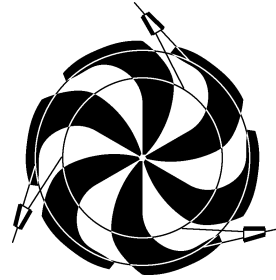


TRIUMF



ANNUAL REPORT SCIENTIFIC ACTIVITIES 1998

CANADA'S NATIONAL MESON FACILITY
OPERATED AS A JOINT VENTURE BY:

MEMBERS:

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UNIVERSITY OF VICTORIA
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UNIVERSITY OF TORONTO
UNIVERSITY OF REGINA
CARLETON UNIVERSITY
QUEEN'S UNIVERSITY

UNDER A CONTRIBUTION FROM THE
NATIONAL RESEARCH COUNCIL OF CANADA

APRIL 1999

The contributions on individual experiments in this report are outlines intended to demonstrate the extent of scientific activity at TRIUMF during the past year. The outlines are not publications and often contain preliminary results not intended, or not yet ready, for publication. Material from these reports should not be reproduced or quoted without permission from the authors.

CONFERENCES, WORKSHOPS AND MEETINGS

1998 WESTERN REGIONAL NUCLEAR AND PARTICLE PHYSICS CONFERENCE

The Western Regional Nuclear and Particle Physics Conference was held February 13–15 at the traditional location of Lake Louise, Alberta. This year the conference was organized by the University of Manitoba and TRIUMF. The organizing committee consisted of Des Ramsay (chair), Larry Lee, Kumar Sharma, and Elly Driessen (coordinator). Normally the conference is able to obtain funding from both TUEC and TRIUMF, but this year no money was available from either of these sources. We were very grateful to obtain some University of Manitoba funding from the Department of Subatomic Physics, the Dean of Science, and the Office of Research and Administration. Together with the registration fees, the conference was able to meet expenses, but we were unable to offer a graduate student subsidy this year.

Attendance was low this year with only 19 participants. While we would have liked to see more participants, particularly graduate students, the small size of the group fostered interesting and lively discussion.

The eclectic program included a wide variety of topics. The invited talks were:

- “Exploring the Strangeness Content of the Nucleon via Parity Violation at Jefferson Lab”, Lawrence Lee, University of Manitoba
- “Pion-Nucleon Physics and the Chiral Symmetry of Low Energy QCD”, Marcello Pavan, MIT
- “Nuclear Pion Absorption Studies with the CHAOS Detector and TRIUMF”, Roman Tacik, University of Regina/TRIUMF
- “Application of Low Energy Spin Polarized Radioactive Beams at ISAC to Condensed Matter Physics”, Rob Kiefl, UBC/TRIUMF
- “Progress at the CPT and the Radioactive Beam Facility at Argonne”, Guy Savard, Argonne National Laboratory
- “Studies of Explosive Nucleosynthesis using the DRAGON at ISAC”, John M. D’Auria, Simon Fraser University

- “Supersymmetry and its Consequences”, John Ng, TRIUMF
- “Recent Results from the HERMES Experiment”, Jinsong Ouyang, TRIUMF

The calibre of the excellent student papers was such that the judges declared a three-way tie for first place. The prize was shared by

- Araz Hamian, University of Manitoba, “The TRIUMF Parity Violation Experiment”.
- Michael Landry, University of Manitoba, “Search for Ξ - Hypernuclei”.
- Richard Lange, Simon Fraser University, “Preparation of a Radioactive ^{44}Ti Target”.

As usual, sessions were held in the mornings and evenings, leaving the afternoons free. Fortunately, we were blessed with excellent sunny weather for the delegates to enjoy ice-climbing, hiking, downhill and cross-country skiing, and skating.

At the end of the conference a meeting was held to discuss the future of the Western Regional. Most people agreed that the scope should be kept broad, not only because this is intrinsically interesting, but because the number of graduate students in ‘straight’ nuclear physics is declining. A variety of reasons for declining participation were identified, primarily lack of money, conflicting meetings and experimental runs, and reduced numbers of graduate students, and not aggressive enough pre-conference promotion. To address this last point the 1999 organizers plan to appoint a local representative at each institution who will be responsible for maximizing the participation of his or her immediate colleagues. TUEC will also try to obtain money to support graduate students.

Thanks to all the participants in the 1998 conference and we hope to see you all again in 1999, each with several graduate students in tow!

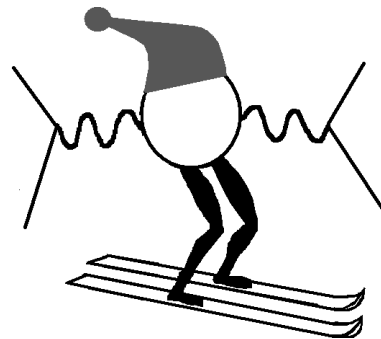


Fig. 169. The 1998 WRNPPC logo.

WORKSHOP ON ACCELERATOR OPERATIONS

The second Workshop on Accelerator Operations (WAO'98) was held May 18–22 at the University of British Columbia in Vancouver, Canada. Ronald Lauz conceived the workshop series and organized the first one at the Thomas Jefferson National Accelerator Facility, Virginia, USA in 1996. The WAO workshops are concerned with the practical day to day issues of running accelerators. Example topics include staffing, training, documentation, commissioning, safety and maintenance.

The first workshop focused on “How We Do Business”; the second Program Committee used “Maintenance” and “Training” as major themes for two full days of presentations. Other sessions covered the topics of “Control Room Layout” and “Scheduling”. Poster sessions focusing on each of the above topics were held. A “How We Do Business” poster session was also included. The issues of “Problems at Small Labs” were discussed. Two evening sessions were added to cover “The DOE Accelerator Order” and “Web Based Logbooks and Other Web Tools”.

Three invited speakers from outside of the accelerator community gave presentations. Ian Graham gave a talk on “How the BC Transit Skytrain Control Centre Does Business”, Lynn Duncan presented “Eight Myths of Team Building” and Cary Meyers spoke about the “Nav Canada Training Program for Air Traffic Controllers”.

An opening reception was held on Monday evening before the Workshop began. On Wednesday afternoon we toured the TRIUMF site. Highlights included the brand new ISAC radioactive beams building and the MDS Nordion facility. Later that evening cable cars carried us up to an evening banquet on top of Grouse Mountain. The restaurant's large windows presented a magnificent view of downtown Vancouver as the sun sank into the ocean. Thanks to El Nino, exceptionally good weather prevailed during the workshop.

The industrial displays highlighted technologies particularly relevant to the operations environment.

With about 150 registrants, WAO'98 more than doubled the attendance of the first workshop. The success of the event is due mainly to the shared energy and contributions of the participants. Corporate sponsorship was generously provided by MDS Nordion, Ebco Technologies, Dehnel Consulting, Philtek Electronics and Accelsoft Inc. Program Committee support was provided by CERN, LANL, SLAC, TJNAF, and TRIUMF.

The idea to host WAO'98 sprang from a badge room discussion between Fred Bach and Rick Bloemhard. Gerardo Dutto, Philip Gardner, Dave

Pearce and Nigel Stevenson provided crucial early support. Unfortunately there is not enough room to mention all of the TRIUMF staff members and their contributions. Major responsibilities taken on by the organizers include:

Fred Bach – workshop secretary, Web site, communications, on-line registrations

Rick Bloemhard – program committee, poster, Web site, proceedings editor

Elly Driessen – workshop coordinator, registration, transportation, banquet, TRIUMF tour

Shirley Reeve – treasurer, budget

Dave Pearce – program committee, workshop office equipment

Jane Richards – registration database

Nigel Stevenson – program committee, budget

Jana Thomson – presenters submissions, publishing

A soft cover book of the proceedings is being published. CERN will host the next WAO workshop in January, 2001 (tentatively).

INTERNATIONAL CONFERENCE ON HIGH ENERGY PHYSICS

The twenty-ninth International Conference on High Energy Physics was held in Vancouver from July 23 to July 29. Some 882 delegates from 43 countries attended the conference together with 251 accompanying persons. The conference followed the traditional format of three days of parallel sessions, organized at various locations on the campus of the University of British Columbia. These were followed by three days of plenary talks, which took place in the Chan Centre for the Performing Arts on the UBC campus. Dr. Martha Piper, President of UBC, formally opened the conference.

The meeting was organized by the TRIUMF laboratory, and this was the first occasion that the “Rochester Conference” had taken place in Canada. The laboratory followed the recent tradition of making extensive use of the World Wide Web for communication.

The conference was held under the aegis of the International Union of Pure and Applied Physics, C11 commission and we are grateful for their sponsorship. We also received financial support from the British Columbia Information, Science and Technology Agency, the University of British Columbia, ALSTOM, MDS Nordion, Sun Rise Engineering, Talvan Machine Shop and UMA.

The social program included a buffet dinner at TRIUMF with a tour of the facility. Saturday saw a salmon barbecue and fireworks with options to attend Shakespeare's *As You Like It* at the Bard on the Beach, or

a visit to the Pacific Space Centre. The vigour and vitality of the delegates were very much in evidence by the oversubscribed hikes on Sunday. There was a slight break from the classical tradition, with the staging of a jazz concert by the Michael Kaeshammer Trio in the Chan Centre. Dr. Rocky Kolb provided an entertaining and very educational public lecture entitled *The Earliest Moments of the Big Bang* in which he endeavoured to extol the benefits of “Primordial Soup”.

TRIUMF SUMMER INSTITUTE

The tenth annual TRIUMF Summer Institute was held at TRIUMF August 10 to 21. This year’s Institute focused on three related topics roughly defining an important new area of science: trapping techniques and the impact of these techniques on fundamental symmetries and on nuclear physics. Special emphasis was placed on the use of radioactive or exotic ion beams and related non-accelerator experiments involving complementary symmetry tests. Very new and elegant experimental techniques are involved. The symmetry issues are crucial for tests of the standard model of quarks, leptons and the unified forces. The aim of this Institute was to provide a detailed overview of this whole new field.

The lecturers in 1998 were:

- N. Fortson, University of Washington, *Atomic PNC and EDM Experiments*
- S. Freedman, Berkeley, *Tests of Fundamental Symmetries*
- J. Behr, SFU/TRIUMF, *TRIUMF’s Neutral Atom Trapping Project*
- M. Kasevich, Yale University, *Precision Measurements with Laser Cooled Atoms*
- L.A. Orozco, SUNY at Stony Brook, *Studies of trapped radioactive atoms*
- I.S. Towner, Queen’s University, *The Weak Interaction*
- G. Savard, Argonne National Laboratory, *Ion Traps*

The organizers of the Summer Institute were B.K. Jennings, K.P. Jackson and E.W. Vogt.

TRIUMF USERS’ GROUP ANNUAL GENERAL MEETING

Following a poll of the TRIUMF users, the TRIUMF Users’ Group AGM was moved from December to June to coincide with the only subatomic EEC held in 1998. The AGM was held on June 30 in the TRIUMF Auditorium.

L. Buchmann	Introduction
J.-M. Poutissou	TRIUMF Director’s Report and the Next 5 Year Plan
P. Kitching	The LRPC 5 Year Plan Report
	Open Discussion on the 5 Year Plan
M. Vetterli	NSERC Report
P. Schmor	ISAC Update
L. Buchmann	Open Issues Regarding the TRIUMF Users’ Group
	Otto Häusser Memorial Session
K.P. Jackson	Opening Thoughts
G. Cates	Physics with ^3He :
(Princeton U.)	from Muons to MRI
A. McDonald	Status of SNO
(Queen’s U.)	
M. Vetterli	Otto Häusser’s Years at TRIUMF

The morning session began with J.-M. Poutissou presenting the Director’s report and outlining the next five year plan in the absence of A. Astbury, who was in Ottawa attending an Agency Committee on TRIUMF meeting. P. Kitching discussed the LRPC 5 Year Plan Report which had been published in June following an LRPC meeting in May. Prior to the LRPC meeting, TUEC had sponsored a series of seminars by proponents of new facilities for consideration in the formulation of the 2000–2005 five year plan. An open discussion followed in which the users raised various issues contained in the LRPC report and the draft five year plan. M. Vetterli gave a report on the NSERC subatomic physics grant selection committee which covered the reallocation exercise, the funding envelope, the committee membership, and the upcoming competition. P. Schmor gave an overview of the present status of ISAC. L. Buchmann led a discussion, prompted by comments from TRIUMF Management, concerning the role of the TRIUMF Users’ Group and its self image. The recent efforts of TUEC on behalf of the TRIUMF Users’ Group were outlined. TUEC proposed to use the new reconfirmation of membership every three years as a method of maintaining a group which is truly interested in TRIUMF. In addition, a survey of members’ interests will enable TUEC to direct relevant information to sub groups rather than always to the complete membership. In that way the TRIUMF Users’ Group would be more relevant to the diverse groups that use TRIUMF, and therefore it should attract more active participants.

The afternoon was dedicated to a memorial session for the late Otto Häusser. K.P. Jackson and M. Vetterli, TRIUMF/SFU physicists who had worked with

Otto at TRIUMF, were joined by G. Cates of Princeton University and A. McDonald of Queen's University to describe Otto's influence on their careers and his contributions to physics.

The AGM ended with a reception in the hot sunshine in the TRIUMF courtyard.

TUEC membership for 1998

L. Buchmann	TRIUMF	<i>Chair</i>
J.M. D'Auria	SFU	<i>Chair-elect</i>
M.D. Hasinoff	UBC	<i>Past-chair</i>
S.R. Kreitzman	TRIUMF	1997/98
S. Yen	TRIUMF	1997/98
A. Konaka	TRIUMF	1998/99
N. Rodning	U. Alberta	1998/99
M. La Brooy	TRIUMF	<i>Liaison Officer</i>