



TRIUMF

CANADA'S NATIONAL LABORATORY FOR PARTICLE AND NUCLEAR PHYSICS

Owned and operated as a joint venture by a consortium of Canadian universities via a contribution through the National Research Council Canada



The 1.3 GHz program at TRIUMF

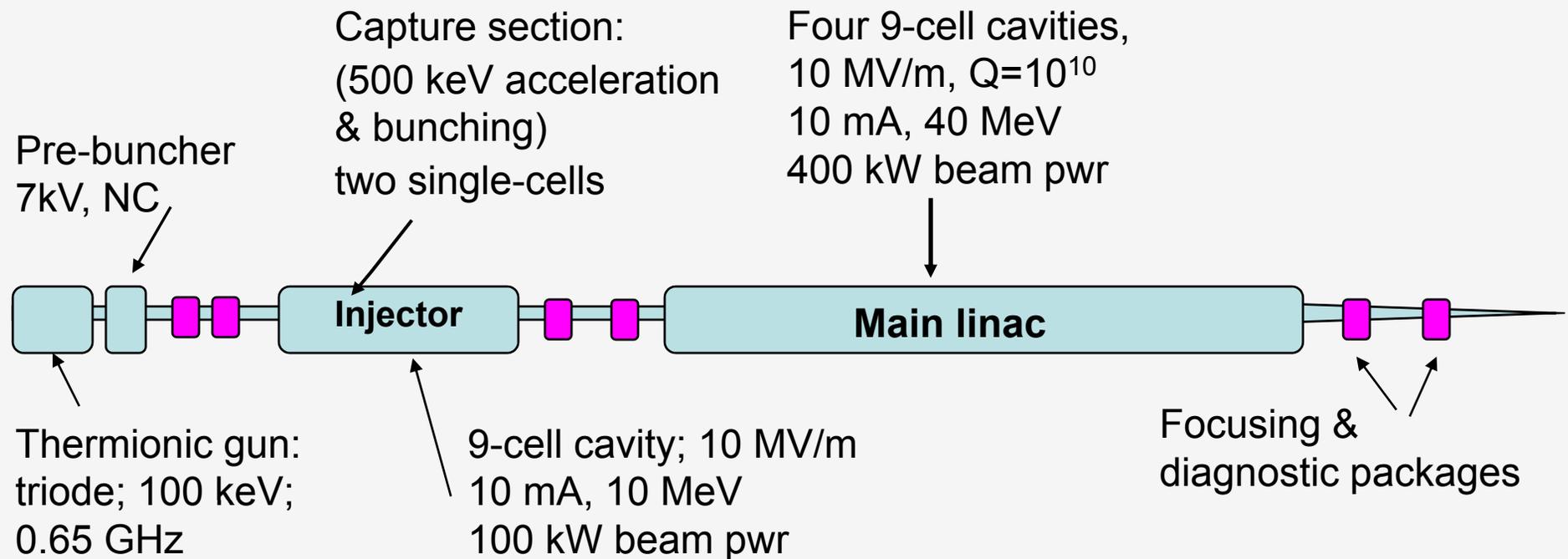
Anna Grassellino, Ph.D. Candidate, TRIUMF – University of Pennsylvania

LABORATOIRE NATIONAL CANADIEN POUR LA RECHERCHE EN PHYSIQUE NUCLÉAIRE ET EN PHYSIQUE DES PARTICULES

Propriété d'un consortium d'universités canadiennes, géré en co-entreprise à partir d'une contribution administrée par le Conseil national de recherches Canada

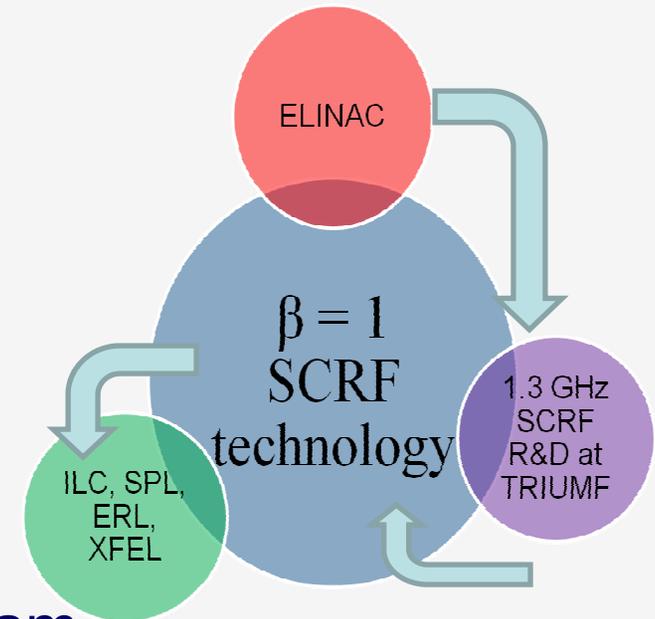
ELINAC

- $\frac{1}{2}$ MW driver for photofission
- The baseline is 1.3 GHz & 2K



Motivation for a 1.3GHz program at TRIUMF

- ELINAC
- International collaborations
 - ILC, SPL, VECC...
- Entrepreneurial partnership
 - PAVAC, Canadian company based in Richmond, specialized in Electron Beam welding
- Student program
 - Fundamental studies (High Field Q-slope, High Q quest...)



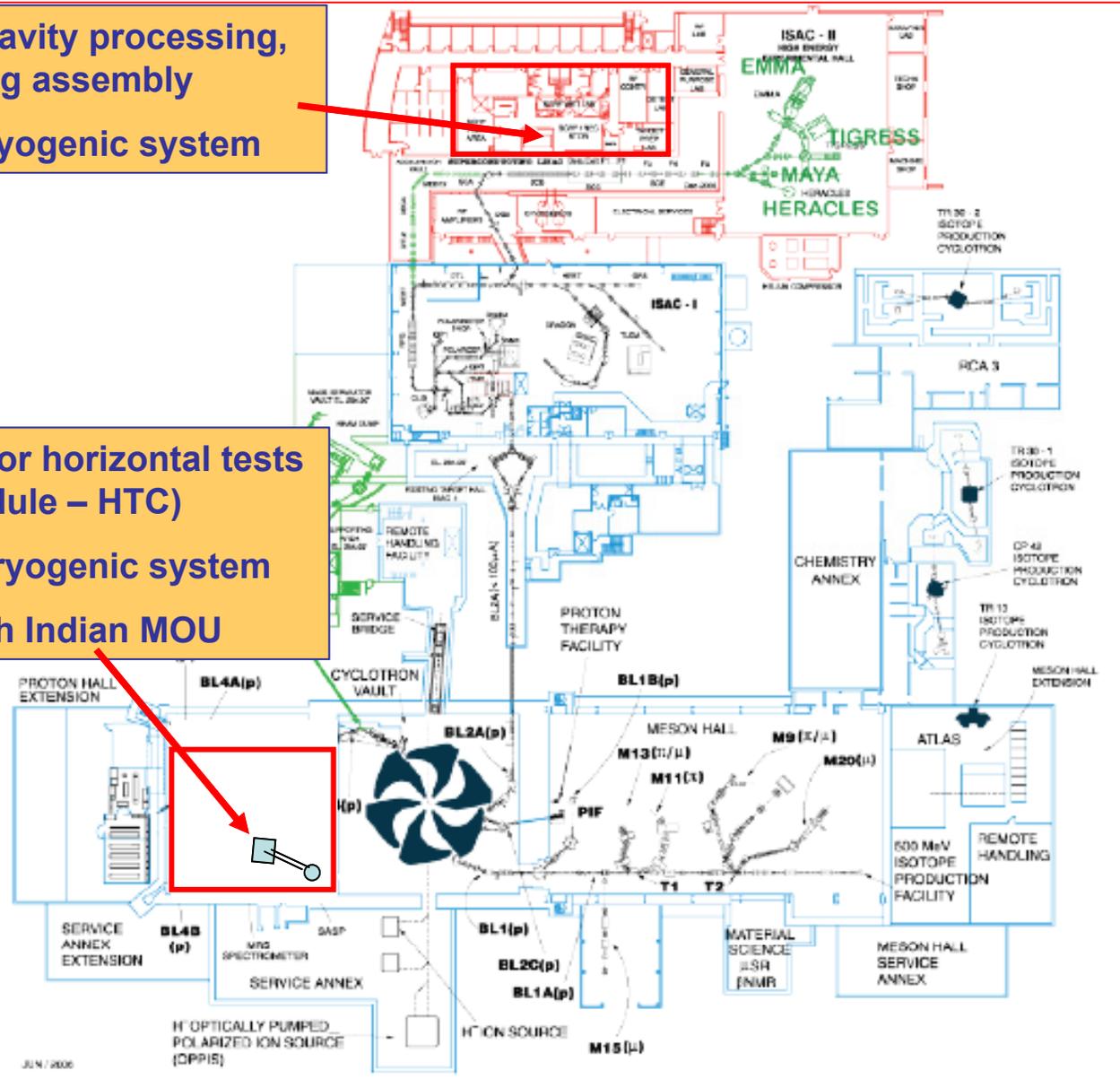
Project overview

ISAC-II Clean room for cavity processing, vertical testing and string assembly

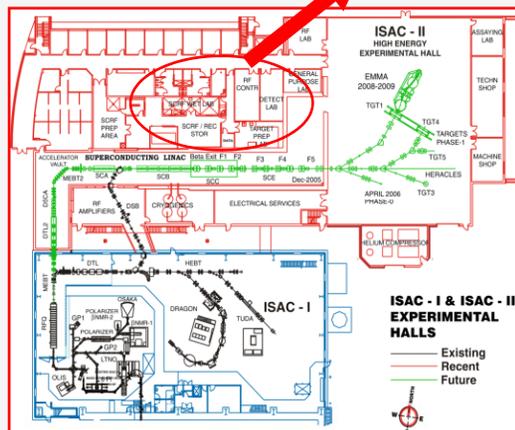
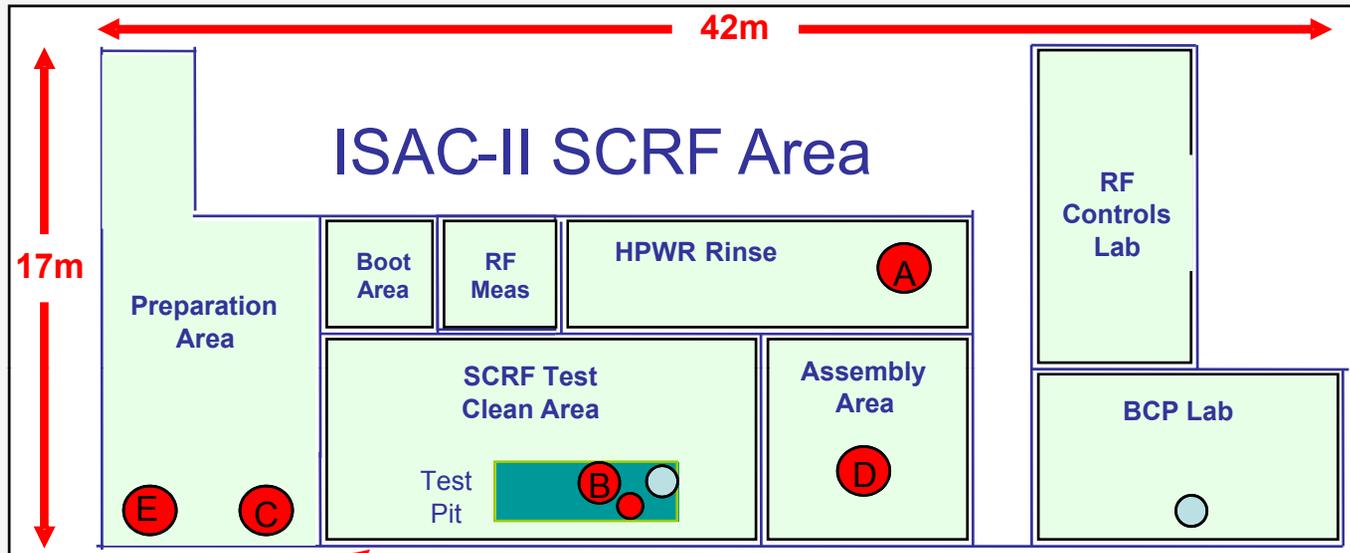
- Coupled with ISAC-II cryogenic system

E-Linac assembly area for horizontal tests (horizontal test cryomodule – HTC)

- Coupled with e-Linac cryogenic system
- HTC brought ahead with Indian MOU



1.3GHz upgrade in existing SCRF area



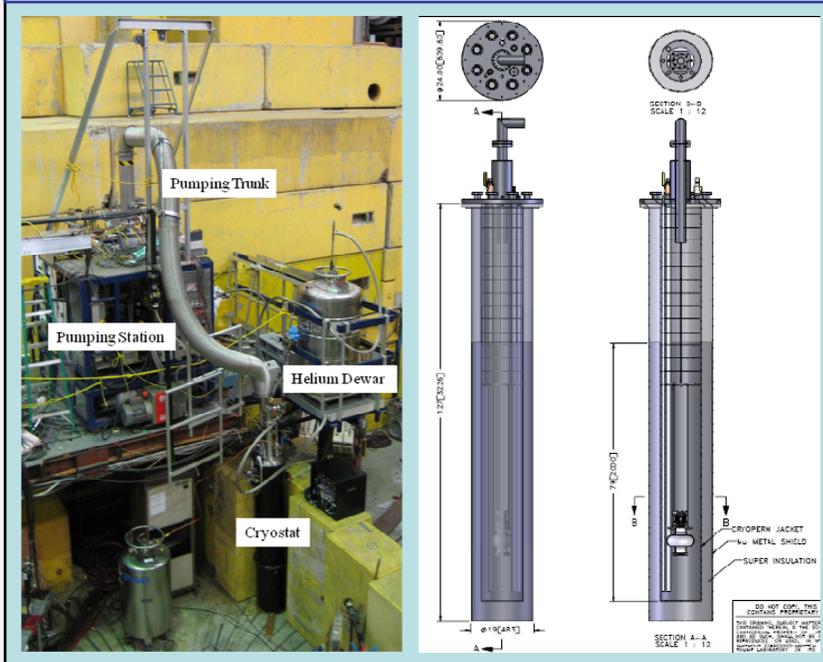
ISAC-II SCRF test and assembly areas

- A. Add a vertical HPWR rinse station
- B. Add a nine-cell vertical test cryostat
- C. Add a cavity tuning apparatus
- D. Add a string assembly frame
- E. Add RRR cryostat

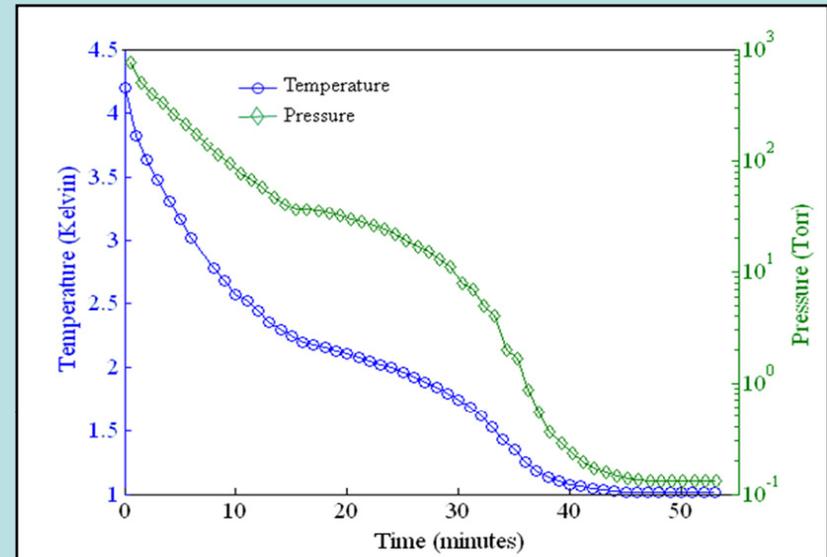
1.3GHz hardware development: cryostat

- Vacuum vessel and bath insert for single cell test cryostat in hand
- Pumps for 2K tested
- top plate assembly for initial single cell tests almost complete
- Modification for nine cell tests next year

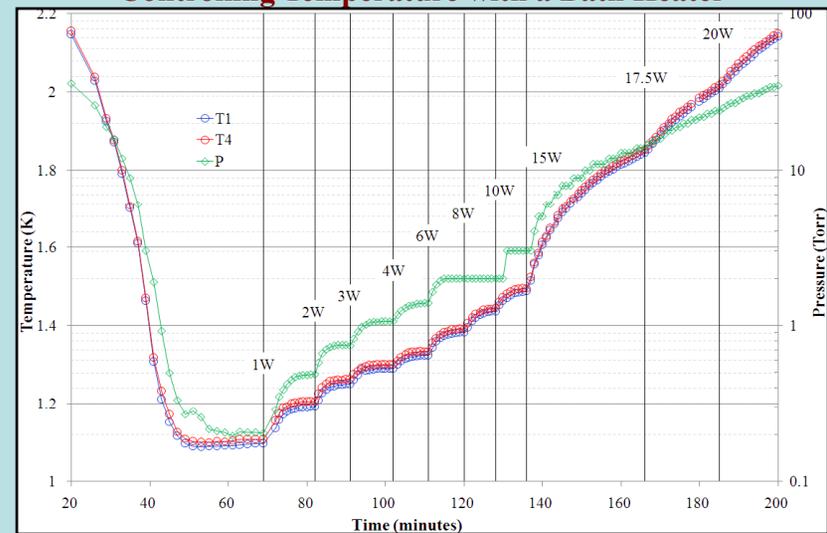
2K Cryostat Test



Pressure and Temperature Curves during Cryostat Pumpdown

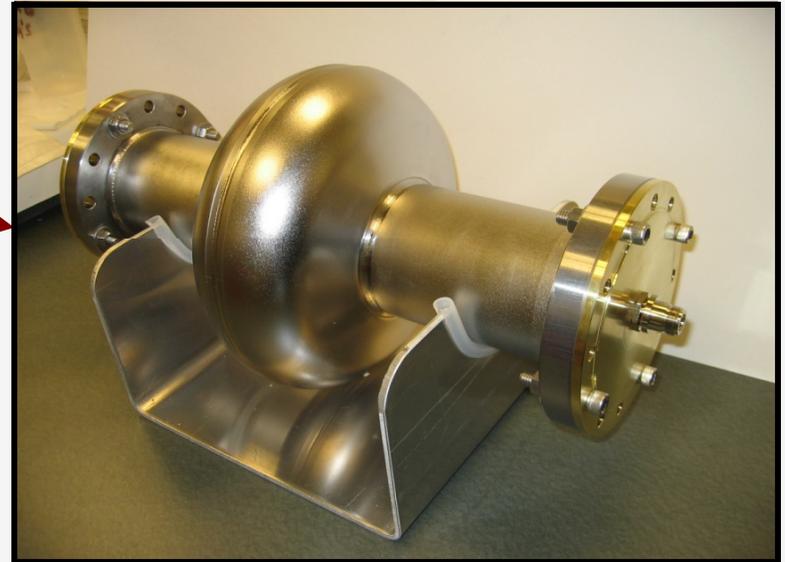


Controlling Temperature with a Bath Heater



Towards 1.3GHz: 2008-09 developments

- Begin 1.3GHz cavity testing program in ISAC-II clean room
 - One single cell sourced from Fermilab
 - Bath cryostat in preparation
 - Sub-atmospheric pump for 2K operation sourced and tested
 - Will develop LLRF in house
- Begin cavity fabrication at PAVAC with processing at TRIUMF
 - Fabrication dies sourced from Fermilab
 - Goal:
 - Two single cell cavities in the next six months
 - One nine-cell cavity by the end of 2009



2008-09 developments plan

