TRIUMF

ANNUAL REPORT
SCIENTIFIC ACTIVITIES
2003

ISSN 1492-417X

CANADA'S NATIONAL LABORATORY
FOR PARTICLE AND NUCLEAR PHYSICS

OPERATED AS A JOINT VENTURE

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UNDER A CONTRIBUTION FROM THE
NATIONAL RESEARCH COUNCIL OF CANADA

DECEMBER 2004

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.

Appendix B

SEMINARS*

The following seminars were presented at TRIUMF this year.

09/01 *Precision Spectroscopy of Pionic Hydrogen*, Johannes Zmeskal, Inst. Medium Energy Physics, Vienna.
13/01 *QED Theory and Isotope Shifts in Few-Electron Atoms*, Gordon Drake, U. Windsor.
17/01 *Pierre Auger Cosmic Ray Observatory*, Gertjan Hofman, TRIUMF.
23/01 *The μSR Technique at TRIUMF: Applications to Superconductivity*, Jeff Sonier, SFU.
28/01 *The Present and Future of Big Bang Nucleosynthesis*, Richard Cyburt, U. Illinois.
05/02 *REX-ISOLDE: Present Status and Future Plans for the Machine and the Experiments*, Joakim Cederkall, CERN.
06/02 *Nucleosynthesis in Shells on Top of Degenerate Cores*, Falk Herwig, U. Victoria.
11/02 *Studying Chiral 2N and 3N Forces in Few-Nucleon Systems*, Andreas Nogga, U. Arizona.
13/02 *Phenomenology of the Littlest Higgs Model*, Bob McElrath, U. Wisconsin.
18/02 *Final-State Phase Information in Heavy Meson Decays*, Cheng Wei Chiang, ANL.
20/02 *Nucleosynthesis and Extra-Mixing in Low-Mass Red Giants*, Pavel Denissenkov, U. Victoria/U. St. Petersburg.
25/02 *Unquenched QCD with Light Quarks*, Jaebeom Yoo, U. Pittsburgh.
26/02 *Shape Coexistence in Neutron-Deficient Lead Nuclei*, George Dracoulis, Australian National U.
27/02 *Extraction of the Magnetic Form Factor of the Neutron $G_M^n(Q^2)$ from Inclusive Quasi-Elastic Scattering of Electrons from Light Targets*, Avraham Rinat, Weizmann Inst.
04/03 *Desperately Seeking SUSY*, Isabel Trigger, CERN.
12/03 *Properties of Nucleons and Their Interaction in the Medium*, Willem Dickhoff, Washington U., St. Louis.
13/03 *Magnets for the LHC*, Gijs de Rijk, CERN.
14/03 *Can We Trust the Random Phase Approximation?*, Ionel Stetcu, Louisiana State U.
17/03 *Recent Rare B Decay Results from the BaBar Experiment*, Steven Robertson, SLAC.
31/03 *Virtual Compton Scattering Off the Nucleon*, Stefan Scherer, Johannes-Gutenberg U., Mainz.
03/04 *Nuclear Physics and Core-Collapse Supernovae*, Karlheinz Langanke, Aarhus U.
04/04 *Fast and Slow Rare Isotope Beams at the NSCL*, Georg Bollen, Michigan State U.
07/04 *Parity and Time Reversal Violation in Atoms and Nuclei and Test of the Standard Model*, Victor Flambaum, U. New South Wales.
10/04 *Two Examples of Using Nuclear Physics in the Cosmos: Sub-Barrier Fusion and Neutrino-Nucleus Scattering*, Baha Balantekin, U. Wisconsin-Madison.
17/04 *Hyperon Semi-Leptonic Decays – An Overview*, Ashkan Alavi, U. Wisconsin-Madison.
24/04 *Rare Vector-Vector B Decays: A Laboratory for Strong and Weak Dynamics*, Andrei Gritsan, UC Berkeley.
25/04 *Navigating Through Strong Interactions with Heavy Quarks*, Mikhail Voloshin, U. Minnesota.
01/05 *MICE – The Muon Ionisation Cooling Experiment*, Rob Edgecock, Rutherford Lab.
09/05 *Status Report of the SPIRAL2 Design Study*, Alban Mosnier and Robin Ferdinand, Saclay.
14/05 *Recent Nuclear Structure Studies of Neutron-Rich Nuclei Produced by Low-Energy Fission*, Gary Simpson, Institut Laue-Langevin, Grenoble.
15/05 *20 Years of PET Chemistry at TRIUMF*, Mike Adam, TRIUMF.
22/05 *Prostate Cancer, Pharmaceutical Research and PET*, Emma Guns, VGH/UBC.
26/05 *ROOT: A Framework for Data Storage and Analysis*, Rene Brun, CERN.
28/05 *Superconducting Linac Developments for the European RIB Facility Projects*, Alberto Facco, LNL-INFN.
29/05 *Ups and Downs of Nuclear Isomers*, Phil Walker, U. Surrey/TRIUMF.
02/06 *Three Themes for Experiments with Radioactive Beams*, Joakim Cederkall, MPI, Heidelberg/CERN.
03/06 *Indirect Measurements for Determining the Production of ^{22}Na and ^{26}Al in Explosive Stellar Burning Sites*, Jac Caggiano, Yale U.
04/06 *Indirect Techniques in Experimental Nuclear Astrophysics*, Barry Davids, KVI, Groningen.
05/06 *The Charm and Beauty of Lattice QCD*, Aida El-Khadra, U. Illinois.
19/06 *LSND and Rare Muon Decays*, Sandip Pakvasa, U. Hawaii.
24/06 *Physics with Intense Ultracold Neutrons*, Yasuhiro Masuda, KEK.
25/06 *Jet Quenching at RHIC*, Carl Gagliardi, Texas A&M U.
02/07 *Accelerator Activities at VECC and in India*, Bikash Sinha, Saha Inst., India.
03/07 *Signals of Quark Gluon Plasma – Terrestrial and Cosmological*, Bikash Sinha, Saha Inst., India.
10/07 *First Observation of Doubly Charmed Baryons*, Murray Moinester, Tel Aviv U.
11/07 *At the Limits of Nuclear Stability: The Observation of Two-Proton Emission*, Bertram Blank, ANL/CEN Bordeaux-Gradigan.

18/07 *MINERvA: A High Statistics, Neutrino-Nucleus Scattering Experiment in the NuMI Beam at Fermilab*, Jorge Morfin, Fermilab.
24/07 *Status of Neutrino Mixing and Oscillations*, Samoil Bilenky, JINR, Dubna.
28/07 *In the Zinc Mine, But Looking Up at the Stars: Neutrino Astronomy at Super-Kamiokande*, Matthew Malek, SUNY.
05/08 *Ultraprecise Measurement of the Electronic g-Factor in Hydrogen-Like Oxygen*, Jose Verdu, U. Mainz.
08/08 *The HERMES Recoil Detector*, Ralf Kaiser, U. Glasgow.
11/08 g_A*, the Lattice and* $\pi N \rightarrow \pi\pi N$, Thomas Hemmert, U. Munich.
12/08 *Pentaquark*, Kim Maltman, York U.; Andy Miller and Byron Jennings, TRIUMF.
18/08 *Overview and Status of the RIA Project*, Jerry Nolen and Guy Savard, ANL.
19/08 *Deconstructing the Charm and Charm-Strange P-Wave Mesons*, Stephen Godfrey, Carleton U.
25/08 *LIBO: A CERN-INFN Linac Booster for Proton Therapy at TERA: Rationale, Construction and First Prototype Tests*, Dario Giove, LASA-INFN, Milan.
15/09 *First Results from the Salt Phase of the Sudbury Neutrino Observatory*, Alysia Marino, LBNL/UC Berkeley.
16/09 *The Penning Trap System of SHIPTRAP*, Günther Sikler, Gesellschaft für Schwerionenforschung, Darmstadt.
18/09 *Recent Results from the D0 Experiment*, Brigitte Vachon, Fermilab.
22/09 *Highly Excited Nuclear States at Low Laboratory Energies*, Goetz Ruprecht, Technische U., Berlin.
03/10 *The* $^{21}Na(p,\gamma)^{22}Mg$ *Reaction from* E_{cm} *= 200 to 800 keV in Explosive Stellar Events*, Shawn Bishop, SFU.
09/10 *Nuclear Spectroscopy Using Radioactive Ion Beams from the HRIBF*, Alfredo Galindo-Uribarri, ORNL.
09/10 *Status and Scope of the J-PARC Project in Japan*, Shoji Nagamiya, KEK/JAERI.
16/10 *Neutron Electric Dipole Moment*, Richard Mischke, LANL.
17/10 *Present Status of Applications of Liquid Xenon Scintillation Detectors*, Tadayoshi Doke, Waseda U.
27/10 *Development and Applications of the Gas Electron Multiplier*, Fabio Sauli, CERN.
30/10 *Light Baryon Resonances in Constituent Quark Models*, Lukas Theussl, TRIUMF.
13/11 *Beautiful Mirrors and Precision Electroweak Data*, Tim Tait, Fermilab.
14/11 *Production of Dilepton Events at CDF*, Reda Tafirout, U. Toronto.
14/11 *Resonant Bose-Einstein Condensation*, Carl Wieman, U. Colorado.
20/11 $^{7}Be(p,\gamma)^{8}B$ *and Solar Neutrinos*, Kurt Snover, U. Washington.
21/11 *Beta-Decay of* ^{11}Li, Fred Sarazin, Colorado School of Mines/TRIUMF.
24/11 *Parity Violation in e-p Scattering: The G0 and Qweak Experiments at JLab*, Larry Lee, U. Manitoba.
25/11 *Hint of New Physics in* $B \rightarrow \phi K_S$, Alakabha Datta, U. Toronto.
26/11 *A Hot Topic with Cool Results – Muon Frictional Cooling*, Raphael Galea, MPI, Munich.
01/12 *Very Small Asymmetries and the Weak Interaction*, Gregory Mitchell, LANL.
02/12 *Grid Computing for the LHC: A Practical Example*, John White, Helsinki Inst. Physics.
04/12 *Secrets of E949*, Joe Mildenberger, TRIUMF.
05/12 *Casting Light on Antimatter: Fundamental Physics with Cold Antihydrogen*, Makoto Fujiwara, RIKEN.
10/12 *Physics for the Birds*, Boye Ahlborn, UBC.
17/12 *Experience with ALPI and PIAVE Resonators*, Anna-Maria Porcellato, LNL-INFN.
18/12 *Weak Pion-Nucleon Coupling and Parity Violation in the Radiative Capture of Polarized Cold Neutrons on Hydrogen*, Michael Gericke, Indiana U.

The following ISAC seminars were presented at TRIUMF this year.

26/02 *The TRIUMF Neutral Atom Trap Physics Program*, Dan Melconian, TRIUMF.
12/03 *Revisiting the* $^{12}C + \alpha$ *Theoretical Description*, Jean-Marc Sparenberg, TRIUMF.
19/03 *The Heidelberg EBIT (Electron Beam Ion Trap) System, a Device for Breeding High Charge States and Precision Experiments: First Measurements and Tests*, Michael Trinczek, MPI for Nuclear Physics, Heidelberg.
26/03 *Reports from the RIA Workshop, Oak Ridge, March 18–22, 2003*, John Behr, Joe Vaz, Helen Scraggs and Fred Sarazin, TRIUMF.
09/04 *The DRAGON is Puffing – An Extended Status Report*, Sabine Engel, U. Bochum.
23/04 *Meson and Quark Effects in Nuclear Beta Decay of the A=12 System and* ^{20}Na *Beta-Ray Angular Distribution from Oriented Nuclei*, Kei Minamisono, Osaka U./TRIUMF.
21/05 *The ISAC Front End: Production of Exotic Nuclei*, Marik Dombsky, TRIUMF.
04/06 *The Laser Ion Source System at ISAC*, Jens Lassen, TRIUMF.
18/06 *Calibration and Simulation of a Gamma Array for DRAGON*, Dario Gigliotti, UNBC/TRIUMF.
02/07 *The Quantum: Still Crazy After All These Years*, Jim Al-Khalili, U. Surrey.
06/08 *TIGRESS*, Helen Scraggs, TRIUMF.
15/10 *Resonant Elastic Scattering Studies at TUDA*, Chris Ruiz, TRIUMF.
12/11 (α,p) *Reactions in Nuclear Astrophysics*, Ernst Rehm, ANL.

24/11 *SCEPTAR: The New Scintillating Array for the 8π Spectrometer*, Elizabeth Cunningham, TRIUMF/U. Surrey.
24/11 *Enter the DRAGON: Investigating the $^{13}C(p,\gamma)^{14}N$ Reaction*, Aaron Bebington, TRIUMF/U. Surrey.
03/12 *^{182}Hf, from the Early Solar System to a Possibly Live Supernova Remnant on Earth*, Christof Vockenhuber, U. Vienna.

The following UBC/TRIUMF joint colloquia were presented this year.

30/01 *Unstable Nuclei in Cosmic Explosions and in Radioactive Beams on Earth*, Hendrik Schatz, Michigan State U.
25/03 *Meson Spectroscopy in the AdS/CFT*, Rob Myers, Perimeter Inst.
29/07 *The Decay $K^+ \to \pi^+\nu\bar{\nu}$ at BNL E787/E949*, Bipul Bhuyan, Delhi U.

The following lunchtime seminars were presented at TRIUMF this year.

20/01 *Report on Neutrino-Nucleus Interactions Conference 2002*, Stan Yen, TRIUMF.
28/04 *WestGrid*, Michel Vetterli, SFU.
13/05 *Weak Interaction Tests at Low Energies*, Nathal Severijns, K.U. Leuven.
16/06 *Building Web-Based Software Applications*, Morgan Burke, TRIUMF.
24/07 *VME Standards and CAEN/WIENER Nuclear VME Developments*, Andreas Ruben, WIENER/CAEN USA.
02/09 *Introducing GEANT4*, Makoto Asai, SLAC.
03/09 *Electromagnetic Physics in GEANT4*, Michel Maire, LN2P3/LAPP.
04/09 *Hadronic Physics in GEANT4*, Hans-Peter Wellisch, CERN.
05/09 *AIDA/JAS/WIRED: Interactivity and Visualization*, Massimiliano Turri, SLAC.
17/11 *Report on the NSS Conference*, P. Amaudruz and P. Gumplinger, TRIUMF.

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* All matters concerning TRIUMF seminars should be referred via e-mail to seminar@triumf.ca

The latest listing of TRIUMF seminars can be seen at http://admin.triumf.ca/netdata/seminars/list