



Contribution ID: 40

Type: **not specified**

## Cyclotron Tank Cryopumping and Cryogenics for Superconducting Facilities at TRIUMF

*Thursday 25 September 2008 15:30 (25 minutes)*

A modern helium refrigerator has replaced a 30-year old Philips cryogenerator on the 500 MeV cyclotron. Two ~11m long cryopanel are cooled down to 4.5K from the previous 17K, increasing pumping speed and improving reliability of the 90 m<sup>3</sup> cyclotron tank vacuum system.

A 600 Watts helium refrigerator, supporting the ISAC Phase-I SC-linac, is now in routine operation. The Phase-II SC-linac will be cooled with an identical refrigerator, already commissioned and tested on the Phase-I section of the linac. This second refrigerator is being used for Phase-II linac developments, including new SC-cavity performance tests.

A 50 MeV, 500kW superconducting electron linac, with its 2K refrigeration system, is proposed as a primary development for the Laboratory.

Relevant design choices for the above systems, as well as results from recent operational and commissioning experience will be discussed.

**Proposed for workshop session (see call for abstracts): 1- Operation 2- Maintenance 3 - Safety 4 - Control**

1- Operation

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**Session Classification:** OPERATION 4

**Track Classification:** OPERATION