

Erich W. VOGT,

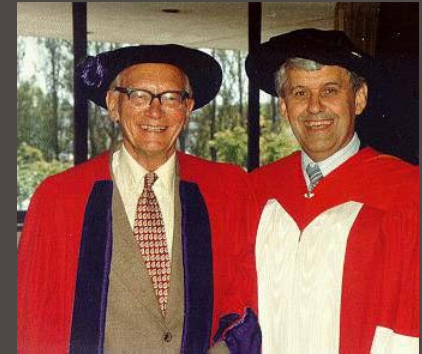
Outstanding Canadian Science Leader

(1929-2014)

Jean-Michel POUTISSOU
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



- Early education at U. Manitoba (1951(BSc)-1952(MSc))
- The Princeton years(PhD1955) under E. Wigner
- The Chalk River years (1955-1965)
- UBC and TRIUMF (1965-2014)
- The KAON area (1976-1993)

- **Erich's legacy;**
 - The educator
 - The leader
 - The international expert
 - The team captain

Leadership

- **Leadership is not about driving the train but about laying down the tracks**
- **Examples:**
 - TRIUMF initial funding and organization
 - TRIUMF as an international laboratory
 - TRIUMF as a multidisciplinary laboratory
 - TRIUMF and Technology transfer office
 - TRIUMF and Universities: expanding the consortium
 - KAON
 - Community reach :
 - Science world
 - BC science council
 - Vancouver institute

- At the 1960 Nuclear Physics conference in Kingston, Erich was determined that the proceedings would be issued in a timely manner.
- He asked that every speaker come to the meeting with a camera ready version of their presentation. The proceedings were published in record time (Participants received a truly " **cut, paste and copy**" version as they were leaving the meeting) and that procedure was used in many subsequent conferences.....*until internet, power point ,etc, returned us to year long proceedings deliveries!!!*

- I started my career in Nuclear Physics recommissioning the Chalk River EN tandem (much admired by Erich) as it moved to U de Montreal in 1967
- I arrived at UBC in 1972 as a U de Montreal post doctoral fellow to establish its rare decay program and started to build BI1A at TRIUMF the following year.
- I took the position of Research Scientist for UBC in 1978.
- 1988-1994: Erich appoints me as his deputy.
- As he travelled the world to rally support for KAON, he named me “the director in residence”.

The Chalk River years

- The Golden Area according to Erich:
 - Neutron lifetime (J. Robson)
 - Muon lifetime and rare decays(Hicks, Pontecorvo)
 - Solar neutrino search (Hanna, Pontecorvo)
 - High resolution Neutron capture Gamma studies
 - Triple axis neutron spectrometer (Brockhouse)
 - Fission fragment neutron emission (Milton, Fraser)

 - Tandem accelerator (Bromley, Gove, Litherland)
 - Li drifted germanium detector (Ewan, Fowler, Tavendale)
 - Nuclear Astrophysics (Al. Cameron)

Birth of Nuclear astrophysics

- Cameron published his papers on nucleosynthesis in 1957. Experts attribute the birth of the field of nuclear astrophysics to those papers, together with one by a group at Caltech led by William Fowler published the same year. Fowler, an experimentalist, won the Nobel Prize in 1983 for his work in the field, and in his Nobel Lecture credited the independent work of Cameron.
- ISAC is now one of the main centres for nuclear astrophysics

The Chalk River years

- In March 2000, Erich wrote a PIC feature article titled :

A century of Canadian Physics- Much to celebrate-

- *“A strong characteristic of CRNL was extraordinary intensity with which physics was pursued and the correspondingly strong personalities of the physicists involved”*

Nuclear Physics in the 60's in Canada

- Nuclear physics facilities in the 60's
 - McGill Cyclotron 1949
 - UBC Van de Graaff 1951
 - Queen's e synchrotron 1950
 - McMaster Reactor 1959
 - Alberta Van de Graaff 1962
 - Laval Van de Graaff 1963
 - Manitoba Cyclotron 1965
 - Saskatchewan Linac 1965
 - Queen's Van de Graaff 1966
 - Toronto Linac 1966
 - Ottawa-Carleton Dynamitron 1967
 - Montreal EN Tandem 1967 (from Chalk River)
 - McMaster Tandem 1969
- Many of the TRIUMF staff were educated in these centres.

The Chalk River years (end)

- *“The full blame... (for the termination of the nuclear physics program at CRNL) ..must be assigned to the lack of vision of AECL, which had forgotten the powerful role that fundamental science can play for its main mission of economic nuclear power. It was a failure of the system, of AECL management and of its prestigious Advisory Councils. It was the same lack of visionary leadership which led to the reduction of fundamental physics at NRC. (Game score Bureaucrats 2 Canada 0) “*

- Erich joined UBC in 1965
- Erich as a **teacher** at UBC (Phys 107) for 45 years earning teaching awards and high ratings from his students (5000 by some estimates).
- Erich was **VP academic** for faculty and student affairs (1975-1981)

- Erich co-chaired the initial TRIUMF project definition study. Wrote science case, edited proposal and got initial funding. (more about this from M.Craddock)
- **Chair** of the BOM 1974-1980
- Triumph's **directorship** 1981-1994

Erich as UBC VP faculty and student affairs

Erich recalled the major challenge he faced then when the Engineering students started a Pie in the face contest . He was asked to deal with the pie throwers who hit the University president.

He is remembered for supporting a University women affairs panel to deal specifically with women issues on campus.

He strongly supported excellence in teaching and research. He would not have considered the UBC present real estate campaign.

Erich was not a fanatic of University politics but more of a team player.

He molded TRIUMF to this taste.



The TRIUMF area

The great leap forward.

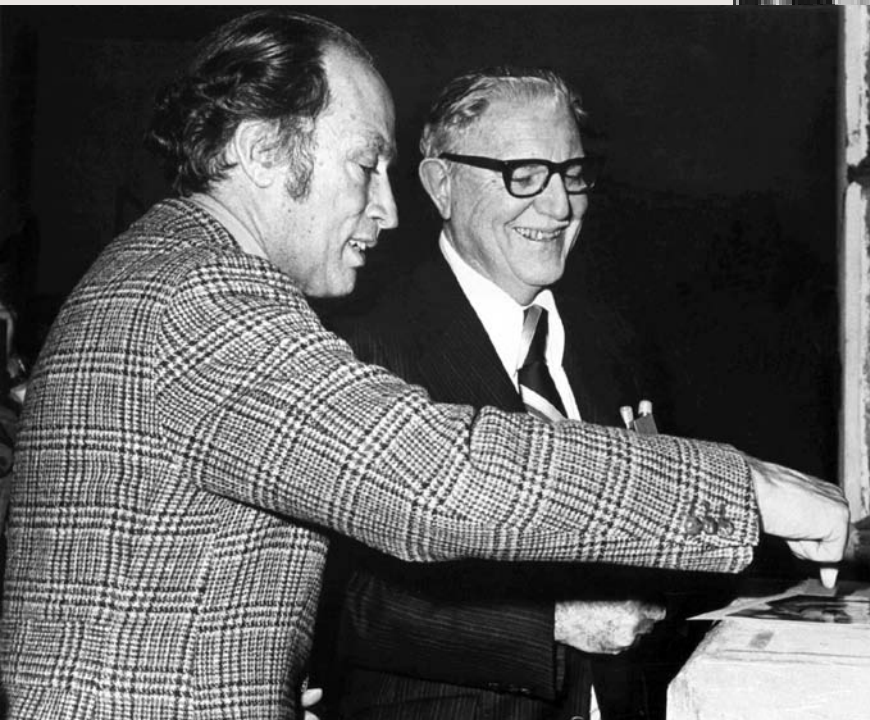
Erich's moved to UBC in 1965 and took on the challenge of replacing John Warren's 3MeV van de Graaff by a modern machine that Reg Richardson had just designed for UCLA but did not get funded in the USA.

Erich organised the campaign to get a project definition study funded, a proposal written and eventually a cheque from Ottawa. His great connections with Chalk River AECL senior management and government supporters were essential.



Erich at TRIUMF Opening

Note the attentive
observer on his right:
He later said : I have
no idea what a
cyclotron is but I am
glad Canada has one!
P.E.T.



Nucleon-nucleon scattering program

- The BASQUE experiment, the first experiment in the then new TRIUMF Proton Hall, was a collaboration among the University of Victoria, the University of British Columbia (UBC) and AERE Harwell, the University of Surrey, Queen Mary College and Bedford College in the UK.
- Nucleon-nucleon cross sections and spin dependent measurements published by the BASQUE collaboration in 1983 established unambiguous phase shifts for kinetic energies 180 MeV up to 500 MeV. This is still reference data today.

Chargex facility for (n,p) and (p,n) reactions

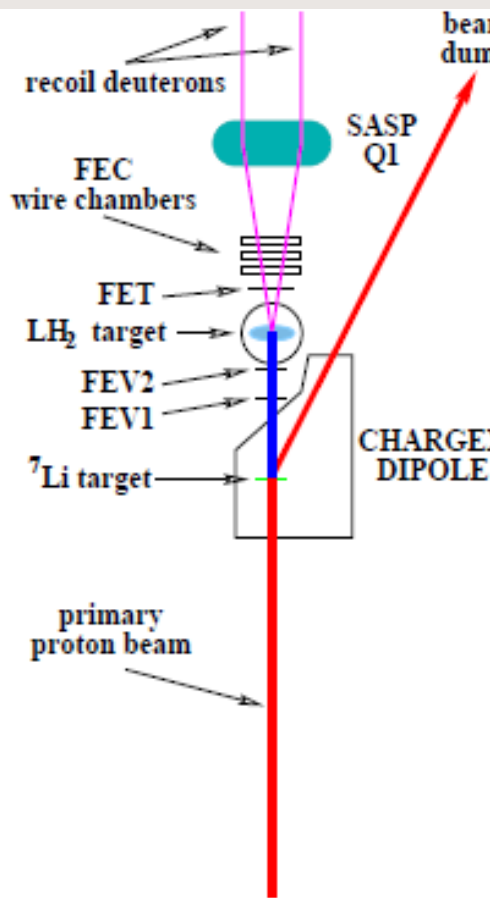


Fig. 28. Schematic drawing of CHARGEEX neutron-beam facility, LH_2 target, and front end detectors for $np \rightarrow d\pi^0$ measurement.

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Gamow-Teller strength deduced from charge exchange reactions on ^{54}Fe at 300 MeV

M. C. Vetterli,^(a) O. Häusser,^{(a),(b)} R. Abegg,^(b) W. P. Alford,^(c) A. Celler,^(a) D. Frekers,^{(b),(d)} R. Helmer,^(c) R. Henderson,^{(b),(e)} K. H. Hicks,^(b) K. P. Jackson,^(b) R. G. Jeppesen,^(a) C. A. Miller,^(b) K. Raywood,^(e) and S. Yen^(b)

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(Received 12 April 1989)

Angular distributions of the $^{54}\text{Fe}(p,n)^{54}\text{Co}$ and $^{54}\text{Fe}(n,p)^{54}\text{Mn}$ cross sections have been measured to test the Gamow-Teller sum rule [$S_- - S_+ = 3(N - Z)$] in a case where the Gamow-Teller strength is large for both channels. The results for S_- and S_+ are compared to several models which have moderate success in describing the data. Large scale shell-model and quasiparticle random-phase-approximation calculations correctly predict the distribution of Gamow-Teller strength but overestimate the total strength. A model that approximates the nuclear surface to be a semi-infinite slab describes the cross sections well in the quasielastic scattering region if 2p-2h correlations are included.

Parker Alford and Peter Jackson

Spin physics at TRIUMF



World best polarized beams, Technology transferred to RHIC

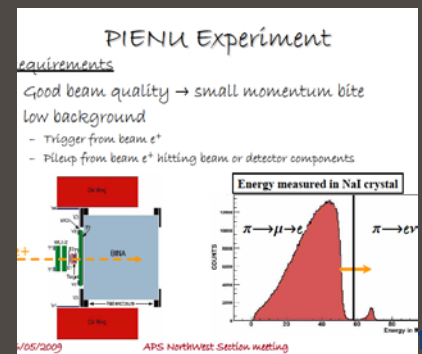
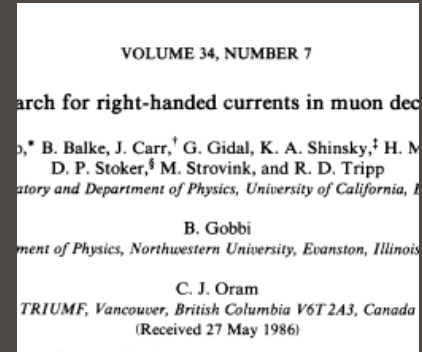


Pion and Muon decay experiments

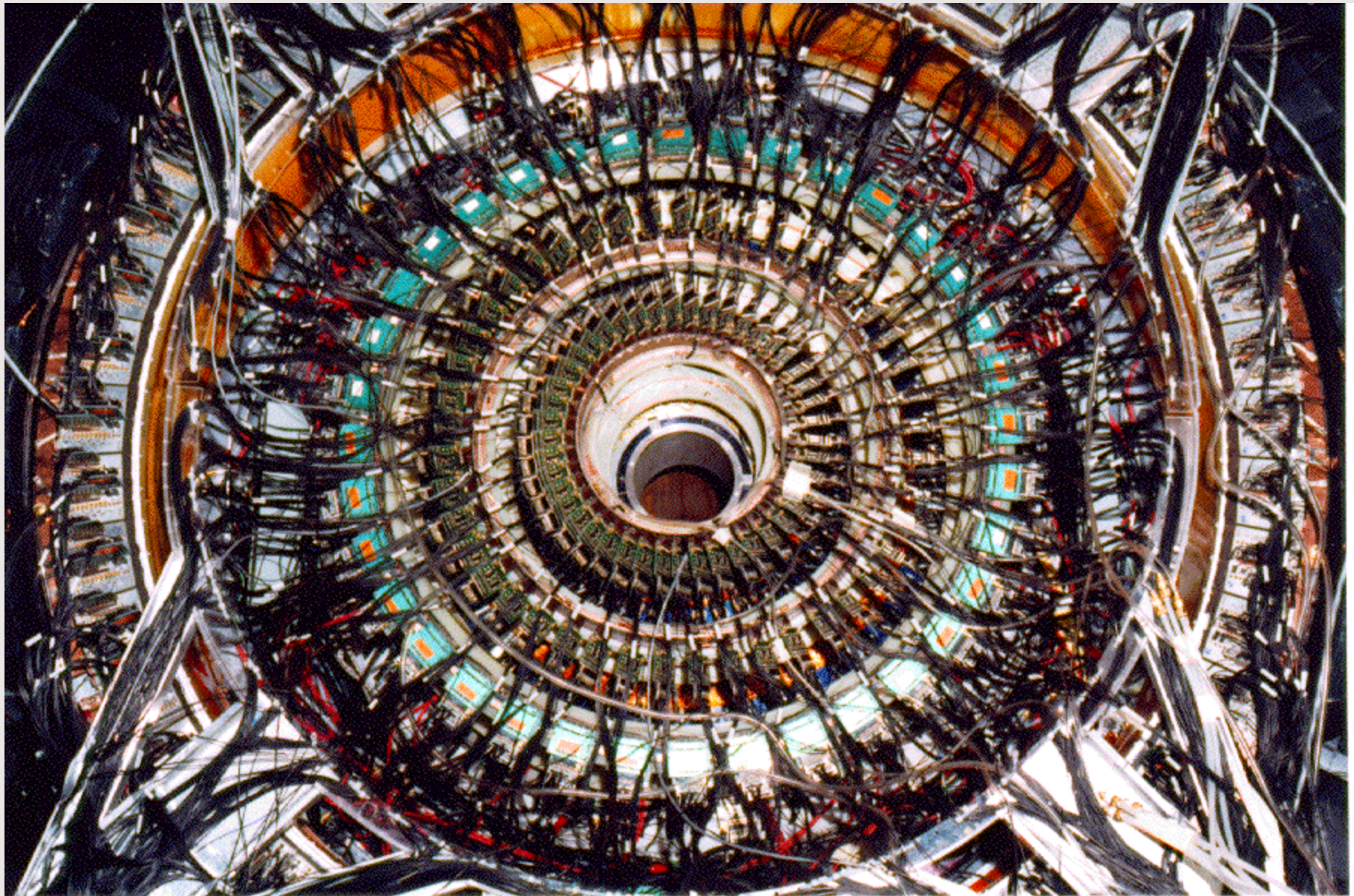
pienu (1), pienu(2),
 pienugamma, K.Crowe,
 M.Strovink, Twist, Pienu (3)

Partnership with US groups

Accelerating Science for Canada
 Un accélérateur de la démarche scientifique canadienne

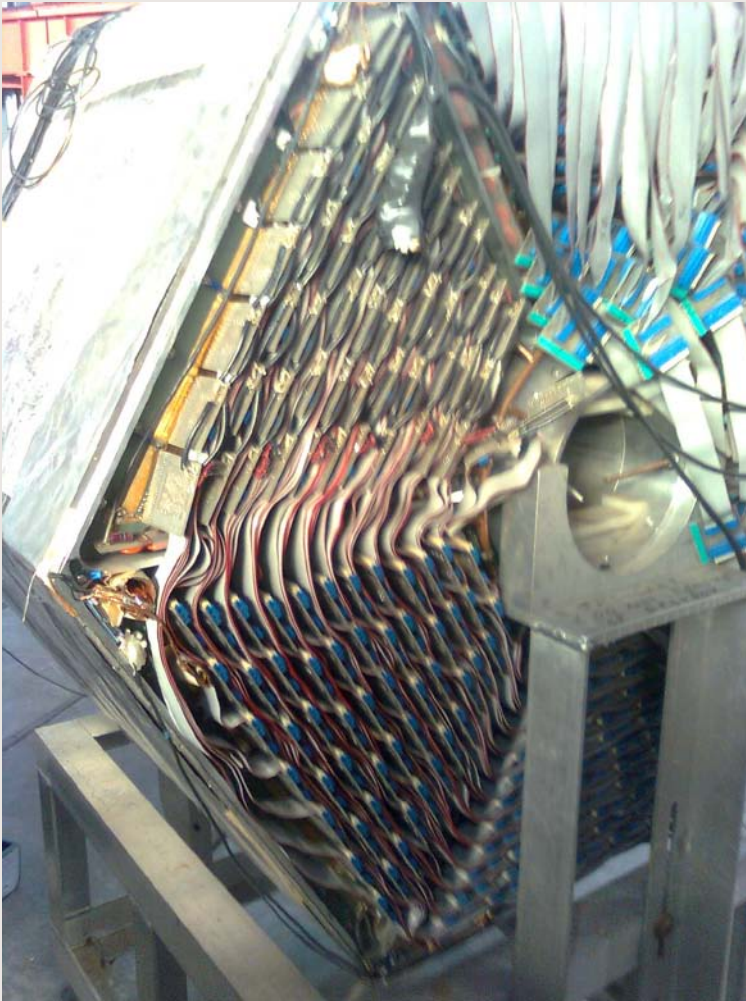


PION physics



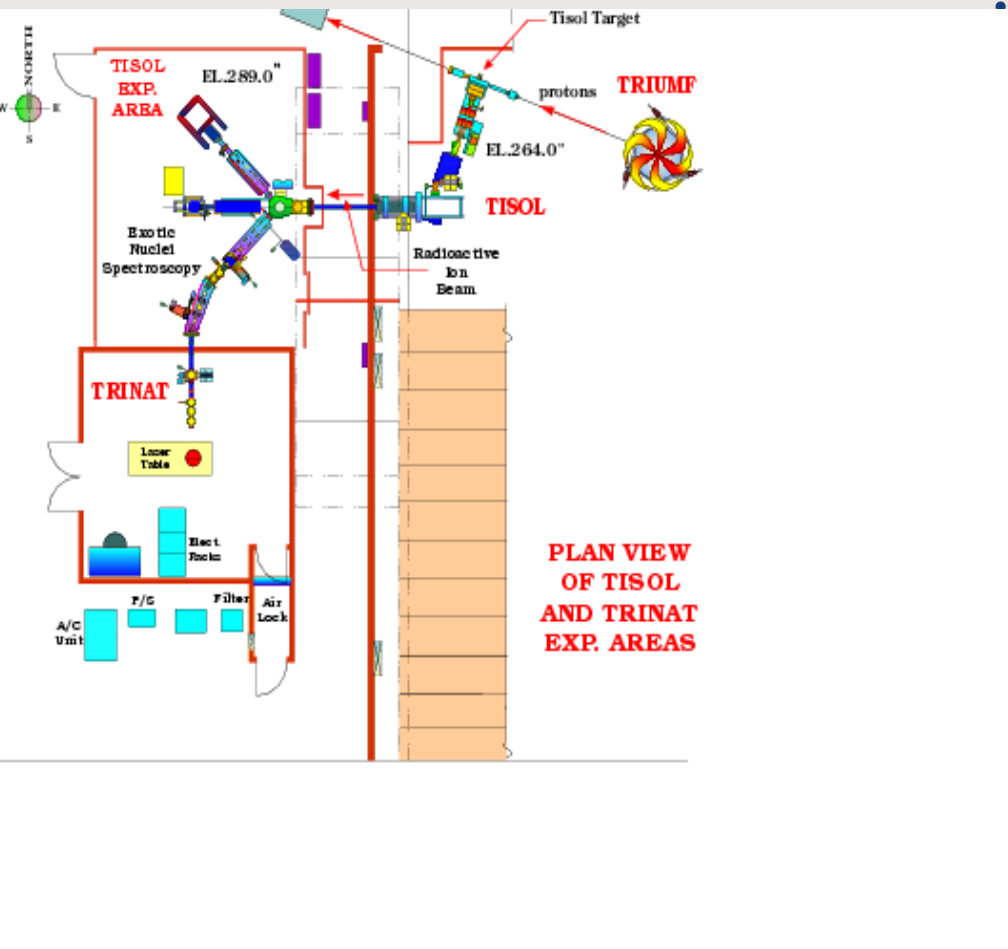
- One of the corner stones of the initial motivation for TRIUMF.
- Many experiments provided nice data sets (at PSI and LAMPF as well) but didn't clarify much of the underlying physics
- Eventually the pion programs were stopped at all meson facilities
- However such data are often crucial for the current programs in electron scattering and neutrino cross sections at Jlab, J-PARC and Fermilab.

Building up detector expertise



- First TPC use in an experiment.
- Hermes TRD's chambers
- RMC drift chamber
- E787 drift chamber
- Babar drift chamber
- T2K TPC's

RED GIANT at TISOL



[R. E. Azuma](#), [L. Buchmann](#), [F. C. Barker](#), [C. A. Barnes](#), [J. M. D'Auria](#), [M. Dombisky](#), [U. Giesen](#), [K. P. Jackson](#), [J. D. King](#), [R. G. Korteling](#), [P. McNeely](#), [J. Powell](#), [G. Roy](#), [J. Vincent](#), [T. R. Wang](#), [S. S. M. Wong](#), and [P. R. Wrean](#)

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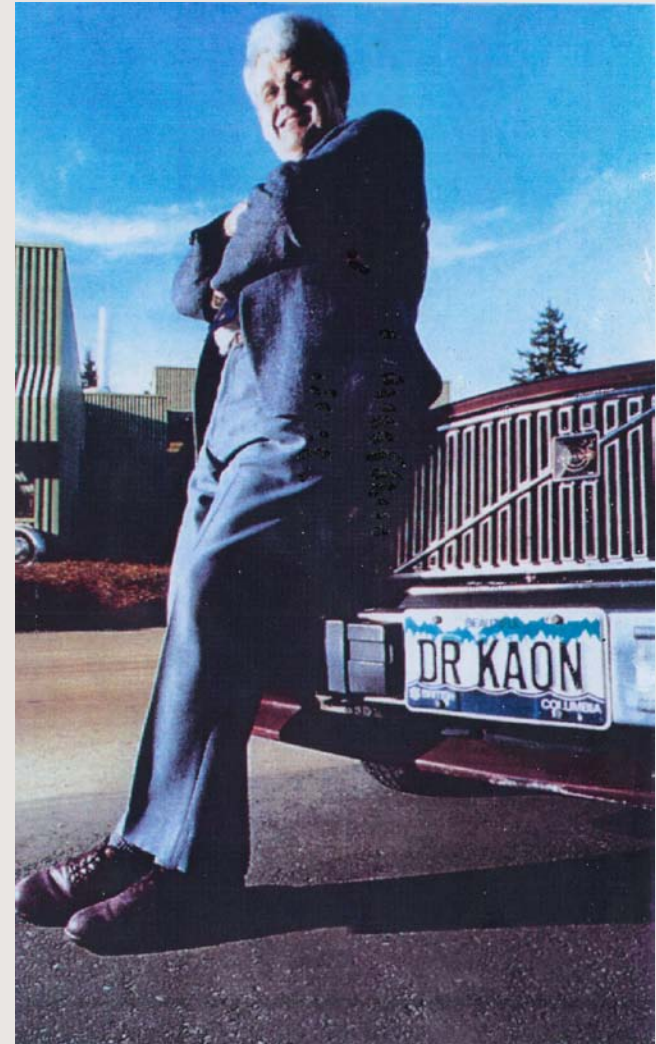
The KAON area

- As early as 1976, several proposals for increasing the beam energy of TRIUMF were considered.
- As he became TRIUMF third director in 1981, Erich took KAON as the main new initiative to establish the long term future of the laboratory.
- He became “ Dr KAON” , an indefatigable advocate, promoter and fund raiser.
- Mike Craddock will expand on this crusade period

Dr. KAON and one of his many Volvo's

- An adventurous man with conservative cars (several generations of Red Station Wagon Volvo's)

Maybe he needed tank-like cars after all.
He destroyed a few.



The Kaon area

- Erich introduces the so called “HERA Model” which was used to bring Canada into Hera and to support the Canadian participation in ZEUS and HERMES experiments.
- It calls for contributions to both the accelerator and the detector/data analysis systems.
- This was the model Erich wanted for KAON.
- This model was also used for a Canadian Participation in ATLAS/LHC, T2K/J-PARC.
- To some degree, It is the basis of the FAIR business model.
- See Ewart’s talk for more details on this area

Erich as administrator

- Erich introduced a divisional structure which is still used today.
- Erich strengthen the science program by creating several research scientist positions in the universities (associate and full member)
- Erich created four chairs in the full member universities and attracted A.Astbury, O Hausser, F.Khanna, and Doug Bryman
- Under Erich, the student program was expanded considerably
- Erich fostered several key partnerships to develop new facilities:
 - M9B superconducting channel with U Tokyo
 - Chargex facility with P.Alford
 - Trinat with O Hausser
 - Tisol with J.D'Auria, D.Azuma , C.Barnes
This would initiate the ISAC future of TRIUMF

Internationalization of the TRIUMF program

- To secure international contributions to KAON, Erich pushed for expanding the TRIUMF program beyond that on the cyclotron and supported an active external program:
 - Rare decays at TRIUMF moved to BNL (ex 787/949)
 - Parity Violation in p-p moved to Q-weak at TJNAF
 - Pol ^3He program led to Hermes at HERA
- **Physics studies during KAON led to**
 - Neutrino BNL proposal(failed to be funded) and T2K
 - Kaon resonances studies at BNL and KEK
 - Antiproton studies at KAON led to ALPHA
 - Rare decays at BNL, KEK, J-PARC?

Convincing people to join KAON

- **Kaon workshop in Torino (Oct 1989)**
- “ Earlier speakers have spoken about the KAON facility and its five rings. Let me also remind you about the fact that Vancouver and TRIUMF, though nine times zones away from Torino, are located in a Mediterranean setting and are very hospitable and congenial to European scientists. We know you will come”.
- **I reminded him after that I could not remember seeing so many olive trees in “ Mediterranean” BC. He thought for a second and said: “... but fig trees we have and lots of tomatoes as I grow in my garden”.**
- **Proceedings of the 13th International Conference on Cyclotrons and their Applications, Vancouver, (1992).**
- The opening welcome address by Erich Vogt (Dr. KAON), invited the audience to tear up their return tickets and stay in this magical area of Vancouver, which was Indian territory not so long ago.

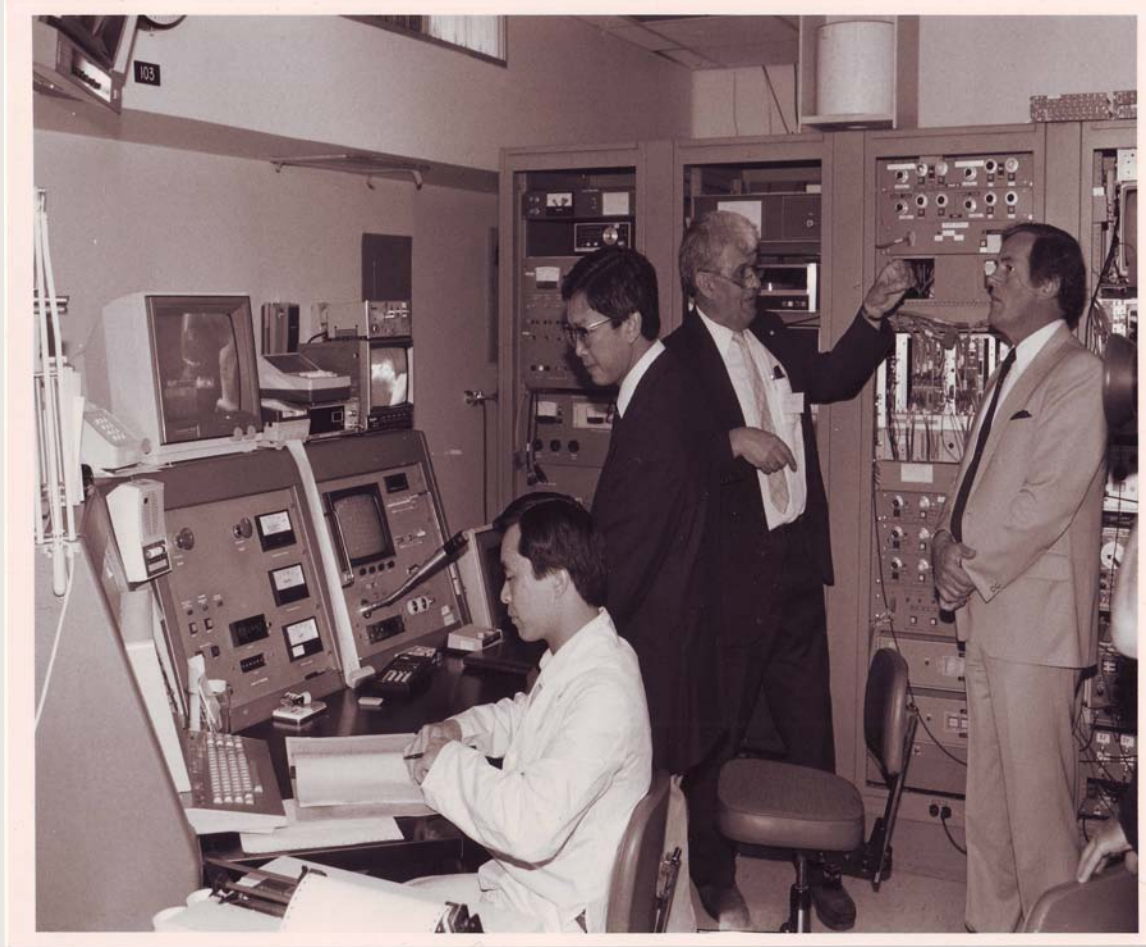
Connecting with world's physics drivers



1988 Kaon symposium: Erich shares a log with V. Soergel, (DESY), L. Maiani (Cern) and boat captain in Centre Bay on Gambier island.

Big Bang and Fantasy Garden boss

Erich trying to explain the Big Bang to fellow gardener and creationist, Bill Van der Zalm, BC's premier and Kaon supporter.



Visitor program

- TRIUMF House as a home away from home for visitors
- A sabbatical visitor program was established
- After the collapse of the USRR, Erich arranged for key Russian scientists to collaborate and eventually join TRIUMF
- Erich sponsored many Israeli visitors who made seminal contributions to the nuclear physics program
- Note: it was the Financial officer's nightmare as Erich's invitations worldwide could not be controlled.

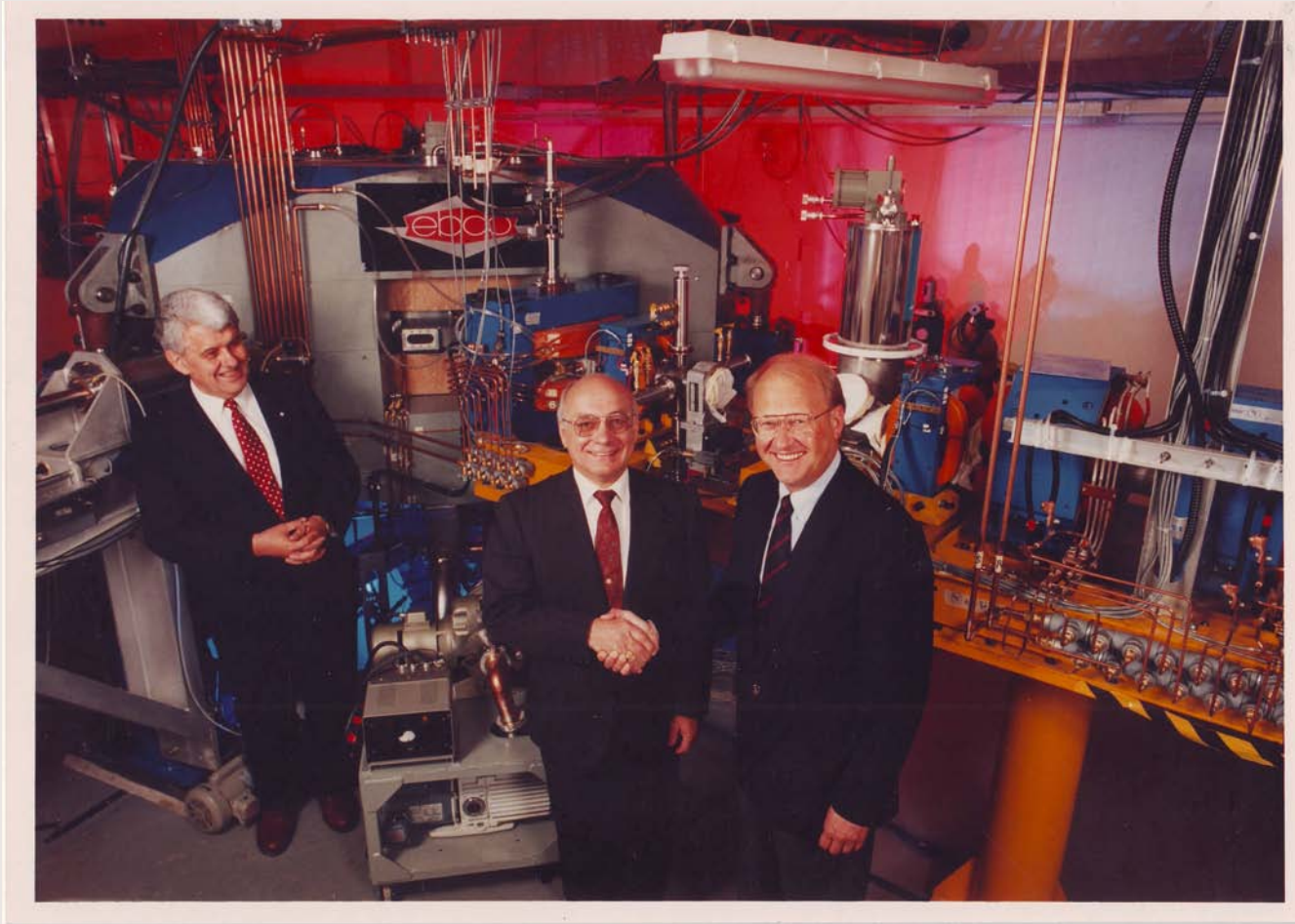
“Applied” program

- Collaboration with Nordion was established in 1983 and nurtured . Often cited as the best example of University–Industry partnership (2 NSERC Synergy Awards)
- Support for the Pacific Parkinsons Research Centre with D.Calne. Erich saved it when CIHR failed to renew its team grant by providing bridging funds.
- Establishment of technology transfer office with development of the TR cyclotron series with EBCO, now ACSI.

Home made first PET scanner



Hub cups, vacuum tank, Boeing 747 floors, medical cyclotron



Order of Canada

- **Erich W. Vogt, O.C., O.B.C., Ph.D., F.R.S.C.**
- **Honour Appointment Investiture Officer of the Order of Canada June 23, 1976**
- **Nuclear Physicist who played a major role in the creation of the Tri-University Meson Facility, the new multi-million dollar cyclotron at the University of British Columbia, which is a major achievement in Physics in Canada.**

Many other awards

- Centennial medal 1967
- Order of Canada 1976
- Queen Elizabeth Silver Jubilee medal 1977
- CAP medal for achievement in Physics 1988:
- BC Science Council Career Achievement Award 1998
- Queen Elizabeth Golden Jubilee medal 2002
- Order of BC 2006
- UBC Faculty of Science Achievement Award for Teaching 2006
- Queen Elizabeth Diamond Jubilee medal 2012

- Honorary degrees from
 - U. Manitoba 1982
 - Queen's U. 1984
 - U. of Regina 1986
 - Carleton U. 1988
 - SFU. 1995
 - UBC. 1998

Erich and the community

- CAP president (1970-1971)
- Founding chairman of the Science Council of BC 1978-1980
- Board member of Science World 1985-1991
- Executive member of the Vancouver Institute 1982-1992, Honorary lifetime member 1992
- IUPAP member, vice chair and chair (1990-1999) of C12 (Nuclear Physics commission)
- Joint IUPAP-IUPAC Working group for new element claims (1994-2012)

Erich and People

- Erich was a “ **renaissance man** ” *
- A man with many deep passions: Physics, teaching, history (always could relate a situation in science to a historical event), family (16 grand children), music with Barbara, tomato growing (more than 20 varieties), superb writing skill, entertainer and people skills
- Erich would call each TRIUMF staff on their birthday.
- Erich would try and greet visitors with a few words in their mother tongue... and a joke.
- Erich would entertain many at his house with superb feast
- Erich had no patience for pseudo science and said so eloquently in public (Cold fusion for ex)

* / *took this definition from Tim Meyer's quantum diary article of March 2014*

Erich's vision (1998)

- The 1998 U of Toronto symposium to honor A.Bromley and T Litherland,
- **The Tuesday morning sessions were opened with a very upbeat talk by Erich Vogt entitled "Where do we go from here?".**

Noting the intimate connection between new facilities and new knowledge, he pinned his hopes on 5 new facilities: The Jefferson Laboratory electron accelerator (CEBAF), the Brookhaven heavy-ion accelerator RHIC, the 50 GEV Kaon facility at KEK, the radioactive ion accelerator ISAC at TRIUMF, and the heavy water neutrino detector, SNO, in Sudbury. With these facilities Erich believes we will go beyond the Standard Model, investigate quark-gluon plasmas, and the weak interaction. Along the way we will pick up new insights into the r and rp processes with their waiting points and maybe a few more new elements.

As Erich tells it, the epicycle model of Ptolomey fitted the then known universe very well, but Alfonso X, King of Spain who had spent years learning the Ptolomeic Model mused that he wished the Creator had come up with something simpler.

Our present model of the universe, the big bang and the Standard Model, do amazingly well, but many of us wish the Creator had come up with something simpler, and maybe even a quantum mechanics that Einstein could believe in.

Lessons learned working with Erich

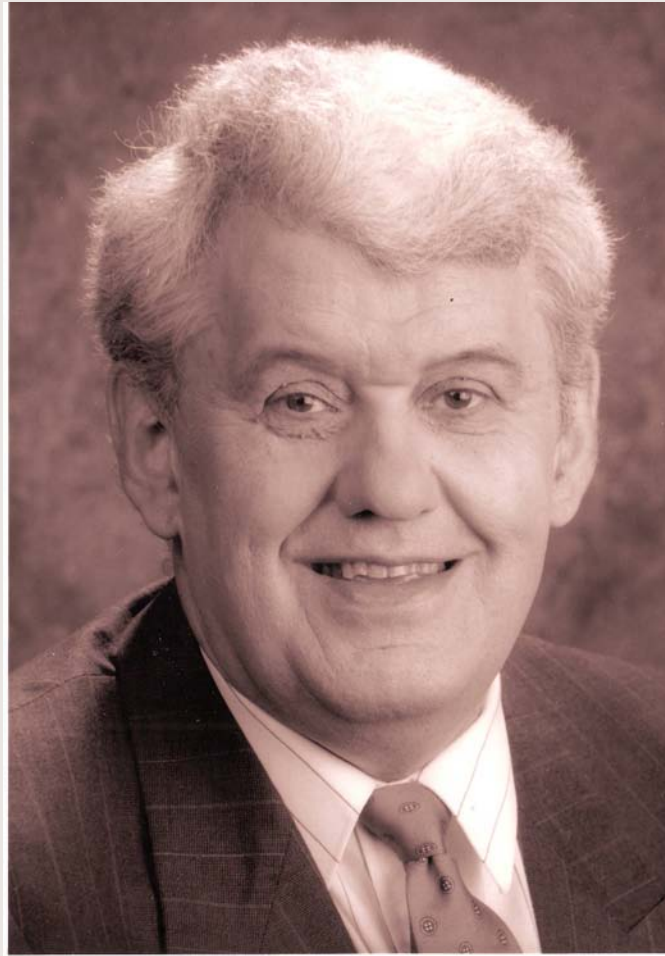
- People are the most important resource in particular students of all age.
- Choose your collaborators well, then entrust them
- Show interest in every one's tasks as much as possible
- Managing people well is difficult but rewarding
- Deal with issues as soon as possible
- Collaboration and team work beats competition
- Collaboration is a two way deal and must be actively nourished
- Always go for gold not bronze
- Think big, outside the box and go for it

Erich's legacy



"The secret of genius
is to carry the spirit of the child into old age,
which means never losing your enthusiasm."

Merci, Erich



Thank you!

Merci

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

