

Operations at TRIUMF

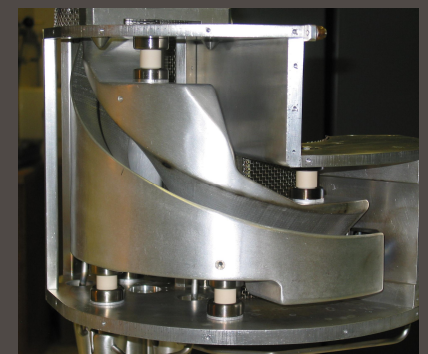
How we do Business

Workshop On Accelerator Operations 2012

Eric Chapman 520MeV Operations TRIUMF

Accelerating Science for Canada
Un accélérateur de la démarche scientifique canadienne

Owned and operated as a joint venture by a consortium of Canadian universities via a contribution through the National Research Council Canada
Propriété d'un consortium d'universités canadiennes, géré en co-entreprise à partir d'une contribution administrée par le Conseil national de recherches Canada



- **Where are we?**
 - Consortium of Canadian Universities
 - TRI University Meson Facility
 - Partners with MDS Nordion
 - Located on UBC campus Vancouver, BC
 - Total staff of ~400
- **Financing**
 - National Research Council of Canada
 - 5 year plans approved by federal government of Canada
 - Additional from grants and private revenue

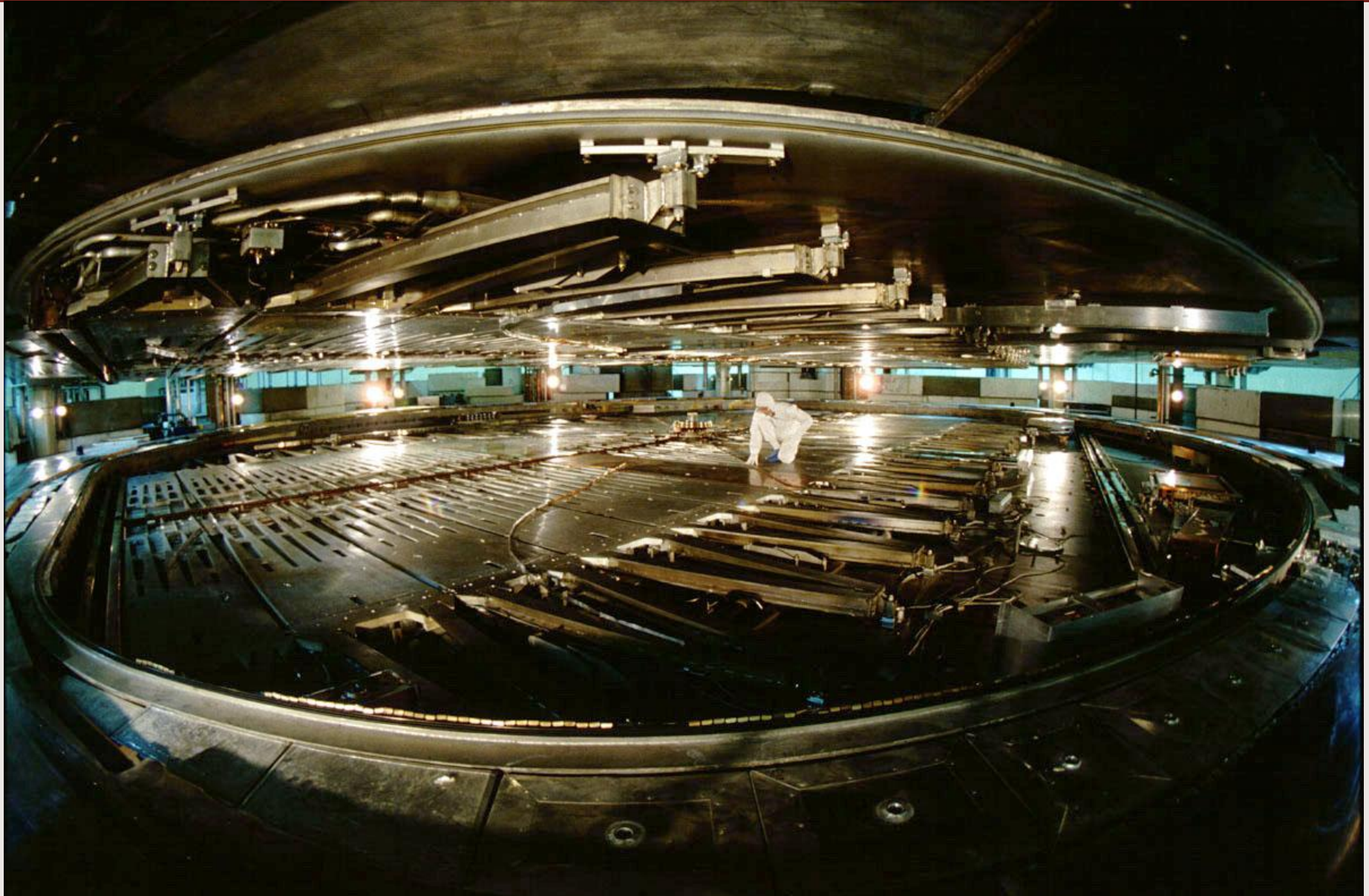
Arial View of TRIUMF



- **Cyclotron Operations**
 - 520MeV Cyclotron, 200-250uA in high current mode
 - 300kV ion source
 - Soon to be added photo fission E-LINAC
- **ISAC Operations**
 - ISAC I Drift tube LINAC, 1.5MeV/u
 - ISAC II Superconducting LINAC, 20MeV/u
 - 8 cryo modules housing 40 SC RF cavities

TR-13 Cyclotron for PET, and 2 TR-30 Cyclotrons in Nordion

520 MeV Cyclotron



ISAC II Superconducting LINAC



- **Cyclotron**
 - 300kV injection line
 - BL1A, 483MeV, 200uA, Meson production
 - BL1B, 483MeV, NIF, ~400counts
 - BL2A, 480MeV, 100uA, ISAC spallation target(s)
 - BL2C4, 100MeV, 80uA, soon 110MeV, 100uA
 - BL2C1, 70MeV-116MeV, PIF, 10nA
 - BL4, soon to be '4N', 480MeV, 100uA
- **ISAC**
 - Secondary (R)IB beamlines to TUDA, DRAGON, 8Pi, EMMA & TITAN
 - ISAC II Superconducting LINAC, 20nA limit to EMMA and TITAN

Operations Staffing and Shifts

DAY OF THE WEEK ----- SHIFT & TIMES	FSSM	TWT	FSSM	TWT	FSSM	TWT	FSSM	TWT	FSSM	TWT
NIGHT 23:00 - 07:15	C	D	E	A	B	C	D	E	A	B
DAY 07:00 - 15:00	A	B	C	D	E	A	B	C	D	E
EVENING 14:45 - 23:15	E	A	B	C	D	E	A	B	C	D

- Cyclotron Operations

- 5 shifts of 3 operators per shift (min of 2)
- One Supervisor per shift
- 3, 8 hour shifts per day starting 07:00 15:00 and 23:00
- Main Control Room manned 24hrs, 365 days a year
- Shuffle semi-annually
- Weeks split into 4,3 with 35 day rotation

Operations Staffing and Shifts

- ISAC Operations
 - 5 shifts of 2 operators per shift (min of 1)
 - 3, 8 hour shifts per day
 - Weeks split into 2,2,3, Starting on Monday
 - Off shift during Shutdown
 - 10 week rotation
 - Supervises beam delivery in ISAC
 - LINAC operations
 - RIB tuning

Main Control Room



- OpenVMS 8.3-1H1, X Windows environment
- Proven reliable, fast and secure
- Dedicated screens yield reproducible ergonomics

ISAC Control Room



- More common EPICS interface
- Linux based environment

- Cyclotron 2011 availability achieved 93.7%. Goal >90%
- ISAC Rare Isotope Beam delivery:
- 2011 RIB hrs projected: ~2550 (successful year)
- 2010 RIB hrs: 1730





Canada's national laboratory for particle and nuclear physics
Laboratoire national canadien pour la recherche en physique nucléaire
et en physique des particules

Thank you!

Merci

TRIUMF: Alberta | British Columbia |
Calgary | Carleton | Guelph | Manitoba |
McMaster | Montréal | Northern British
Columbia | Queen's Regina | Saint Mary's |
Simon Fraser | Toronto Victoria | Winnipeg
| York



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