

TRIUMF and the University of Victoria

Joint meeting of Operations Committee
and the Board of Management
June 28, 2002

- Overview of Victoria particle physics group
- Importance of TRIUMF to researchers in Victoria
- Future plans
- Input to TRIUMF 5-year plan

Scientific interests of the Victoria **particle physics** group

1990

- **OPAL experiment at LEP and LEP2 (1991-2002)**
 - precise determination of electroweak parameters, precision tests of electroweak theory
 - most sensitive search to date for Higgs Boson
- **High energy frontier at ATLAS (1992-2015)**
 - probe origin of mass (Higgs...)
 - search for new phenomena (extra dimensions...)
- **Precision frontier at BaBar (1995-2008)**
 - matter-antimatter (CP) symmetry violation
 - rare decays to probe new physics
- **Preparing for the next linear collider (2002-?)**
 - precise studies of Higgs couplings, unravel source of new phenomena

2000

2010

Grant eligible scientists

 new D. Karlen (R. M. Pearce Chair, Linear Collider R&D)

- R. Keeler (Director of IPP, ATLAS, OPAL)
- R. Kowalewski (BaBar)
- M. Lefebvre (ATLAS)
- M. Roney (BaBar)
- C. Picciotto (theorist)

 new M. Pospelov (theorist)

- R. McPherson (IPP scientist, OPAL, ATLAS)
- R. Sobie (IPP scientist, ATLAS, Computing)
- A. Astbury (Emeritus, ATLAS)
- G. Beer (Emeritus, DEAR, Finuda)
- A. Olin (TRIUMF)

Research associates and graduate students

- P. Poffenberger
- M. Fincke-Keeler
- N. Kanaya
- A. Agarwal
- S. Banerjee
- J. Van Uytven

- L. Kormos
- I. Bailey
- P. Jackson
- D. Fortin
- C. Brown
- C. Bird
- T. Ince
- I. Nugent
- K. Hamano
- T. Starke
- J. Yun

Ph.D.

M.Sc.

+ \approx 4 undergraduates/year

Recent Ph.D. graduates

- B. Vachon (2002) – [NSERC PDF](#)
- M. Dobbs (2002) – [Owen Chamberlain PDF](#) at the Lawrence Berkeley Laboratory
- K. Graham (2001) – Queens University RA
- I. Lawson (2000) – University of Guelph RA
- D. O’Neil (1999) – Michigan State RA, now [SFU faculty](#)
- S. Robertson* (1999) – [PDF at SLAC](#)

* Awarded Governor General’s gold medal for the best Ph.D. thesis at Victoria. This award has been given to particle physics students twice in the last 10 years.

TRIUMF personnel at Victoria

Target design group (under E. Blackmore):

- A. Dowling (engineer)
- R. Langstaff (senior designer)
- M. Lenckowski (designer)
- P. Birney (technologist)
- L. Charron (secretary)



In addition to work on engineering for TRIUMF, these staff members provide critical infrastructure support for the Victoria particle physics group.

Facilities in Victoria

- Machine shop
 - 3 machinists
- Electronics shop
 - only for small jobs
- Quality laboratory space
 - ATLAS feedthrough production now (photo)
 - Linear Collider soon
- Linux cluster (~50 cpu, 2.4 TB disk and growing) for data analysis and Monte Carlo production
- Central UVic computing facilities
 - Minerva symmetric multiprocessing supercomputer
 - new 400 TB storage facility in RFP stage
- GRID Canada testbed site (the other is NRC-Ottawa)

Cryogenic Feedthrough Production

4.3M\$ project

44 units produced of which 29 at CERN and officially received. **Production expected to end in August or September 2002.**



vacuum cable installation



final cold tests

Importance of TRIUMF facilities to projects involving Victoria

- OPAL
 - TRIUMF scientist developed Si μ -vertex detector
 - BaBar
 - Drift chamber built at TRIUMF (1997-98) (photo)
 - ATLAS
 - HEC construction at TRIUMF
 - Accelerator contributions to Large Hadron Collider
 - Linear Collider detector development and eventual accelerator contributions
 - TRIUMF theory centre
 - TRIUMF subatomic computing centre
- } We strongly support these initiatives

BaBar

TRIUMF Clean room
– preparing to string

Drift

Chamber

Installation into
BaBar detector

TRIUMF Clean room
– stringing completed



University of Victoria Plans

Physics department:

- Committed to ATLAS and BaBar
- New effort on Linear Collider
- Interest in long baseline neutrino physics
- Emeritus faculty does exotic atom research (at Daphne)

One new Victoria hire in condensed matter physics
B.C. Choi – magnetodynamics, fast microscopy)

Second position in negotiation. Involvement with TRIUMF programme not yet clear.

Other Victoria-TRIUMF connections

- **Vancouver Island Clinic (B.C. Cancer Agency)**
researchers have UVic adjunct status
 - A. Truman is a participant in CFI funded detector development facility at TRIUMF (Bryman et al.)
 - LS 51 Auger Therapy for Prostate Cancer C. Ludgate and collaborators
 - LS 43 Positron Emission Mamography (A. Truman and collaborators)
- **UVic Centre of Environmental Health**
 - LI-2/99 Modelling Genetic Risk for Ionizing Radiation Exposure in Space, J. de Boer
- **Electrical Engineering**
 - development of GaAs CCDs, H. Kwok

Input to 5-year plan

The major focus at Victoria is particle physics;
IPP is the vehicle for input into the TRIUMF 5YP

Victoria involved in ATLAS,
BaBar, LC detector develop-
ment; Interested in long
baseline neutrino physics

Using TRIUMF
accelerator expertise
in international
projects is crucial

Support enlargement and renewal of TRIUMF
theory group

Support subatomic computing centre at TRIUMF