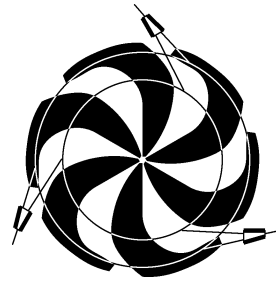


TRIUMF



ANNUAL REPORT SCIENTIFIC ACTIVITIES 2001

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**CANADA'S NATIONAL LABORATORY
FOR PARTICLE AND NUCLEAR PHYSICS**

OPERATED AS A JOINT VENTURE

MEMBERS:

THE UNIVERSITY OF ALBERTA
THE UNIVERSITY OF BRITISH COLUMBIA
CARLETON UNIVERSITY
SIMON FRASER UNIVERSITY
THE UNIVERSITY OF VICTORIA

ASSOCIATE MEMBERS:

THE UNIVERSITY OF MANITOBA
McMASTER UNIVERSITY
L'UNIVERSITÉ DE MONTRÉAL
QUEEN'S UNIVERSITY
THE UNIVERSITY OF REGINA
THE UNIVERSITY OF TORONTO

UNDER A CONTRIBUTION FROM THE
NATIONAL RESEARCH COUNCIL OF CANADA

OCTOBER 2002

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.

ORGANIZATION

Board of Management

The Board of Management of TRIUMF manages the business of the facility and has equal representation from each of the five member universities. At the end of 2001 the Board comprised:

University of Alberta	Dr. W.J. McDonald Dr. A. Noujaim	Chairman
University of British Columbia	Dr. I. Samarasekera Dr. B. Turrell	
Carleton University	Dr. F. Hamdullahpur Dr. P.J.S. Watson	
Simon Fraser University	Dr. W.S. Davidson Dr. C.H.W. Jones	
University of Victoria	Dr. V. Paetkau Dr. M. Taylor	
Private Sector	Ms. G. Gabel Dr. H. Ing	Environmental Sensors Inc. Bubble Technologies Inc.

Towards the end of 1987, Board membership was expanded in anticipation of a broadening of the TRIUMF joint venture to include a more national representation of Canadian universities long associated with the TRIUMF experimental program. The University of Manitoba and Université de Montréal became associate members, and the University of Toronto joined as an observer. At the end of 1988, University of Toronto's status changed from that of observer to associate member. In March, 1989 the University of Regina became an associate member. In December, 1998 Carleton University and Queen's University became associate members. In March, 2000 Carleton University's status changed from that of associate member to full member. In 2001 two private sector positions were added. In October, 2001 McMaster University became an associate member. Associate membership at year-end:

Associate members:	Dr. W.T.H. van Oers	University of Manitoba
	M G. Michaud	Université de Montréal
	Dr. A.B. McDonald	Queen's University
	Dr. K. Bergman	University of Regina
	Dr. R. Orr	University of Toronto
	Dr. A.J. Berlinsky	McMaster University
Non-voting members:	Dr. W. Davidson	National Research Council
	Dr. P. Sinervo	ACOT
	Dr. A. Shotter	Director, TRIUMF
	Dr. J.-M. Poutissou	Associate Director, TRIUMF
	Mr. J. Hanlon	TRIUMF Recording Secretary

The following changes occurred in Board membership during 2001: Ms. G. Gabel and Dr. H. Ing were elected as private sector representatives. Dr. K. Bergman replaced Dr. K. Denford as University of Regina member. Dr. R. Orr replaced Dr. P. Sinervo as University of Toronto member. Dr. A.J. Berlinsky joined as McMaster University member. Dr. W. Davidson replaced Ms. J. Verrett as NRC member. Dr. A. Shotter replaced Dr. A. Astbury as Director of TRIUMF. The Board met 4 times during the year.

Administration

Under the directorship of Dr. A. Shotter, TRIUMF personnel were grouped into divisions, with division heads as follows:

Division Head, Science Division	J.-M. Poutissou
Division Head, Accelerator Technology Division	E.W. Blackmore
Division Head, Cyclotron Operations Division	G. Dutto
Division Head, Technology Transfer Division	P.L. Gardner
Division Head, ISAC	P.W. Schmor
Division Head, Administration Division	A. Shotter

Operating Committee

The TRIUMF Operating Committee is responsible for the operation of the facility. It reports to the Board of Management through its chairman, the Director, Dr. A. Shotter. The Operating Committee consists of one voting member from each of the five universities, two voting members representing the interests of the Users, and one representing TRIUMF staff. The Associate Director is a non-voting member. Members of the committee (alternate members in parentheses) at the end of 2001 were:

Dr. A. Shotter	Chairman	Director	
Dr. J.-M. Poutissou	(<i>ex officio</i>)	Associate Director	
Dr. J. Pinfold		University of Alberta	(Dr. N. Rodning)
Dr. G. Oakham		Carleton University	(Dr. D. Karlen)
Dr. K.P. Jackson		Simon Fraser University	(Dr. J.M. D'Auria)
Dr. R. Kowalewski		University of Victoria	(Dr. M. Lefebvre)
Dr. D. Bryman		University of British Columbia	(Dr. T. Mattison)
Dr. G. Luke		Users	(Dr. J. Sonier)
Dr. G. Marshall		Users	(Dr. S. Yen)
Mr. R. Baartman		TRIUMF Employee Group	(Mr. K. Reiniger)
Mr. J. Hanlon	Recording Secretary	TRIUMF	
Dr. W. Davidson	(<i>ex officio</i>)	National Research Council	

Changes in 2001: Dr. A. Shotter replaced Dr. A. Astbury as Director. Dr. J. Pinfold replaced Dr. N. Rodning as University of Alberta member (Dr. Rodning replaced Dr. L.G. Greeniaus as alternate). Dr. K.P. Jackson replaced Dr. P. Percival as Simon Fraser University member, with Dr. J.M. D'Auria replacing Dr. Jackson as alternate. Dr. R. Kowalewski replaced Dr. R. Keeler as University of Victoria member, with Dr. M. Lefebvre replacing Dr. M. Roney as alternate. Dr. D. Bryman replaced Dr. C. Hearty as University of British Columbia member, with Dr. T. Mattison replacing Dr. M.D. Hasinoff as alternate. Dr. G. Luke replaced Dr. E. Mathie as one of the Users members, with Dr. J. Sonier replacing Dr. Luke as alternate. Mr. R. Baartman replaced Mr. K. Reiniger as TRIUMF Employee Group member (Mr. Reiniger remained as alternate). Dr. W. Davidson replaced Ms. J. Verrett as NRC member. The Operating Committee met 11 times in 2001.

NRC Advisory Committee on TRIUMF

Dr. P. Sinervo	Chairman	University of Toronto
Dr. W. Davidson	Secretary	National Research Council
Dr. J. Äystö		CERN
Dr. A.J. Berlinsky		McMaster University
Dr. R. Boyd		Ohio State University
Dr. A. Fenster		J.P. Robarts Research Institute
Dr. J. Guigné		Guigné International Ltd.
Dr. G. Kalmus		Rutherford Appleton Laboratory
Dr. W. Nazarewicz		University of Tennessee
Dr. J. Siegrist		University of California, Berkeley
Dr. P. Vincett		FairCopy Services Inc.
Dr. R. Keeler	(<i>ex officio</i>)	University of Victoria
Dr. W.J. McDonald	(<i>ex officio</i>)	University of Alberta
Dr. K.J. Ragan	(<i>ex officio</i>)	McGill University

Changes in 2001: Dr. W. Davidson replaced Dr. D. Santry as secretary. Drs. W. Nazarewicz, J. Äystö and J. Siegrist replaced Drs. P.-G. Hansen, R. Taylor and Prof. V. Soergel. Drs. R. Keeler, W.J. McDonald and K.J. Ragan replaced Drs. R. Carnegie, C.H.W. Jones and R. Keeler, respectively, as *ex officio* members.

Agency Committee on TRIUMF

Dr. A.J. Carty	Chairman	President, National Research Council
Dr. T. Brzustowski		President, Natural Sciences and Engineering Research Council
Mr. V.P. Harder		Deputy Minister, Industry Canada
Dr. W. Davidson	Secretary	National Research Council

Changes in 2001: Mr. V.P. Harder joined the committee. Dr. W. Davidson replaced Ms. J. Verrett as secretary.

TRIUMF Safety Management Committee

Dr. A. Shotter	Director, TRIUMF
Dr. J.-M. Poutissou	Associate Director/Head, Science Division
Dr. E.W. Blackmore	Head, Accelerator Technology Division
Dr. G. Dutto	Head, Cyclotron Operations Division
Mr. P.L. Gardner	Head, Technology Transfer Division
Dr. P.W. Schmor	Head, ISAC Division
Mr. M. Stenning	Head, Operations Group
Mr. D. Preddy	TAPC Chairman
Mr. G. Wood	Industrial Safety Officer/TAPC
Mr. L. Moritz	Head, Environmental Health & Safety
Mr. J. Hanlon	Manager, Human Resources & Administrative Services
Dr. S. Zeisler	Head, Applied Technology Group
Mrs. K. Gildert	Recording Secretary

Changes in 2001: Dr. A. Shotter replaced Dr. A. Astbury as Director of TRIUMF. Mr. D. Preddy replaced Dr. M. Adam as TAPC chairman.

Experiments Evaluation Committees

Subatomic Committee:

Dr. I.S. Towner	Chairman	Queen's University
Dr. J.-M. Poutissou	Associate Director/ <i>(ex officio)</i>	TRIUMF
Dr. B. Jennings	Secretary	TRIUMF
Dr. H.-O. Meyer		Indiana University
Dr. A. Richter		Technische Universität Darmstadt
Dr. N. Rodning		TUEC Chairman/U. of Alberta/TRIUMF
Dr. B.M. Sherrill		NSCL/Michigan State University
Dr. F.K. Thielemann		Universität Basel
Dr. M.C.T. Wiescher		University of Notre Dame

Materials Science Committee:

Dr. I.K. Affleck	Chairman	Boston University
Dr. J.-M. Poutissou	Associate Director/ <i>(ex officio)</i>	TRIUMF
Dr. P.W. Percival	Secretary/ <i>(ex officio)</i>	SFU/TRIUMF
Dr. J.H. Brewer		TUEC Past Chairman/UBC
Dr. S.F.J. Cox		Rutherford Appleton Laboratory
Dr. B. Gaulin		McMaster University
Dr. S. Roorda		FOM Inst. for Atomic and Molecular Physics
Dr. G.A. Sawatzky		University of British Columbia
Dr. T.W. Swaddle		University of Calgary

In July, 1994 the Experiments Evaluation Committee was formally split into two committees representing subatomic physics and μ SR physics. In 2000 the μ SR Committee changed its name to the Materials Science Committee. Changes in membership during the year: on the Subatomic Committee, Dr. B. Jennings replaced Dr. H. Fearing as secretary. Dr. N. Rodning replaced Dr. J.M. D'Auria as TUEC chairman. Drs. W.C. Haxton and K. Langanke completed their terms. The committee welcomed Drs. B.M. Sherrill and F.K. Thielemann. On the Materials Science Committee, Dr. R.E. Wasylshen completed his term. The committee welcomed Dr. T.W. Swaddle.

Life Sciences Project Evaluation Committee

Dr. A. Fenster	Chairman	J.P. Robarts Research Institute
Dr. J.-M. Poutissou	Associate Director / (<i>ex officio</i>)	TRIUMF
Dr. L.P. Robertson	Secretary	University of Victoria
Dr. D.C. Price		University of California, San Francisco
Dr. R.L. Wahl		Johns Hopkins Medical Institute
Dr. J.E. van Lier		Université de Sherbrooke
Dr. J. Link		University of Washington
Dr. C.J. Thompson		Montreal Neurological Institute

Changes in 2001: Dr. A. Fenster replaced Dr. T. Lewellen as chairman. Dr. R. Finn completed his term. The committee welcomed Drs. J. Link and C.J. Thompson.