



1 V chip



10 V chip



Constant-Voltage Step

More Information

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