The TRIUMF Newsletter

News from Canada's National Laboratory for Particle and Nuclear Physics

Tomo Uemura wins Yamazaki Prize

The International Society for μSR Spectroscopy (ISMS) has awarded its first "Yamazaki Prize" to Professor Yasutomo (Tomo) Uemura of Columbia University. Upon announcing the prize, Robert Heffner, President of ISMS, stated "Professor Uemura has distinguished himself with his pioneering μSR experiments in various novel magnetic systems - in particular, his studies of spin glasses and the development of phenomenological models for the relaxation functions in these systems which are standards today - and in his more recent work systemizing μSR penetration depth data in a wide range of superconductors. He has profoundly demonstrated the value of μSR to the wider condensed matter physics communities."

The ISMS will award the Yamazaki Prize every three years to a scientist for outstanding, sustained work in μSR science with long-term impact on scientific and/or technical μSR applications. It is named in honour of University of Tokyo Professor Toshimitsu Yamazaki, a true μSR pioneer and winner of the prestigious Imperial Medal in Japan.

TRIUMF can be doubly proud of this year's Yamazaki Prize: the bulk of Tomo's μSR work was performed at TRIUMF, and Professor Yamazaki himself was a μSR pioneer at the lab 30 years ago.•

Marcello Pavan

For more information, visit: http://www.musr.org/isms/news

TRIUMF Director, Alan Shotter presents the first annual Life Science Research Scholarship to Suzy Lapi on August 19, 2005.

The Life Science scholarship assists graduate students who are actively conducting research under TRIUMF's life sciences program using radiotracers produced at TRIUMF. It is made possible by funds received from the 2004 NSERC Synergy award, which recognized the successful TRIUMF-MDS Nordion partnership in isotope production.

For more information visit: http://www.triumf.info/public/students/awards/lifesciences.php.

DIRECTOR'S NOTES

During the period since the last newsletter, a major milestone for the ISAC-II program was successfully passed: the acceleration of a heavy ion beam by one medium beta cavity module. This is a significant milestone since the ISAC-II accelerator is based on a technology that is new for TRIUMF, i.e., superconducting RF cavities. Congratulations to Bob Laxdal and his team for this success. ISAC's next milestone will be to have several of these accelerator sections ready by the end of the year; this will enable some experiments to run soon after the end of TRIUMF's usual winter maintenance shutdown period.

Research using muons is a very significant part of TRIUMF's scientific portfolio. It is therefore very pleasing to acknowledge the work of Professor Uemura and to congratulate him on the award of the Yamazaki Prize from the International Society for μSR Spectroscopy. Jess Brewer and Syd Kreitzman, who have both championed the μSR program over many years, describe in this issue of the newsletter some aspects of TRIUMF's μSR program.

For any scientific endeavor, theory and experiment must go hand in hand. As the ISAC experimental program evolves so also will a complementary theoretical program. Achim Schwenk is an international expert on many body systems and it is a great pleasure to announce that Achim will join TRIUMF's theoretical team as a staff member. Achim's work has the potential to illuminate many areas ranging from exotic nuclei to neutron stars.

Young people become associated with TRIUMF is various ways, one of which is the annual Summer Institute. This year's theme was atom and ion traps – a theme that complements TRIUMF's TITAN program. It was a highly successful institute that attracted one of the largest numbers of young participants in recent years.

As I reported in the last newsletter, the NSERC Synergy award money will be used to create scholarships to support life science students. It gives me great pleasure to congratulate Suzy Lapi for being the first student to receive such an award.•

Alan Shotter, TRIUMF Director

For more information on TRIUMF Projects, visit the TRIUMF website at: http://www.triumf.info

WHAT'S INSIDE

Superconducting Acceleration Successfully Achieved at TRIUMF/ISAC

The ISAC-I linear accelerators presently deliver beams of radioactive and stable ions to experiment with final energies variables between 150 keV/u and 1.5 MeV/u (corresponding to velocities from 1.8% to 5.6% the speed of light). TRIUMF is now constructing an extension to the ISAC facility, ISAC-II, to further accelerate the ions from 1.5 MeV/u to energies of at least 6.5 MeV/u (v/c=11.7%). At the heart of the installation is a new superconducting linear accelerator. The accelerator is composed of resonant rf structures called cavities and superconducting solenoids that provide periodic focusing for the accelerating beams. The cavities and solenoids are housed in box-like structures called cryomodules that provide a good thermal isolation for the cold elements of the linac. The linac is grouped into medium and high beta (velocity) sections. An initial installation of twenty medium beta cavities corresponding to an accelerating voltage of 20 MV is due for commissioning by the end of 2005. A major milestone, reported here and achieved in July 2005, is the demonstration of the acceleration of an ion beam with a single cryomodule.

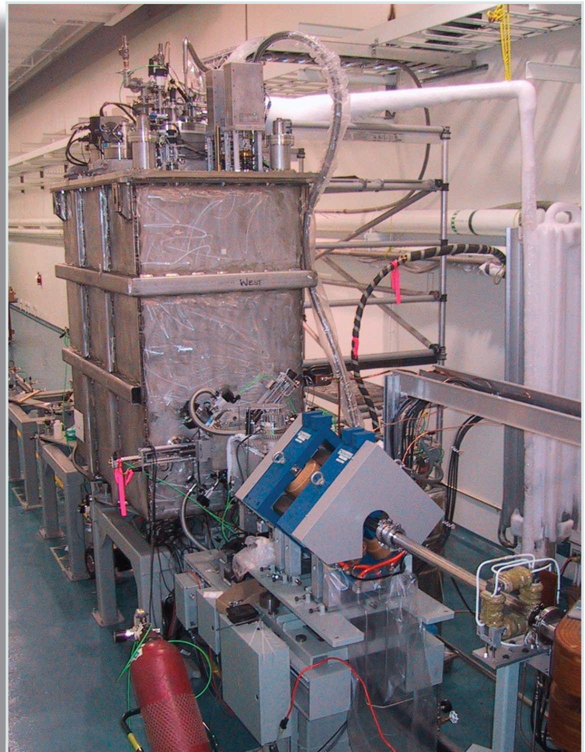


Fig. 1. Medium Beta Cryomodule positioned in the accelerator vault for testing.

Thus far a number of cold tests have been completed in the ISAC-II clean room and test facility. The tests establish the vacuum and cryogenic performance, the cold alignment and the rf integrity of the cryomodules.

In a recent test a cryomodule was moved to the accelerator vault and tested in situ (Fig. 1) with the new refrigerator providing liquid helium. The test allowed us to operate the cavities and solenoid inthe vault environment and with the cabling, control systems and power supplies as for the final linear accelerator. A $^{26}Mg^{6+}$ beam at 1.5 MeV/u was delivered from ISAC through a new transport beam-line system and tuned through the cryomodule. A beam profile monitor and Faraday cup in the downstream diagnostic box were used to optimize the beam and a silicon detector was used to measure the final energy. The three operating cavities were turned on and phased sequentially. The final spectra of the unaccelerated beam plus the spectra after each cavity is turned on is shown Fig. 2. The final energy of the $^{26}Mg^{6+}$ was 2.3 MeV/u. Each cavity gave a voltage gain of 1.2 MV corresponding to an average gradient of 7.4 MV/m and a peak surface field of 37 MV. These fields are a significant increase above other present day operating heavy ion facilities. The future looks bright for ISAC-II.•

Robert Laxdal

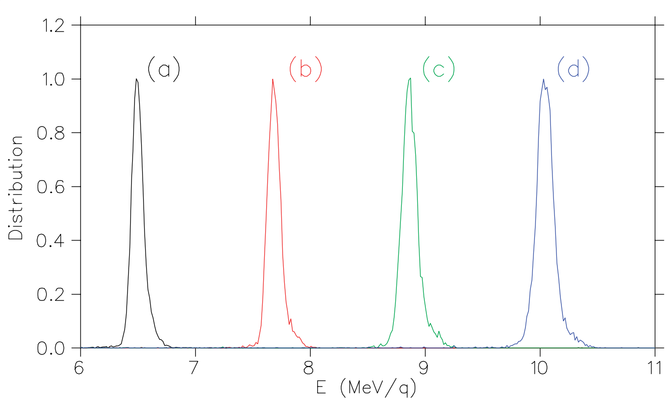


Fig. 2. Energy spectra of $^{26}Mg^{6+}$ beam. Shown are the spectra of the injected beam (a) and the spectra after turning on and phasing three cavities sequentially.

Probing Electronic Corr

Modern day material science is based on understanding the complex interactions of atomic constituents in clusters ranging from the nanoscopic (1-100s of atoms), through to macroscopic interaction ranges. Basic physics teaches that the negatively charged electrons interacting with the positive nuclear cores is responsible for basic atomic structure. However, even within single atoms the electrons may interact strongly with one another producing phenomena like “atomic magnetism”.

Bringing together many atoms in a condensed matter environment leads to further inter-atomic interactions between electrons and nuclear cores, for example, when one electron is simultaneously attracted to several nuclear cores. This results in lowering the overall energy of the system and causes these atoms to bond together. On the other hand, electrons repel one another because they have the same electrical charge and because they are quantum objects called *fermions* which cannot share an identical quantum state. This quantum repulsion is ultimately responsible for both the rich electronic infrastructure of the atoms themselves and the very complex interactions that inter atomic electrons have in condensed materials.

Such complex electronic interactions go under the name “electronic correlations”, and they are a very large area in modern condensed matter science research. Often materials of interest will have many different many-body electronic phenomena potentially active at the same time and the

elations with MuSR's High Pressure Experiment

interplay and competition among them lead to multifaceted complex behavior. This is the playground of many condensed matter physicists: sorting out and understanding the large and growing variety of cooperative phenomena which underlie the behavior of today's sophisticated materials.

Scientists learn about such things by applying known perturbations to the microscopic electronic environment and then seeing what happens. One of the most informative perturbations is to change the average spacing between the electrons and this is done by conducting experiments under various degrees of pressure. Pressure brings all the atomic constituents closer together changing the strength of the mutual interactions. These changes can then go on to modify the interplay among these interactions which often result in dramatically different physical behavior and properties. Through observing such changes we learn more about the underlying electronic correlation mechanisms themselves.

At TRIUMF, the experimental technique used to probe electronic correlations is called MuSR, or Muon Spin Resonance Spectroscopy. *Muons* are short-lived (2.2μs lifetime) particles resulting from the decay of even shorter-lived (26ns lifetime) particles called *pions*, which are produced when the 500 MeV TRIUMF cyclotron beam breaks apart nuclei in a production target. Muons are nature's most sensitive and exquisite magnetic probe. A muon will react to a local magnetic field and transmit the static and dynamic information about this field to the outside world via an easily detectable positron decay. The muon lifetime is ideal for many time scales of interest in condensed matter systems and they also can be implanted into anything solid. The reason that sensitivity to the subtleties of the local magnetic field is such a good probe of electronic correlations is that electrons themselves create a magnetic field and therefore contribute a unique signature to the local magnetic field to which the muon are sensitive.

The art of applying pressure in experimental physics is relatively well developed, but if the pressures required are very high, like at TRIUMF where experimentalists would like pressures of up to 30,000 Atm (440,000 PSI), very strong and thick pressure cells must be used to sustain the forces. On the other hand, one still has to get the muon beam into, and the decay positrons out of, the cell. Other considerations in designing such targets include varying the temperature (related to the average spread in energy of the mobile electrons) and placing the system in a static external magnetic field (which provides a reference frequency signal in the absence of any interactions and correlations under investigation).

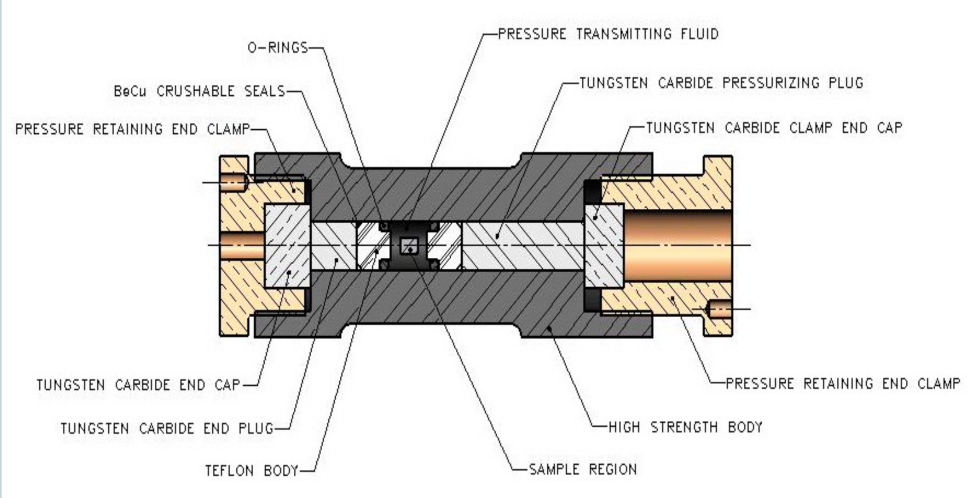


Fig.1. Layout* of a high pressure "clamp style" cell for muon spin resonance spectroscopy. The sample is located in a high strength metallic cylinder within a pressure transmitting fluid. An extremely strong tungsten carbide plunger is used to compress the fluid to very high pressure and then clamped in place. The pressure is uniform within the cell, and thereby transmitted to the sample. Special sealing techniques are used to keep the cell from leaking under thermal cycling conditions.
* Designed by Dr. Goko, Tokyo University of Science.

So, a MuSR high pressure experiment requires five basic ingredients. i) A cyclotron, like TRIUMF, to produce the muon beam. ii) A MuSR spectrometer, which will contain a magnet, an array of particle detectors, and the environmental vessel (cryogenic or oven) to house the sample/pressure cell. iii) The cryostat/oven to be able to apply a wide temperature environment for the cell/sample. iv) The pressure cell itself. v) A practical way to deliver the cell/sample into the spectrometer and cryostat/oven to minimize time spent changing samples. The elements going into the design of a typical pressure cell are shown in Figure 1.

Such a pressure cell is currently being used in TRIUMF MuSR experiments. For example, Expt E1035 studies the so-called Mott transition in the material $Ca_{2-x}Sr_xO_4$, from anti-ferromagnetic insulator to a weakly magnetic metal at x=0.2. Under applied pressure the system will make a similar transition, but this time to a ferromagnetic metal. There is also a region of pressure where both phases exists together in the same sample ... all fertile experimental grounds to explore the underlying nature of these phases and the simultaneous insulator-metal and anti-ferromagnetic-magnetic phase transitions.

Correlated electrons in condensed matter exhibit a wide range of cooperative behavior each of which has its own magnetic microscopic fingerprint and fluctuation signature. Muons are nature's uniquely sensitive magnetic sleuths and MuSR experiments can be used identify and unravel these patterns, yielding significant insights into the nature of the underlying mechanisms that cause this fantastic display of phenomena.• *Syd Kreitzman*

Footnote: The author would like to acknowledge Dan Brennan in the design of the pressure cell holder and the preparation of the diagram presented in this article.

For more information about MuSR,
visit the website at: http://www.tcmms.ca

Muons in Magnetic Semiconductors

μSR scientists Vyatcheslav ("Slava") Storchak and Dmitri ("Dima") Eshchenko demonstrate that the III-V semiconductor manganese-doped indium antimonide (InSb:Mn) is indeed a ferromagnet at room temperature, as it is being picked up by a small magnet.

In today's electronics, logic operations take place in semiconductors while information is stored in magnetic media. If it were possible to combine both functions on the same chip, or even in the same "bit", revolutionary new types of devices might be built. The ability to control and manipulate the dynamics of both charge carriers and spin by external electric and magnetic fields (as well as light) is expected to lead to novel applications. This dream has spawned the exciting area of research known as "spintronics", which awaits the discovery of semiconductors which are also ferromagnetic.

Numerous candidate materials have been found, but so far the most promising are magnetic only at very low temperatures, restricting their use to those applications where extreme refrigeration is economical. A few samples have exhibited magnetism at room temperature, only to be found inhomogeneous, containing tiny inclusions of magnetic phases embedded in a nonmagnetic semiconductor.

But in the summer of 2005 a new candidate was found, the III-V semiconductor InSb (indium antimonide) doped with small amounts of Mn (manganese), which is ferromagnetic at room temperature: even with less than 1% Mn content, the samples can be picked up with a magnet like paper clips with a refrigerator magnet!

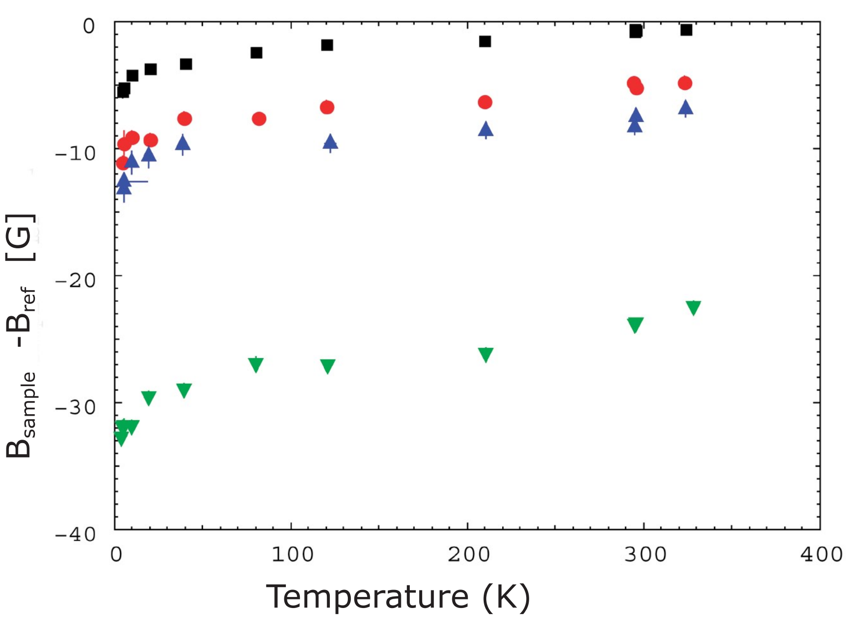


Fig. 1. Difference between the applied magnetic field and the field detected by positive muons in InSb:0.25%Mn (squares), InSb:0.5%Mn (circles), InSb:0.75%Mn (triangles) and InSb:1%Mn (nablas). Data were taken at high field (6 T). The results above 300K suggest that the materials are still magnetic well above room temperature.

Given previous disappointments, caution was in order: perhaps the manganese had "clumped" to form small magnetic inclusions. Using X-ray diffraction, the samples (produced in Russia) were shown to be highly homogeneous. But the magnetism might still be confined to the surfaces, as in some other examples; this would not be detected by the magnetic susceptibility measurements that confirmed a strong ferromagnetism at room temperature.

So the samples were brought to TRIUMF to be studied with the most sensitive known probe of local magnetism: the positive muon. Using μSR, an international team confirmed that the materials are magnetic throughout their volume at temperatures well above room temperature, an exciting conclusion that may pave the way for commercial development of spintronics devices.

Caution is still advised, of course: although InSb is an excellent semiconductor in its pure state (boasting the smallest effective electron mass of any of the III-V semiconductors), the effect of doping up to 1% Mn on its electronic properties is not yet fully explored, and the crucial interactions between electrons, holes and magnetism are still a matter of theoretical speculation.

But there is reason for guarded excitement.• *Jess Brewer*

Advances in Theoretical

The traditional problem in nuclear physics is that nuclear interactions are strong and model dependent. Different models for the strong repulsive force between nucleons (proton and neutrons) at short distances lead to different predictions at high momenta or high virtual energies. The optimal way to deal with these high-momentum parts is to convert the problem first to a low-energy theory. Since short-distance details are not resolved in such a theory, they can be replaced by simpler interactions, while maintaining all low-energy predictions. Then so called "renormalization group" techniques can be used to derive the low-momentum theory[1] in a systematic manner. This is illustrated in figures 1 and 2, where all commonly used microscopic nuclear forces evolve to a universal low-

Nuclear Physics

momentum interaction (shown in Fig. 2) after application of the aforementioned procedure.

An added benefit of this technique is that the low-momentum theory also can be constructed systematically in "chiral effective field theory"[2]. Effective field theory separates nuclear physics from the more complicated problem of hadronic physics, while maintaining a direct connection to the underlying theory of Quantum Chromodynamics. In addition, low-momentum effective interactions are a common feature in modern nuclear many-body developments, where the strong high-momentum modes are systematically removed.

The nuclear many-body problem is extremely rich. It describes systems spanning 18 orders of magnitude in size from nucleons to neutron stars. A significant advantage of low-momentum interactions is that they can be directly applied to nuclear many-body systems with model-independent results and without uncontrolled resummations. For systems with A<100 particles, prime approaches are exact shell model diagonalizations [3] and the coupled cluster method[4] widely used in quantum chemistry. First applications of low-momentum interactions to the nuclear shell model are very promising and provide a microscopic basis for studies of the emergent phenomena of nuclei investigated at ISAC. In nuclear physics, many-body interactions are inevitable. Chiral effective field theory makes it possible to systematically derive three and many-nucleon interactions, with weaker three-nucleon forces for low-momentum theories. As a result, it will be possible to include microscopic three-nucleon interactions beyond the light nuclei. For A>100 particle systems, the method of choice is density functional theory,[5] and its microscopic foundations are now well-understood. Advances for nuclear matter also motivate a program to derive the universal nuclear density functional from microscopic interactions.

These considerations lead to a long-term vision of nuclear theory that is both microscopic and predictive, giving an understanding of nucleonic matter under extreme compositions, temperatures and densities, both on the earth and in stars. This new understanding has many common themes with atomic and condensed matter systems: How does the structure of matter change with its composition? What is the many-body physics of complex and collective phenomena in nuclear systems? How are shape transitions in nuclei and the crust of neutron stars related to frustrated systems and the phase diagram of asymmetric matter? How does nucleonic matter respond to external probes, for instance interactions with neutrinos in supernovae or neutron star cooling? What are the large-scattering length features in nuclear structure, resonant nuclear reactions and neutron matter? Nuclear physics is entereing new and exciting times.•

B.K. Jennings (TRIUMF)
A. Schwenk (NTC, Indiana University)

[1] S.K. Bogner, T.T.S. Kuo and A. Schwenk, Phys. Rept. **386** (2003) 1, S.K. Bogner, A. Schwenk, R.J. Furnstahl and A. Nogga, nucl-th/0504043, A. Nogga, S.K. Bogner and A. Schwenk, Phys. Rev. **C70** (2004) 061002(R).

[2] U. van Kolck, Prog. Part. Nucl. Phys. **43** (1999) 337; E. Epelbaum, nucl-th/0509032.

[3] E. Caurier *et al.*, Rev. Mod. Phys. **77** (2005) 427, and references therein.

[4] M. Wloch *et al.*, Phys. Rev. Lett. **94** (2005) 212501, and references therein.

[5] M. Bender, P.-H. Heenen and P.-G. Reinhard, Rev. Mod. Phys. **75** (2003) 121, and references therein.

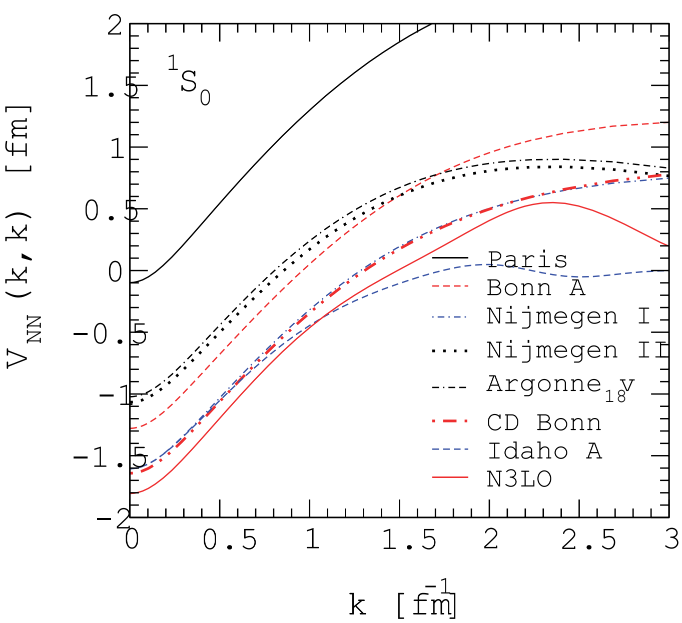


Figure 1. Different nucleon-nucleon interaction potentials as a function of the relative momentum *k* of the two nucleons.

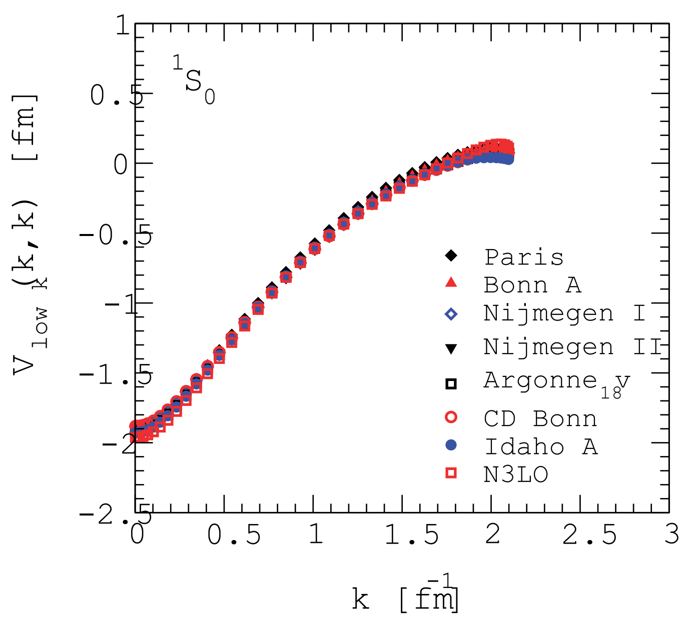


Figure 2. The resulting low-momentum interactions, derived by eliminating the high-momentum (k > 2.1 fm^{-1}) components using renormalization group techniques. The very different interactions in figure 1 become very similar when the high momentum components are eliminated.

TRIUMF Cancer Therapy Centre Treats 100th Patient

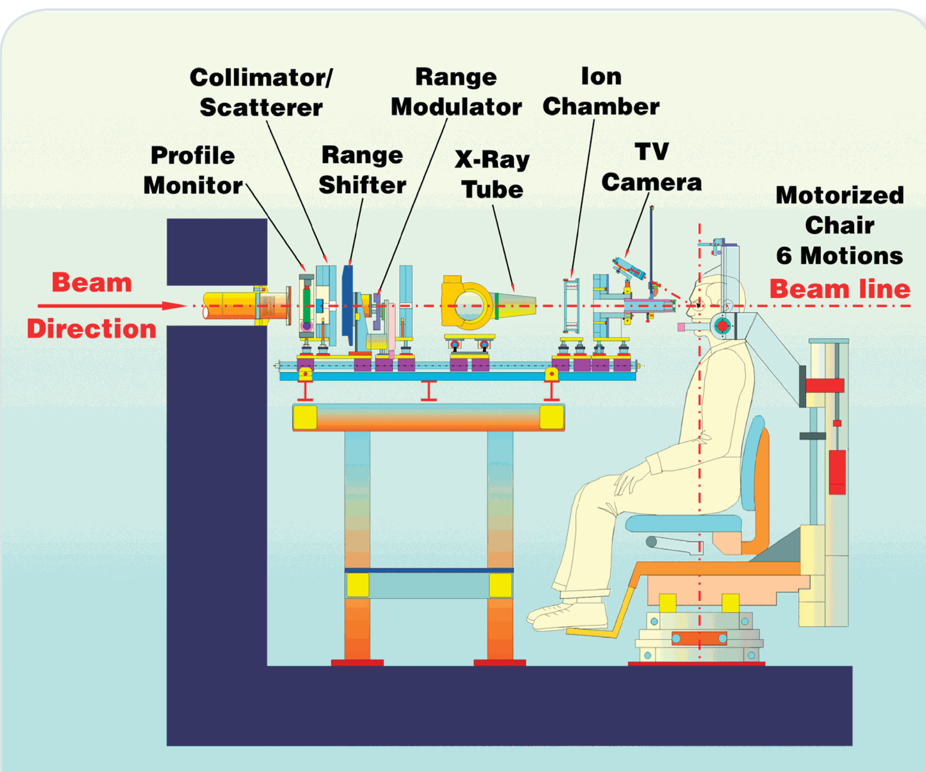
A major milestone in eye cancer treatment was reached recently at TRIUMF. In the week of the 10th anniversary of treating its very first eye cancer patient, the TRIUMF cancer therapy facility treated its 100th patient on August 29. The only facility of its kind in Canada, the Proton Eye Treatment Facility was established in 1995 with a grant from the Mr. & Mrs. P.A. Woodward Foundation, and is operated in conjunction with the BC Cancer Agency, UBC Dept. of Ophthalmology and the Eye Care Centre at Vancouver General Hospital.

The facility treats a cancerous growth on the back of the eye called choroidal melanoma. Before proton treatment became available, the most common procedure was removal of the eye, or for smaller tumours, implanting a radioactive disk on the retinal wall under the tumour for a number of days.

"Proton therapy for eye tumours has allowed us to treat patients who would otherwise have required removal of the eye," says UBC ophthalmologist Dr. Katherine Paton. "Frequently this preserves reasonable vision and function, and for patients with only one working eye this has been most gratifying."

The 100th patient of TRIUMF's Proton Eye Treatment Facility sits in the special treatment chair awaiting proton therapy for Choroidal Melanoma.

The treatment uses a low intensity beam of 74 MeV protons extracted from the TRIUMF cyclotron. The beam is modified by range modulation and collimation to provide a uniform dose over the volume of the tumour while sparing, if possible, the critical structures such as the lens and optic nerve. The tumour location is defined by tantalum clips that can be seen on an X-ray for beam alignment. The patient sits in a special treatment chair with the head immobilized in a mask and bite block and gazes at a blinking light during treatment. Because the beam of protons deposits its energy so predictably, it can successfully destroy a tumour while better preserving the other nearby parts of the eye.



Schematic view of the Proton Eye Cancer Teatment Facility

The painless treatment lasts about 90 seconds and patients are treated once a day for four consecutive days. Patients are referred to the facility from western Canada and prepared for treatment by specialists working at the Eye Care Centre at VGH in collaboration with oncologists and medical physicists from the BC Cancer Agency.

TRIUMF proton therapy coordinator, Ewart Blackmore observed that although TRIUMF is a basic research facility it has an enviable record in practical applications of its beams, particularly in the medical field.

The first patient treated was Mr. Lorne Scott of Campbell River, BC on August 21, 1995. •

Ewart Blackmore

TRIUMF Canada's National Laboratory for Particle & Nuclear Physics
Technology Transfer Bulletin

For more information about Applied Science at TRIUMF, visit the Technology Transfer website at:

http://www.triumf.info/public/tech_transfer/tech_transfer_5.php

Outreach and Education

TRIUMF Summer Institute poster prize winners and organizers (from left): P. Schury (MSU/ NSCL), K. Madison (UBC, TSI Co-organizer) J. Dilling (TSI Chair) M. Brodeur (UBC/TRIUMF), W. Trimble (U of Washington), A. Shotter (Director TRIUMF).

The summer is a busy time for TRIUMF's outreach and science education programs, particularly so this year during the 2005 United Nations World Year of Physics (WYP2005). TRIUMF has been involved in many WYP2005 events, several of which were highlighted in the previous Newsletter (see Vol.3 No1).

The centerpiece of local WYP2005 celebrations was the opening weekend of the 2005 CAP Congress held in Vancouver. On Saturday June 4 TRIUMF opened its doors to the public for a site-wide open house. The response was overwhelming: almost a thousand guests kept the TRIUMF tour guides hopping throughout the day. The highly successful day was followed by an equally successful public lecture at UBC's Chan Centre by (Canadian) Professor Clifford Will of Washington University in St. Louis. His talk, "Was Einstein Right?" enthralled hundreds of people, as did the opening performance by the Borealis String Quartet. The weekend festivities were very well received by all who attended.

TRIUMF has begun a new initiative creating science education videos for high schools. These videos aim to assist teachers with their classes by demonstrating how the high school physics curriculum is applied at a laboratory like TRIUMF. The first video, "Approaching the Speed of Light: Demonstrating Special Relativity using the TRIUMF Cyclotron", was spearheaded by TRIUMF scientist Stan Yen and Richmond high school teacher Philip Freeman. Response from teachers has been very positive, so a copy of the DVD will be sent to every high school in Vancouver, and to any other high school in Canada that requests one. TRIUMF has applied to the NSERC PromoScience program for funds to create three more such videos.

For the second year the BC Innovation Council and TRIUMF have joined together to offer the $3000 High School Fellowship, attracting applications from over 100 of the top students in the province. This year's winner Jacob Cosman of Kamloops spent a six-week work term at TRIUMF working under Professor Jess Brewer of UBC. His excellent work led to a joint publication with Prof. Brewer and his collaborators. The Fellowship has been very successful and highly regarded, so plans are underway to expand the program in the near future.

Jacob Cosman of Kamloops, BC displaying his 2005 TRIUMF High School Fellowhip certificate.

Summer at TRIUMF means a lot of undergraduate students cutting their research teeth on various lab experiments. Ten students from the undergraduate summer program gave presentations on their research projects at the 5th Summer Student Symposium in the TRIUMF auditorium on July 27. The three-judge panel invited Heather Crawford to present her talk at the next Canadian Winter Nuclear & Particle Physics Conference in February 2006 at Banff, Alberta, while Tam Nhan and Chris Campbell were commended with honourable mentions. Everyone present was very impressed with the quality of the talks, which are improving each year.

Graduate students and young post-docs from Canada and around the world have been well served by the TRIUMF Summer Institute (TSI) for 17 years. This year's Institute was entitled "Atom and Ion Trap: Techniques and Applications" and it took place at TRIUMF from July 11-22. About 48 students studied atomic and molecular physics, nuclear and particle physics, applied solid state physics and even quantum computing, with formal lectures in the morning and an organized small-group discussion round plus tutorial session in the afternoon. Various extra curriculum activities were organized, and a poster session was held, where the participants presented their research to fellow students and lecturers. The posters were judged by the lecturers and prizes (donated by American Magnetics) were awarded at the fabulous conference dinner at the Vancouver Aquarium

In the fall several annual outreach activities will return to TRIUMF. On October 21, the BCAPT and the BC Science Teachers Association will host the Professional Development Day. About 90 teachers will attend lectures and lab activities for an entire day. This year's focus will be on physics topics for grades 9 and 10. And starting in November, the Saturday Morning Lecture Series will begin anew with public lectures on topics ranging from the philosophy of Albert Einstein to the applications of liquid mirror telescopes. Some lectures are also planned off site in Sechelt, BC. The schedule has not yet been finalized, but if last year was any indication, the lectures should prove to be very popular once again. •

Marcello Pavan

For more information, visit the following websites:
WYP2005: http://www.triumf.info/public/wyp/
TSI: http://www.triumf.ca/tsi/
SML: http://www.phas.ubc.ca/~outreach/satlect/index.htm

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Queens University
University of Regina
Saint Mary's University

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Design/layout by D. Giasson

Important Upcoming Dates

∗ see insert

NSERC	Research Tools and Instruments grant applications due	Oct 25	Ottawa
NSERC	Discovery grant applications due	Nov 1	Ottawa
ACOT	Advisory Committee on TRIUMF Meeting	Nov 4-5	TRIUMF
BOM	TRIUMF Board of Management Meeting	Nov 18	TRIUMF
SAPEEC*	Subatomic Experiments Evaluation Committee Meeting	Dec 1-2	TRIUMF
NSERC Town Hall	NSERC - LRP Town Hall Meeting	Dec 5-6	Montreal
TUG AGM*	TRIUMF Users' Group Annual General Meeting	Dec 7	TRIUMF
MMSEEC*	Molecular and Materials Science Experiments Evaluation Committee Meeting	Dec 8-9	TRIUMF
LSPEC*	Life Science Projects Evaluation Committee Meeting	Jan 26-27, 2006	TRIUMF

TUEC NEWS

NSERC has started a new long range planning exercise, which is intended to 'prepare a forward look for subatomic physics in Canada covering the period until 2016'. The process should be both a community- and a science-driven one. NSERC has formed a committee composed of people from all communities served by GSC 19, namely particle physics, nuclear physics, neutrino physics, astroparticle physics and theory.

The LRP committee (LRPC) is composed of:

S. Bhadra, York
M. Butler, St. Mary's
J. Dilling, TRIUMF
S. Godfrey, Carleton
C. Hearty, UBC/IPP
G. Huber, Regina
R. McPherson, UVic/IPP
T. Noble, Queen's
K. Ragan, McGill (Chair)
C. Svensson, Guelph

A Nuclear Physics Town Hall Meeting for the NSERC long range planning exercise was held at TRIUMF, Friday and Saturday 9-10 September 2005. The submitted documents and presentations will serve as a basis to prepare a brief from the nuclear physics community. The presentations are now available on the Internet (thanks to M. Comyn), directly via the TUG page http://www.triumf.ca/tug/npthm/ or via the DNP Web site http://www.phys.uregina.ca/dnp/. The page is password protected, since presentations include budgets, student names, etc. The user ID and password can be requested from a committee member (see below) or the TRIUMF users group secretary at tug@triumf.ca.

For the Nuclear Physics community, the time-line is the following:

25 Sep	Final submission of briefs to Nuclear Physics Brief Committee
14/15 Oct	Meeting of Nuclear Physics Brief Committee at TRIUMF
22 Oct	Draft brief out to community for comments
1 Nov	Deadline for feedback from community
15 Nov	Final submission of brief to NSERC LRP committee

For the NSERC LRP process, a Town Hall meeting for the entire subatomic physics community is planned for 5-6 Dec. 2005 in Montreal. A draft of the LRP document will be generated in early January 2006 and will be available for the NSERC GSC. This year's TUG AGM will be held on Wed. Dec. 7 at TRIUMF, following the tradition to place it between the SAP EEC (Dec 1-2) and the MMS EEC (Dec 8-9). Amongst other topics, a summary of the Montreal NSERC THM will be given. Details for the AGM will be circulated shortly. •

Jens Dilling
TUEC Chair

If you have any questions or comments to the nuclear physics procedure, or if you want to provide additional information, please contact the committee:

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To join TUG or contact TUEC members, please visit the TRIUMF Users' Group website at:
http://www.triumf.ca/tug/

Detailed information about the LRPC can be found on the NSERC LRP website http://www.ap.smu.ca/lrp/

TRIUMF Beam Schedule

The current TRIUMF beam schedule is available on the Web at:

https://admin.triumf.ca/docs/eec/

Users should subscribe to the automated update notification to receive notice of changes which may be required during the period already scheduled.