

Ottawa Carleton Institute for Physics

L'Institut de physique d'Ottawa Carleton

2005 Newsletter

In 2005, OCIP underwent some important changes. Bela Joós replaced Gerald Oakham as Director and Stephen Godfrey became Associate Director. Carleton University welcomed two new faculty members, David Asner an experimental particle physicist and Heather Logan a theoretical particle physicist. Paul Johns became Chair of the Carleton Physics Department in 2005 and Feridun Hamdullapur, Carleton's VP Research and International, became the chair of the TRIUMF board of management, an important position in subatomic physics in Canada. At the University of Ottawa, Gary Slater became Dean of the Faculty of Graduate and Postdoctoral Studies.

Our members continued their active involvement in the affairs of the physics community. Steve Godfrey was a member of the NSERC Subatomic Physics Long Planning Committee which, through extensive consultation with the community, is to prepare recommendations for the long range planning of the discipline in Canada. As Béla Joós completed his term on NSERC Grant Selection Committee, Condensed Matter, GSC 28, Pawel Hawrylak was appointed for the next competition keeping three Institute members on the GSC's, with Xiaoyi Bao on GSC 29 (General Physics), and André Longtin on GSC 21 (interdisciplinary). Pawel was also elected secretary of the Commission on Semiconductors (C8) of the International Union of Pure and Applied Physics (IUPAP) and appointed to the Editorial Board of Solid State Communications. D. Rogers was appointed as one of 2 deputy editors of Medical Physics, the pre-eminent journal in our field. He is also a Consultant to the IAEA on the creation of a phase-space database for external beam radiotherapy. Xiaoyi Bao was appointed Topical Editor for the Journal of Applied Optics (an Optical Society of America journal). In addition she served as the 2005 SPIE (The International Society for Optical Engineering) Visiting Lecturer. She was a Committee member of "Optical fiber sensors for civil engineering applications" -a subcommittee of International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM) since 2005. She also began her term as Council member of the International Society for Structural Health Monitoring of Intelligent Infrastructure (ISHMII). Ivan L'Heureux was the external evaluator for the graduate and undergraduate programs in physics at Université de Sherbrooke. And Gary Slater sat as a member of the Board of Directors of C3.ca (Canadian Organization for the Performance Computing in the Country). Mads Kaern was elected Founding and Interim President of the Canadian Society for Systems Biology. He arranged its 1st organizational meeting in November, in Ottawa. Systems Biology is a new emerging area which the institute has identified as a priority area.

This brings us to the usual participation of our members in the organization of conferences, with Bao serving on numerous planning committees, several as member of the international advisory committee (Second International Conference on Structural Health Monitoring of Intelligent Infrastructure, SPIE Smart Structures and Material Annual Conferences: Smart sensor technology and measurement systems, San Diego, USA, the ISIS Canada Annual Meeting in Ottawa, the 1st International Workshop on Opto-electronic Sensor based monitoring in Geo-engineering (1st OSMG-2005), Optical Fibre Sensors (OFS) 17 conference and chair of the laser development session. Pawel Hawrylak was also busy as member of the International Advisory Committee for the International Conference on Electronic Properties of Two-Dimensional Electronic Systems, EP2DS-16, Albuquerque, USA, Co-Director, Polish-Canadian workshop on Nanospintronics, Warsaw-Wroclaw, and Co-Director, Canadian Institute for Advanced Research workshop "Controlling electrons, excitons and photons on nanoscale", Banff, Canada, and Member of the International Program Committee for the International Conference on Quantum Electronics, Tokyo, Japan, July 2005. S. H. Logan was on the Conference organizing committee of Pheno 2005 Symposium held at University of Wisconsin in Madison, and acted as co-

convener for the "CP-Violating and Nonstandard Higgs" working group report, for the chapter on Little Higgs models and co-convener of the Higgs Working Group of the 2005 International Linear Collider Physics and Detector Workshop held at Snowmass Colorado.

Our members were distinguished by honorary appointments and awards. Gary Slater was named University Chair in Biological Physics at the University of Ottawa. Pawel Hawrylak was appointed "Professor Titular of Physical Sciences" by the President of Poland. Peter Raaphorst retired from his position as Head of Medical Physics of The Ottawa Hospital Regional Cancer Centre in the summer of 2005 after twenty years service at the Ottawa Regional Cancer Centre. In 2005 he also received a Career Achievement Award from the Ottawa Life Sciences Council in recognition of his significant contribution to the life sciences sector in the Ottawa area. And Ian Cameron became a Fellow of the Canadian College of Physicists in Medicine. A paper by P.C. Johns and M.P. Wismayer, "Measurement of Coherent X-Ray Scatter Form Factors for Amorphous Materials using Diffractometers", *Physics in Medicine and Biology* 49, 5233-5250 (2004), was awarded the Sylvia Fedoruk Prize in Medical Physics by the Saskatchewan Cancer Agency. This prize is for the "best" medical physics paper published in the previous calendar year for work done wholly or mostly in a Canadian institution and was given at the July 2005 COMP/CCPM conference. Finally, Dave Rogers is the Founding Chair of the Canadian Organization of Medical Physicists Gold Medal Committee which established the criteria for this new medal and is responsible for selecting the recipients.

2005 OCIP Seminar Series

OCIP – Spring Graduate Student Seminar Day University of Ottawa – Wednesday, May 18, 2005

13:00	Cyril Hnatovsky (U. Ottawa) Polarization Selective Etching in Femtosecond Laser-assisted Microfluidic Channel Fabrication in Glasses.
13:30	Cliff Dugal (Carleton U.) Application of Monte Carlo to Linac Bunker Shielding
14:00	Jim Evans (U. Ottawa) Ab initio simulations of quadrupole splitting distributions.
14:30	Elena Tonkopi (Carleton U.) Influence of ion chamber response on in-air profile and scatter factor measurements in megavoltage photon beams.
15:00	Pause avec rafraîchissements / Break with refreshments
15:30	Adrian Pegoraro (U. Ottawa) Modeling Nonlinear Optical Phenomena in Inhomogeneous Microscopic Systems.
16:00	Lourdes Fernandez (Carleton U.) Fitting the linear quadratic model to detail data set for different dose ranges.
16:30	Chris Smelser: (U. Ottawa) Fabrication of fiber Bragg gratings with an ultrafast 800 nm laser source.

OCIP – Spring Graduate Student Seminars University of Ottawa – Tuesday, May 24, 2005

13:00	David Babineau (University of Ottawa) Modeling the Electric Field and Naturalistic Stimuli of Weakly Electric Fish.
13:30	Zdenko Sego (Carleton University) Multiple-source models for the beams from an Elekta SL25 clinical accelerator.
14:00	Iana Tsandev (University of Ottawa) Factors Affecting the Cycling of Iron, Phosphorus and Sulfur in Lake Sediments.
14:30	Zhanrong Gao (Carleton University) A study of prostate delineation by using a gold standard from the Visible Human Project.
15:00	Pause avec rafraîchissements / Break with refreshments

15:30	Marzieh Nezamzadeh (Carleton University) MR diffusion study in human brain tissue in-vivo.
16:00	Alain Gauthier (University of Ottawa) Permeability of a lipid bilayer.
16:30	Louise Heelan (Carleton University) A Search for Periodic Time Variations in the Solar Neutrino Data from the Sudbury Neutrino Observatory.

**OCIP – Fall Graduate Student Seminars
University of Ottawa – Wednesday, December 7, 2005**

13:15	Pierre-Alexandre Boucher University of Ottawa	"Rupture of Lipid Bilayers under a Tension Ramp with peptides in solution"
13:45	Sebastien Casault University of Ottawa	"A Combinatorial Approach to Controlling Drug Delivery from Passive Hydrogels"
14:15	Ken Nkongchu Carleton University	"Gel Dosimetry by 3D Magnetic Resonance Imaging"
14:45	Jason Middleton University of Ottawa	"Electrosensory processing and response to higher order stimulus features in weakly electric fish "
15:15	Break with refreshments /Pause avec rafraîchissements	
15:45	Connie Sutherland University of Ottawa.	"Delayed Spatio-Temporal Feedback in Stochastic Neural Networks"
16:15	José Manuel Martinez Carleton University	"Brain Ultrasound Thermotherapy: Biophysics, Technology and Instrumentation"
16:45	Martin Kenward University of Ottawa	"Polymers in Silico: Molecular Dynamics simulations of polymers in sieving media (and related topics)"

**OCIP – Christmas Symposium
University of Ottawa – Monday, December 19, 2005**

9:00	David Asner Carleton University	Charm School for the Holidays
9:30	Marek Korkusinski University of Ottawa	Atomistic simulations of strain and electronic structure of multimillion-atom nanostructures
10:00	Heather Logan Carleton University	A Recycled Gift: Radiative Corrections to Dark Matter Annihilation
10:30	Break with refreshments / Pause avec rafraîchissements	
11:00	Lora Ramunno University of Ottawa	Controlling the world on the nanoscale
11:30	Ian Cameron Carleton University	Diffusion Effects in MRI
12:30	Lunch	

2005 Departmental Seminars

Name	Institution	Title	Date	Host
Dr. Vladimir Kalosha	Dept. of Physics University of Ottawa	Bylayer Mechanics and Conformational Equilibria of Voltage-Gated Channels	Jan. 6, 2005	O
Dr. Catherine E Morris	Ottawa Hospital Civic Campus	Complexity and Physics of Human Movement	Jan. 13, 2005	O
Dr. Ramesh Balasubramaniam	School of Human Kinetics University of Ottawa	Fibers and Fiber Devices for Next Generation Optical Networks	Jan. 20, 2005	O
Dr. Scott Yam	Dept. of Electric & Computer Eng. Queen's University	Stimulated Brillouin Scattering: from Bulk Materials to Micro-Structured Optical Fibers	Jan. 27, 2005	O
Dr. Shahraam Afsha Vahid	Dept. of Physics University of Ottawa	PMD and PDL Impairments in Optical Systems	Feb. 3, 2005	O
Dr. Mauricio O'Sullivan	Nortel Networks		Feb. 10, 2005	O
Dr. Khalil Boudjemline	Carleton University	Study of the CPC tracking chambers for the ALICE dimuon spectrometer	Feb. 14, 2005	C
Dr. Javier B. Giorgi	Dept. of Chemistry University of Ottawa	Understanding SOFC Catalysts: from Surface Science to Reactions	Feb. 17, 2005	O
Dr. Franz X.Kartner	Engineering & Computer Laboratory of Electronics ETHs Institute of Technology	Few-Cycle Pulse Generation and It's Applications	Feb. 24, 2005	O
Dr. David Hanna	McGill University	Very High Energy Gamma-ray Astronomy with VERITAS	Feb. 28, 2005	C
Dr. Manuella G. Vincter	Dept. of Physics Carleton University	The Mystery of Matter	Mar. 3, 2005	C
Dr. Brigitte Vachon	McGill University	Searching for Truth using the DZero experiment	Mar. 7, 2005	C
Dr. Aleksei Aksimentiev	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbanan-Champaign	Electronic Recognition of DNA Strands with Nanopore Sensors	Mar. 9, 2005	O
Dr. Marco Verzocchi	University of Maryland	Measuring the W Mass at D0	Mar. 9, 2005	C
Dr. C. Burgess	McGill University	String Theory: Quantum Mechanics and Gravity: the Start of a Beautiful Relationship?	Mar. 10, 2005	C
Dr. Ron Miller	Mechanical and Aerospace Engineering Carleton University	Multi-Scale Modeling: Molecular Dynamics Simulations without all the Atoms	Mar. 10, 2005	O

Dr. Mu-Chun Chen	Brookhaven National Laboratory	Fermion Masses, Neutrino Oscillations and SUSY Grand Unification	Mar. 14, 2005	C
Dr. Alain Côté	Research Institute of Hydro-Québec	Optical Fiber Sensors in Electric Utilities	Mar. 17, 2005	O
Dr. Manuella Vincter	Carleton University	The Mystery of Matter	Mar. 18, 2005	C
Dr. Norbert Bartel	York University	Annual Canadian Association of Physicists Lecture "Testing Einstein's Universe"	Mar. 24, 2005	O
Dr. Heather Logan	University of Wisconsin	Higgs Physics at Hadron Colliders	Mar. 24, 2005	C
Dr. Norbert Bartel	York University	Testing Einstein's Universe	Mar. 24, 2005	O
Dr. Frank Petriello	Johns Hopkins	Opportunities and challenges at the Large Hadron Collider	March 29, 2005	C
Dr. Gary Slater	Dept. of Physics University of Ottawa Brownian Motion: the life of dancing molecules"	Brownian Motion: The Life of Dancing Molecules	Mar. 31, 2005	O
Dr. Kevin Graham	Queen's University	Mass, Mixing, and the Neutrino Renaissance	Mar. 31, 2005	C
Dr. Jerry Battista	London Regional Cancer Centre	Introductory Medical Physics: What's a Nice Physicist Like You Doing in a Hospital?	Apr. 1, 2005	C
Dr. Steve Nahn	Yale University	The Road to Bs Mixing	Apr. 5, 2005	C
Dr. David Asner	University of Pittsburgh	Selected Charm Readings From CLEO	Apr. 6, 2005	C
Dr. B.Y. Ha	Dept. of Physics University of Waterloo	DNA-Inspired Physics: Theory and Biological Relevance	Apr. 7, 2005	O
Dr. Richard Teuscher	University of Chicago	Challenges of the ATLAS Experiment at the LHC	Apr. 7, 2005	C
4 th -year students	Department of Physics, University of Ottawa	Honours Research Projects	Apr. 11, 2005	O
Dr. Guillaume Gervais	University of McGill,	NMR in Flatland and with Too Few Spins	Apr. 14, 2005	O
Dr. Robert Leheny	Dept. of Physics, Johns Hopkins University	Worms with Torque, Levitating Wires, and Other Adventures with Particles in Complex Fluids	Apr. 27, 2005	O
Dr. Philippe Van Cappellen	Dept. of Geochemistry, University of Utrecht.	Relating Microbes and Environmental Change	Apr. 28, 2005	O
Wolfgang Kilian	DESY	Split Supersymmetry at Colliders	May 2, 2005	C
Dr. James Harden	Department of Chemical and Biomolecular Engineering Johns Hopkins	A Macromolecular Model of the Endothelial Surface Layer	May 11, 2005	O

	University			
David Asner	University of Pittsburgh	Introduction to Charm Dalitz Plot Analyses at CLEO	May 19, 2005	C
Dr. Paul Beckwith	Dept. of Physics University of Ottawa	Climate Change: Science and Effects	June 8, 2005	O
Dr. Brent Doiron	Centre for Neural Systems, New York	Synchrony-Rate Relationship in Networks of Spiking Cortical Neurons	June 15, 2005	O
Dr. Louis-Philippe Lamoureux	Centre for Quantum Information and Communication Université Libre de Bruxelles, Belgium	Aspects of Quantum Computation, Cryptography and Non-Locality	Aug. 19, 2005	O
Dr. Rouzbeh Allahverdi	TRIUMF	Thermalization after inflation in supersymmetry	Sep. 13, 2005	C
Dr. Rob DeKemp	Ottawa Heart Institute	Small Animal Positron Emission Tomography for Research in Heart Disease	Sep. 20, 2005	C
Physics Fest 2005	Department of Physics University of Ottawa		Sept. 22, 2005	O
Dr. Bumsoo Kyung	Département de physique, Université de Sherbrooke	Anomalous Normal States of High Temperature Superconductors	Sept. 29, 2005	O
Dr. Michel Loreau	Department of Biology McGill University	Biodiversity and Ecosystem Functioning : Linking Theory and Experiments	Oct. 6, 2005	O
Dr. Jonathan Marangos	Imperial College, London, UK	Molecular Orbital Dependence of High Harmonic Generation	Oct. 7, 2005	O
Dr. Sergei Sukharev	University of Maryland, College Park, MD	Vapor as Channel Gate	Oct. 13, 2005	O
Dr. Claus Fuetterer	Institut Curie, Paris, France	Magnetic Beads in Microfluidic Devices, a Powerful Combination	Oct. 17, 2005	O
Dr. Kuiying Chen	Institute for Aerospace Research, NRCC, Ottawa, ON	Multiple-Scale Modeling of High-temperature and Functional Materials, Materials Informatics Towards Nanostructured Coating Design	Oct. 20, 2005	O
Dr. Clifford M. Will	Washington University	Was Einstein Right?	Oct. 22, 2005	C
Dr. Dan Dalacu	Institute for Microstructural Sciences, NRCC, Ottawa, ON	Site-selected InAs/InP Quantum Dots – A Source of Single Photons	Nov. 10, 2005	O
Dr. Erich Poppitz	University of Toronto	The wonders of supersymmetry: from quantum mechanics, topology, and noise to (maybe) the LHC	Nov. 22, 2005	C
Dr. Tong Xu	University of California	Real-time tumor tracking using implanted positron	Nov. 23, 2005	C

		emission markers: concept and simulation study		
Dr. Ramin Abolfath	Institute for Microstructural Sciences, NRCC, Ottawa, ON	Correlations in Low Dimensional Electron Systems: Quantum Dot Molecules	Dec. 1, 2005	O
Dr. David Yevick	Department of Physics, University of Waterloo	Optical Communication System Analysis with the Multicanonical Method	Dec. 8, 2005	O
Dr. Juan Parra-Robles	Robharts Research Institute	Magnetic Resonance Imaging of the Lungs using Hyperpolarized Noble Gases	Dec. 9, 2005	C
Dr. Andreas Warburton	Seeing Beauty with the Collider Detector at Fermilab	Seeing Beauty with the Collider Detector at Fermilab	Dec. 13, 2005	C

Publications in Refereed Journals and Book Series in 2005

Shiquan Yang, **Xiaoyi Bao**, "Repetition-rate-multiplication in actively mode-locking fiber laser by using phase modulated fiber loop mirror". IEEE J. Quantum Electron. 41. 1285-1292 (2005)

Qinrong Yu, **Xiaoyi Bao**, Fabien Ravet, and Liang Chen, "A simple method to identify the spatial resolution better than pulse length with high strain accuracy". Opt. Lett. 30, No. 17, 2215-2217 (2005).

F. Ravet, **X. Bao**, Q. Yu, and **L. Chen**, "Criterion for sub-pulse-length resolution and minimum frequency shift in distributed Brillouin sensors". IEEE Photon. Techno. Lett. 17, 1504-1506 (2005).

Y. Wan, S. Afshar, L. Zou, L. Chen and **X. Bao** "Sub-peaks in Brillouin loss spectra of the distributed sensor system". Opt. Lett. 30, May 15, 1099-1101 (2005)

X. Bao, Y. Wan, L. Zou, L. Chen, "Effect of the optical phase on the distributed Brillouin sensor at centimeter spatial resolution". Opt. Lett. 30, April 15, 827-829 (2005).

Fabien Ravet, **Xiaoyi Bao**, Liang Chen, "A simple approach to determine minimum measurable stress length and stress measurement accuracy in distributed Brillouin sensing", Applied Optics, 44, No. 25, 5204-5310 (2005)

S. Yang, E. A. Ponomarev, **X. Bao**, "Experimental study on relaxation oscillation in a detuned FM harmonic mode-locked Er-doped fiber laser", Opt. Commun. 245, 371-376 (2005)

L. Zou, **X. Bao**, Y. Wan and **L. Chen**, "Coherent pump-probe based Brillouin sensor for 1cm crack detection". Opt. Lett. 30, 370-372 (2005)

S. Yang, E. A. Ponomarev, **X. Bao**, "80GHz pulse generation from a repetition-rate-doubled FM mode-locked fibre laser", IEEE Photonics Technol Lett. 17, 300-302 (2005).

L. Zou, **X. Bao** and **L. Chen**, "Distributed Brillouin Temperature Sensing in photonic crystal fiber", J. Smart Materials and Structures (SMS). 14, No. 3, 8-11(2005).

S. Afshar, V. P. Kalosha, X. Bao, and **L. Chen**, "Enhancement of stimulated Brillouin scattering of higher order acoustic modes in single mode optical fibers". Opt Lett. 30, No. 20, 2685-2687 (2005).

S. Yang, **L. Chen** and X. Bao, "Wavelength dependence studies on the transmission characteristics of the concatenated PDL and PMD elements". Opt. Engineering, 44 (11): 115006. Nov. 2005

- Qinrong Yu, Xiaoyi, Bao, Fabien Ravet, and **Liang Chen**, "A simple method to identify the spatial resolution better than pulse length with high strain accuracy". *Opt. Lett.* 30, No. 17, 2215-2217 (2005).
- S. Afshar, X. Bao, L. Zou and **L. Chen**, "Brillouin spectral deconvolution method for centimetre spatial resolution and high accuracy strain measurement in Brillouin sensors", *Opt. Lett.* 30, 705-707 (2005).
- D. S. Waddy, **Liang Chen**, and X. Bao. "Polarization effects in aerial fibers", invited review, *Optical Fiber Technology*, 11, 1-19 (2005).
- A. Mestrovic **B. G. Clark**: "Geometric Parameter Analysis to Predetermine Optimal Radiosurgery Technique for the Treatment of Arteriovenous Malformation". *Int. J. Rad. Oncol. Biol. Phys* 63(3): 940-951, 2005.
- M. P. Petric, J. L. Robar, **B. G. Clark**: "A comparison of two commercial treatment planning systems for IMRT". *J App. Cl Med Phys*, 6(3): 63-80, 2005.
- J. L. Robar, **B. G. Clark**, J. W. Schella, and C. S. Kim: "Analysis of patient repositioning accuracy in precision radiation therapy using automated image fusion". *J App. Cl Med Phys*, 6 (1): 71-83, 2005.
- G.X. Ding, **J.E. Cygler**, C.W.Yu, N.I. Kalach, G.M. Daskalov: "A comparison of electron beam dose calculation accuracy between treatment planning systems using either a pencil beam or a Monte Carlo algorithm". *Int. J. Rad. Onc. Biol. Phys.* 63 622-633, 2005
- J.E. Cygler**, C. Lochrin, G.M. Daskalov, M. Howard, R. Zohr, B. Esche, L. Eapen, L. Grimard, J.M. Caudrelier: "Clinical use of a Commercial Monte Carlo Treatment Planning System for Electron Beams". *Phys. Med. Biol.*, *Phys. Med. Biol.* 50 1029-1034, 2005
- S. Desgreniers**, G. Weck, and Loubeyre. "On the Nature of Solid Oxygen Beyond the epsilon-zeta Phase Transition" in *High Pressure Science and Technology*. Edited by Forschungszentrum Karlsruhe (2005). ISBN 3-923704-49-6
- P. Finnie**, Y Homma, J. Lefebvre, "Band gap shift transition in the photoluminescence of single-walled carbon nanotubes", *Phys. Rev. Lett.* 94, 247401 (2005).
- S. Godfrey** and Shou-hua Zhu, " $V_L V_L \rightarrow \pi\pi$ at the International Linear Collider Including $O(\alpha_s)$ QCD Corrections", *Phys. Rev. D* 72, 074011 (2005)
- S. Godfrey**, "Properties of the Charmed P-wave Mesons", *Phys. Rev. D* 72, 054026 (2005)
- T. Barnes, **S. Godfrey**, E.S. Swanson, "Higher Charmonia", *Phys. Rev. D* 72, 054020 (2005)
- S. Godfrey** and Miguel Angel Sanchis Lozano, "Outlook for Quarkonium Physics, Heavy Quarkonium Physics", ed. N. Brambilla, M. Krämer, R. Mussa, and A. Vairo. Published as CERN Yellow Report, CERN-2005-005, Geneva: CERN, 2005.
- T. Barnes, **S. Godfrey**, A.A. Petrov, and E. Swanson, "Proceedings of The First Meeting of the APS Topical Group on Hadronic Physics (GHP2004)", Batavia, Illinois, October 24-26, 2004., *J. Phys.: Conf. Ser.* 9, (2005), Institute of Physics (Bristol), ISSN: 1742-6588.
- P. Hawrylak**, W. Sheng, S.-J. Cheng, "Interacting electrons and holes in quasi2D quantum dots in strong magnetic fields", *Act. Phys. Pol.* 106, 403 (2005).
- Weidong Sheng, Shun-Jen Cheng, and **Pawel Hawrylak**, "Multiband theory of multi-exciton complexes in self-assembled quantum dots", *Phys. Rev. B* 71, 035316 (2005).

D. Chithrani, M. Korkusinski, S.-J. Cheng, **P. Hawrylak**, R.L. Williams, J. Lefebvre, P.J. Poole and G.C. Aers, "Electronic structure of the p-shell in single, site-selected InAs/InP quantum dots", *Physica E* 26,322 (2005).

Weidong Sheng, Marek Korkusinski and **Pawel Hawrylak**, "Microscopic approach to many-exciton complexes in self-assembled InGaAs/GaAs quantum dots ", *Physica E* 26, 267 (2005).

G. Ortner, I. Yugova, G. B. H. von Högersthal, A. Larionov, H. Kurtze, D. R. Yakovlev, M. Bayer, S. Fafard, Z. Wasilewski, **P. Hawrylak**, Y. B. Lyanda-Geller, T. L. Reinecke, A. Babinski, M. Potemski, V. B. Timofeev, and A. Forchel, Fine structure in the excitonic emission of InAs/GaAs quantum dot molecules, *Phys. Rev. B* 71, 125335 (2005)

J. I. Climente, M. Korkusinski, **P. Hawrylak**, and J. Planelles, Voltage control of the magnetic properties of charged semiconductor quantum dots containing magnetic ions, *Phys. Rev. B* 71, 125321 (2005).

W. Sheng and **P. Hawrylak**, "Atomistic theory of electronic and optical properties of InAs/InP self-assembled quantum dots on patterned substrates", *Phys.Rev.B* 72, 035326 (2005).

M. Pioro-Ladrière, R. Abolfath, P. Zawadzki, J. Lapointe, S. Studenikin, A. S. Sachrajda and **Pawel Hawrylak**, "Charge sensing of artificial He⁺ molecule", *Phys. Rev. B* 72, 125307 (2005).

C. Bardot, M. Schwab, M. Bayer, S. Fafard, Z. Wasilewski, and **P. Hawrylak**, "Exciton lifetime in InAs/GaAs quantum dot molecules", *Phys. Rev. B* 72, 035314 (2005).

Pawel Hawrylak and Marek Korkusinski, "Voltage-controlled coded qubit based on electron spin", *Solid State Commun.* 136, 508 (2005).

W. Dybalski, **P. Hawrylak**, "Two electrons in a strongly coupled double quantum dot: from an artificial helium atom to a hydrogen molecule", *Phys. Rev. B* 72, 205432 (2005).

Fanyao Qu and **Pawel Hawrylak**, "Magnetic exchange interactions in quantum dots with electrons and magnetic ions", *Phys. Rev. Lett.* 95, 217206 (2005).

G. Ortner, R. Oulton, H. Kurtze, M. Schwab, D. R. Yakovlev, M. Bayer, S. Fafard, Z. Wasilewski, and **P. Hawrylak**, "Energy relaxation of electrons in InAs/GaAs quantum dot molecules" *Phys. Rev. B* 72, 165353 (2005).

D.G. Austing, **P. Hawrylak**, D.J. Lockwood, A.S. Sachrajda, Guest Editors, Proceedings of the International Conference on Quantum Dots (QD2004), *Physica E: Low- Dimensional Systems and Nanostructures* Volume 26, Issues 1-4, Pages 1-499 (February 2005).

B. J. Jarosz and S. St.James, "Integrated Temperature Sensor for Determination of Ultrasound Interstitial Applicator Heating Effects ", *IEEE Trans. Instrum. Meas.* , vol. 54, pp. 1171-1174, 2005.

Zhou, Z., Lai, P-Y, and **Joós, B.** "Elasticity and stability of a helical filament", *Phys. Rev. E* 71, 052801 (1-5) (2005)

Daniil Zhuravel & **Mads Kærn**. Physics takes another stab at biological design principles. *Molecular Systems Biology*. 2005;1:2005.0029.

Kaern M, Elston TC, Blake WJ, Collins JJ. Stochasticity in gene expression: from theories to phenotypes. *Nat Rev Genet.* 2005 Jun;6(6):451-64

I. Bulyzhenkov, A.-M. Lamarche and **G.Lamarche**, Low-field memory and negative magnetization in emiconductors and polymers, *Phys. Rev B*72, 155203(7) (2005)

- Celebi, .S. Inanir, F., **LeBlanc, M.A.R.**, "Contribution of the Meissner Current to the Magnetostriction in a High T_C Superconductor" *Supercond. Sci. Technol.* 18, 14-17 (2005)
- Osturk, A., Celebi, S., **LeBlanc, M.A.R.**, "Observations and model of a new A.C. loss valley in a YBCO superconductor" *Supercond. Sci. Technol.* 18, 1029-1034 (2005)
- S. Celebi, A. Ozturk, U. Kolemen , **M.A.R. LeBlanc**, Observations of a hysteresis loss valley in yttrium barium copper oxide superconductors. *Jour.of Applied Physics* 100, 073912 (2006)
- S. Celebi, **M.A.R. LeBlanc**, Determination of the field dependence of the intergranular critical current in a YBCO tube by horizontal traversals. *Physica C* 450, 34-39 (2006)
- S.Celebi, F. Inanir, **M.A.R. LeBlanc**, Co-existence of Critical and Normal State Magnetostrictions in Type II Superconductors: A Model Exploration. *Jour. of Applied Physics* 101, 013906 (2007)
- Moh'd Rezeq, **M.A.R. LeBlanc**, Examination of the peak in dI_{CO}/dI_{nt} in weak-linked high T_C superconductors caused by trapped flux. *Supercond. Sci. Technol.* 20, 312-319, (2007)
- V. Barger, W.-Y. Keung, **H. E. Logan**, G. Shaughnessy and A. Tregre, "Neutralino annihilation beyond leading order" *Phys. Lett. B* 633, 98 (2006), arXiv:hep-ph/0510257, preprint in 2005; published 2006
- T. Han, **H. E. Logan** and L.-T. Wang, "Smoking-gun signatures of little Higgs models", *JHEP* 0601, 099 (2006), arXiv:hep-ph/0506313, preprint in 2005; published 2006
- T. Han, **H. E. Logan**, B. Mukhopadhyaya and R. Srikanth, "Neutrino masses and lepton-number violation in the littlest Higgs scenario", *Phys. Rev. D* 72, 053007 (2005), arXiv:hep-ph/0505260
- H. Davoudiasl, T. Han and **H.E. Logan**, "Discovering an invisibly decaying Higgs at hadron colliders" *Phys. Rev. D* 71, 115007 (2005), arXiv:hep-ph/0412269, preprint in 2004; published 2005
- Szalisznyo, K., **Longtin, A.** and Maler, L. (2005) Altered sensory filtering and coding properties by synaptic dynamics in the electric sense. *Neurocomputing* 69, 1070-1075.
- Lindner, B., Doiron, B. and **Longtin, A.** (2005) Theory of oscillatory firing induced by spatially correlated noise and delayed inhibitory feedback. *Phys. Rev. E* 72, 061919.
- Chacron, M.J., **Longtin, A.** and Maler, L. (2005) Delayed excitatory and inhibitory feedback shape neural information transmission. *Phys. Rev. E* 72, 051917. (selected for the November 15, 2005 issue of the *Virtual Journal of Biological Physics Research*).
- Lindner, B., Chacron, M.J. and **Longtin, A.**(2005) Integrate-and-fire neurons with threshold noise - A tractable model of how interspike interval correlations affect neuronal signal transmission. *Phys. Rev. E* 72, 021911.
- Chacron, M.J., Lindner, B., Maler, L., **Longtin, A.**, and Bastian, J. (2005) Experimental and theoretical demonstration of noise shaping by interspike interval correlations. In: *Fluctuations and Noise in Biological, Biophysical and Biomedical Systems III*, N.G. Stocks, D. Abbott and R.P. Morse, eds., *Proc. SPIE* Vol.5841 (invited paper) pp.150-163.
- Masuda, N., Doiron, B., **Longtin, A.** and Aihara, K.(2005), Coding of time-varying signals in networks of spiking neurons with global feedback. *Neural Comput.* 17, 2139-2175.
- Lindner, B. and **Longtin, A.** (2005) Effect of an exponentially decaying threshold on the firing statistics of a stochastic integrate-and-fire neuron. *J. Theor. Biol.* 232, 505-521.

Benda, J., **Longtin, A.** and Maler, L. (2005), Spike-frequency adaptation enhances the detection of transient communication signals. *J. Neuroscience* 25, 2312-2321.

D. Mullins, D. Proulx, A. Saoudi, C. E. Ng. "Chronomodulation topotecan treatments are associated with increased tumor efficacy without enhanced acute toxicity in mice bearing human colorectal carcinoma xenografts". *Int. J. Radiat. Oncol. Biol. Phys.*62 (1): 230-7, May 1, 2005.

P. Piercy and A. Castonguay, "Diffusion-limited kinetics of terrace growth on GaAs(110)", *Phys. Rev. B* 72, 115420, 2005.

G. Niedbala, J. McNamee, **G.P. Raaphorst**. "Response to pulsed dose rate and low dose rate irradiation with and without mild hyperthermia using human breast carcinoma cell lines". *Int. J. Hypertherm.*22: 61-76, 2005.

G.P. Raaphorst, D. P. Yang. "Evaluation of thermal Cisplatin sensitization in normal and XP human cells using mild hyperthermia and 40 and 41°C". *Anti Cancer Res.*25: 2649-2654, 2005.

G. P. Raaphorst, J. M. Leblanc. "Evaluation of thermal Cisplatin sensitization in chicken DT40 cells normal and deficient in DNA homologous and nonhomologous end-joining repairs". *Letters in Drug Design & Discovery* 2: 196-200, 2005.

G.P. Raaphorst, J. M. Leblanc, L. F. Li, D. P. Yang. "Hyperthermia responses in cell lines with normal and deficient DNA repair systems". *J. Thermal. Biol.*30: 478-484, 2005.

G.P. Raaphorst, J. M. Leblanc, D. P. Yang, L. F. Li. "Comparison of response to Cisplatin, radiation, and combined treatment in cell lines deficient in recombinational repair". *Anti Cancer Res.*25: 53-58, 2005.

G.P. Raaphorst, L. F. Li, D. P. Yang, J. M. Leblanc. "Cisplatin sensitization by concurrent mild hyperthermia in parental and mutant cell lines deficient in homologous recombination and nonhomologous end-joining repair". *Oncol Rep.*14 (1): 281-5, July 2005.

J. M. Leblanc, **G.P. Raaphorst**. "The evaluation of Cisplatin treatment given concurrently with pulsed irradiation treatment in Cisplatin sensitive and resistant human ovarian carcinoma cell lines". *Int. J. Radiat. Biol.* 81: 429-435, 2005.

E. Mainegra-Hing, **D.W.O. Rogers**, and I. Kawrakow, Calculation of energy deposition kernels for photons and dose point kernels for electrons, *Med. Phys.* 32, 685 – 699 (2005).

T. P. Selvam, P. R. B. Saull, and **D.W.O. Rogers**, Monte Carlo modelling of the response of NRC's 90Sr/90Y primary beta standard, *Med. Phys.* 32, 3084 – 3094 (2005).

S. D. Thomas, M. Mackenzie, **D.W.O. Rogers**, and B. G. Fallone, A Monte Carlo derived TG-51 equivalent calibration for helical tomotherapy, *Med. Phys.* 32, 1346 – 1153 (2005).

G. G. Zeng, M. R. McEwen, **D.W.O. Rogers**, and N. V. Klassen, An experimental and Monte Carlo investigation of the energy dependence of alanine/EPR dosimetry: II. Clinical electron beams, *Phys. Med. Biol.* 50, 1119 – 1129 (2005).

S. Nedelcu, **G. W. Slater** (2005) Branched polymeric labels used as drag-tags in free solution electrophoresis of ssDNA. *Electrophoresis* 26, 4003-4015.

F. Tessier, **G. W. Slater** (2005) Control and quenching of electroosmotic flow with end-grafted polymer chains. *Macromolecules*, 38, 6752-6754.

Y. Gratton, **G. W. Slater** (2005) Molecular Dynamics Study of Tethered Polymers in Shear Flow. *The European Physical Journal E*, 17, 455-465.

M.G. Gauthier, **G.W. Slater** (2005) A New Set of Monte Carlo Moves for Lattice Random-Walk Models of Biased Diffusion. *Physica A* 355, 283-296.

J.-F. Mercier, **G. W. Slater** (2005) Solid Phase DNA Amplification: A Brownian Dynamics Study of Crowding Effects. *Biophysical Journal*, 89, 32-42.

L.. C. McCormick, **G. W. Slater** (2005) The Molecular End Effect and its Critical Impact on the Behavior of Charged-Uncharged Polymer Conjugates During Free Solution Electrophoresis. *Electrophoresis*, 26(9), 1659-1667.

R.. J. Meagher, J. I. Won, L. C. McCormick, S. Nedelcu, M. Bertrand J.-L. Bertram, G. Drouin, A. E. Barron, **G. W. Slater** (2005) End-labeled free-solution electrophoresis of DNA. *Electrophoresis*, 26(2), 331-350.

Y. P. Varshni: Effect of the Parabolic Confinement Potential on the Binding Energy of a Donor in a Double-step Barrier Quantum Dot, *Indian J. Phys.* 79, 235-237 (2005).

S. H. Patil, K. D. Sen, and **Y. P. Varshni**: Alkali atoms confined to a sphere and to a fullerene cage, *Can. J. Phys.* 83, 919-928 (2005).

G.O. Cron, J.C. Wallace, W.D. Stevens, T. Fortin, B.A. Pappas, **R.C. Wilkins**, F. Kelcz, and G.E. Santyr, "Measurement of the Arterial Input Function in the Rat using Changes in T2* in the Aorta". *Journal of Magnetic Resonance Imaging*, 23: 619-627, (2005)

J.P. McNamee, P.V. Bellier, B.C. Kutzner, **R.C. Wilkins**, "Effect of Pro-inflammatory Cytokines on Spontaneous Apoptosis in Leukocyte sub-sets within a Whole Blood Culture, *Cytokine*", 31:161-167, (2005)

M. Carlone, D. E. Wilkins, **G.P. Raaphorst**. "Radiobiological parameters suitable for modeling individual outcomes cannot be obtained by analyzing heterogeneous population data with homogeneous tumour control models "In Regard to D'Souza et al". (*Int. J. Radiat. Oncol. Biol. Phys.* 5, 1540-1548, 2004)." *Int. J. Radiat. Oncol. Biol. Phys.* 62: 298-299, 2005.

Stadnik Z.M. and Zhang G., 2005, "The Decagonal Quasicrystal $Al_{65}Co_{15}Cu_{20}$ Studied by the Mossbauer Effect", *J. Phys. Condens. Matter.* 17 6599-6608.

CLEO Publications

Carleton Members: **D.Asner, K.W.Edwards**

CLEO Collaboration, D. Besson et al., "SEARCH FOR $e+e- \rightarrow \Lambda(b)$ ANTI- $\Lambda(b)$ NEAR THRESHOLD", *Phys. Rev. D* 71:012004,2005,[HEP-EX 0411078].

CLEO Collaboration, M. Artuso et al., "PHOTON TRANSITIONS IN $\Upsilon(2S)$ AND $\Upsilon(3S)$ DECAYS", *Phys. Rev. Lett.* 94:032001,2005, [HEP-EX 0411068].

CLEO Collaboration, S.B. Athar et al., "A NEW MEASUREMENT OF THE MASSES AND WIDTHS OF THE $\Sigma^{*++}(C)$ AND $\Sigma^{*0}(C)$ CHARMED BARYONS", *Phys. Rev. D* 71:051101,2005,[HEP-EX 0410088].

CLEO Collaboration, S. Dobbs et al., "SEARCH FOR X(3872) IN $\gamma\gamma$ FUSION AND ISR AT CLEO", *Phys. Rev. Lett.* 94:032004,2005, [HEP-EX 0410038].

CLEO Collaboration, G.S. Adams et al., "MEASUREMENT OF THE MUONIC BRANCHING FRACTIONS OF THE NARROW UPSILON RESONANCES", *Phys. Rev. Lett.* 94:012001,2005, [HEP-EX 0409027].

CLEO Collaboration, G.S. Huang et al., "STUDY OF SEMILEPTONIC CHARM DECAYS $D^0 \rightarrow \pi^- l^+ \nu$ AND $D^0 \rightarrow K^- l^+ \nu$ ", Phys. Rev. Lett.94:011802,2005, [HEP-EX 0407035].

CLEO Collaboration, N.E. Adam et al., "OBSERVATION OF 1-0- FINAL STATES FROM $\psi(2S)$ DECAYS AND $e^+ e^-$ ANNIHILATION", Phys. Rev. Lett.94:012005,2005, [HEP-EX 0407028].

CLEO Collaboration, T.K. Pedlar et al., "PRECISION MEASUREMENTS OF THE TIMELIKE ELECTRO-MAGNETIC FORM-FACTORS OF PION, KAON, AND PROTON", Phys. Rev. Lett.95:261803,2005, [HEP-EX 0510005].

CLEO Collaboration, M. Artuso et al., "IMPROVED MEASUREMENT OF $B(D^+ \rightarrow \bar{K}^0)$ AND THE PSEUDOSCALAR DECAY CONSTANT $f(D^+)$ ", Phys. Rev. Lett.95:251801,2005 [HEP-EX 0508057].

CLEO Collaboration, M. Artuso et al., "FIRST EVIDENCE AND MEASUREMENT OF $B(S)^*(\bar{B}(S)^*)$ PRODUCTION AT THE $\Upsilon(5S)$ " Phys. Rev. Lett.95:261801,2005, [HEP-EX 0508047].

CLEO Collaboration, P. Rubin et al., "OBSERVATION OF THE $P(1)-1$ STATE OF CHARMONIUM", Phys. Rev. D72:092004,2005,[HEP-EX 0508037].

CLEO Collaboration, Q. He et al., "SEARCH FOR RARE AND FORBIDDEN DECAYS $D^+ \rightarrow h^+ e^- e^+$ ", Phys. Rev. Lett.95:221802,2005, [HEP-EX 0508031].

CLEO Collaboration, G.S. Huang et al., "ABSOLUTE BRANCHING FRACTION MEASUREMENTS OF EXCLUSIVE D^+ SEMILEPTONIC DECAYS", Phys. Rev. Lett.95:181801,2005, [HEP-EX 0506053].

CLEO Collaboration, T.E. Coan et al., "ABSOLUTE BRANCHING FRACTION MEASUREMENTS OF EXCLUSIVE D^0 SEMILEPTONIC DECAYS," Phys. Rev. Lett.95:181802,2005, [HEP-EX 0506052].

CLEO Collaboration, R.A. Briere et al., "OBSERVATION OF THIRTEEN NEW EXCLUSIVE MULTI-BODY HADRONIC DECAYS OF THE $\psi(2S)$ ", Phys. Rev. Lett.95:062001,2005, [HEP-EX 0505101].

CLEO Collaboration, J.L. Rosner et al., "OBSERVATION OF $h(C)(P(1)-1)$ STATE OF CHARMONIUM", Phys. Rev. Lett.95:102003,2005, [HEP-EX 0505073].

CLEO Collaboration, T.K. Pedlar et al., "BRANCHING FRACTION MEASUREMENTS OF $\psi(2S)$ DECAY TO BARYON-ANTIBARYON FINAL STATES," Phys. Rev. D72:051108,2005, [HEP-EX 0505057].

CLEO Collaboration, Q. He et al., "MEASUREMENT OF ABSOLUTE HADRONIC BRANCHING FRACTIONS OF D MESONS AND $e^+ e^- \rightarrow D$ ANTI- D CROSS SECTIONS AT $E(CM) = 3773$ -MEV", Phys. Rev. Lett.95:121801,2005., Erratum-ibid.96:199903,2006 [HEP-EX 0504003].

CLEO Collaboration, "Review of Three-Body Heavy Meson Decay," XIth International Conference On Hadron Spectroscopy, Rio de Janeiro, Brazil, August 21-26, 2005

CLEO Collaboration, "TIME-INDEPENDENT MEASUREMENTS OF D^0 - ANTI- D^0 MIXING AND RELATIVE STRONG PHASES USING QUANTUM CORRELATIONS AT CLEO-C." XIth International Conference On Hadron Spectroscopy, Rio de Janeiro, Brazil, August 21-26, 2005

CLEO Collaboration, D. Cronin-Hennessy et al., "SEARCHES FOR CP VIOLATION AND $\pi\pi$ S-WAVE IN THE DALITZ-PLOT OF $D^0 \rightarrow \pi^+ \pi^- \pi^0$ ", Phys. Rev. D72:031102,2005 [HEP-EX 0503052].

CLEO Collaboration, D.M. Asner et al., "SEARCH FOR D^0 - ANTI- D^0 MIXING IN THE DALITZ PLOT

ANALYSIS OF $D^0 \rightarrow K^0(S) \pi^+ \pi^-$, Phys. Rev. D72:012001,2005 [HEP-EX 0503045].

CLEO Collaboration, N.E. Adam et al., "BRANCHING FRACTIONS FOR $\psi(2S)$ TO J/ψ TRANSITIONS", Phys. Rev. Lett.94:232002,2005 [HEP-EX 0503028].

CLEO Collaboration, Z. Li et al., "MEASUREMENT OF THE BRANCHING FRACTIONS FOR $J/\psi \rightarrow l^+ l^-$ ", Phys. Rev. D71:111103,2005 [HEP-EX 0503027].

CLEO Collaboration, C. Cawfield et al., "LIMITS ON NEUTRAL D MIXING IN SEMILEPTONIC DECAYS", Phys. Rev. D71:077101,2005 [HEP-EX 0502012].

CLEO Collaboration, K. Arns et al., "STUDY OF TAU DECAYS TO FOUR-HADRON FINAL STATES WITH KAONS", Phys. Rev. Lett.94:241802,2005 [HEP-EX 0501042].

CLEO Collaboration, R. Ahohe et al., "THE SEARCH FOR $\eta(1440) \rightarrow K^0(S)K^+ \pi^-$ IN TWO-PHOTON FUSION AT CLEO", Phys. Rev. D71:072001,2005 [HEP-EX 0501026].

SNO Publications

Carleton Members: **A.Bellerive, C.K.Hargrove, R.J.Hemingway, D.Sinclair, X.Dai, L.Sinclair, D.Waller, F.Zhang, P-L.Drouin, L.Heelan, E.Rollin, O.Simard, G.Tesic, C.Mifflin**

"A search for periodicities in the 8B solar neutrino flux measured by the Sudbury Neutrino Observatory", The SNO Collaboration, Phys.Rev. D72, 052010 (2005)

"Optical calibration hardware for the Sudbury Neutrino Observatory", The SNO Collaboration, Nucl.Instrum.Meth. A554 (2005) 255-265.

"Electron energy spectra, fluxes, and day-night asymmetries of 8B solar neutrinos from the 391-day salt phase SNO data set", The SNO Collaboration, Phys.Rev. C72, 055502 (2005)

ILC Publications

Carleton Members: **A.Bellerive, R.K.Carnegie, M.Dixit (PI); RA: K.Boudjemline, J.Miyamoto; Student: A. Kochermin**

Resolution studies of cosmic-ray tracks in a TPC with GEM readout Nucl.Inst.Meth. A538 (2005) 372

OPAL Publications

Carleton Members: **A.Bellerive, R.K.Carnegie, R.J.Hemingway, T.Junk, P.Krieger, H.Mes, K.Sachs**

OPAL Collaboration, G. Abbiendi et al. Measurement of Rb in e+e- collisions as $\sqrt{s} = 182-209$ GeV Phys. Lett. B609 (2005) 212-225.

OPAL Collaboration, G. Abbiendi et al. Measurement of event shape distributions and moments in e+e- to hadrons at 91-209 GeV and a determination of α_s Eur. Phys.J. C40 (2005) 287-316.

OPAL Collaboration, G. Abbiendi et al. Flavour independent hA search and Two Higgs Doublet model interpretation of neutral Higgs boson searches at LEP Eur. Phys.J. C40 (2005) 317-332.

OPAL Collaboration, G. Abbiendi et al. Search for radions at LEP2 Phys. Letts. B609 (2005) 20-34.

Invited Talks and Publications in Refereed Conference Proceedings in 2005

X. Bao, May 4. Public Forum of the ISIS Canada Annual Meeting “Distributed fiber strain sensors for structural health monitoring”.

X. Bao, Sep 22. Invited talk at OFMC 2005 (Optical Fiber Measurement Conference in Europe): “Distributed Brillouin sensors using different fibers”.

X. Bao, Oct. 18, 2005 Binghamton University/GE Symposium: National trends in small-scale systems and microelectronics packaging. “Fibers sensors and their applications”.

X. Bao, Nov. 16, 2005 International Society for Structural health Monitoring of Intelligent Infrastructure (SHMII) – Nonlinear strain response of the concrete beam to detect the de-bonding and cracks using distributed Brillouin sensor.

X. Bao, Nov. 21, 05, Keynote Speaker at The First International Workshop on Opto-Electronic Sensor-based Monitoring in Geo-Engineering, Nanjing, China. Title: “Opto Electroncs Sensors and their applications”.

A. Bellerive, TPC spatial resolution for the ILC Canadian Association of Physicists (CAP), Vancouver, Canada 8 June 2005

A. Bellerive et al, “Spatial Resolution of a Micromegas-TPC Using the Charge Dispersion Signal”,

2005 International Linear Collider Workshop - Stanford, USA, Conference Proceeding - Carleton Preprint Phys0508

J.E. Cygler, T. Berrang, B. Esche, P. Shokrani, C. Lochrin, L. Grimard, V. Galant, “Effect of tissue inhomogeneities on MU required to deliver prescribed dose - Monte Carlo study”, Presented at AAPM 47th Annual Meeting, Seattle, USA, July 24-28, 2005, Med. Phys. 32, 2016 (2005)

J.E. Cygler, T. Berrang, B. Esche, L. Eapen, “Switching from water tank to real patient dosimetry - clinical impact of implementation of Monte Carlo based treatment planning system, 8th Biennial ESTRO Meeting on Physics and Radiation Technology for Clinical Radiotherapy”, presented at Lisbon, Portugal, Radiotherapy and Oncology, 76 Suppl.2, p.S149, September 24-29, 2005

S. Desgreniers. On the Nature of Solid Oxygen Beyond the ϵ - ζ Phase Transition. AIRAPT 20 Conference, Karlsruhe, Germany, July 2005. Invited Talk.

M. Dixit, “Spatial resolution of a MPGD TPC using the charge dispersion signal”, The 2005 International Linear Collider Physics and Detector Workshop Snowmass, Colorado, USA 23 August 2005

M.Dixit, LCWS 2005, “Spatial resolution of a Micromegas TPC using the charge dispersion signal”, International Linear Collider Workshop (LCWS2005), Stanford University, USA , 21 March 2005

P. Finnie, Y. Homma, J. Lefebvre, "Luminescence from suspended single walled carbon nanotubes", Photonics West, Jan. 23, 2005, San Jose, California, USA

P. Finnie, Y. Homma, J. Lefebvre, "Photoluminescence from SWNTs suspended in Free Space", 207th Meeting of the Electrochemical Society, May 17, 2005, Quebec City, Quebec, Canada

P. Finnie, Y. Homma, J. Lefebvre, "Photoluminescence from Nanotubes Suspended in Free Space", 1st Workshop on Nanotube Optics and Nanospectroscopy, July 20th, 2005, Telluride, Colorado, USA

P. Finnie, "Carbon Nanotubes : Chemical Vapor Deposition and Photoluminescence", 1st Canadian Workshop on NanoCarbon, Nov. 15, 2005, Montreal, Quebec, Canada

E. Ghasroddashti, J. Pantarotto, R. McRae, M. Macpherson, **L. Gerig**, "A Comparison of the Predictive Ability for Lung Tumor Motion", CARO 2006 Meeting, Calgary AB,

L. Gerig, E. Ghasroddashti, J. Pantarotto, R. McRae, M. Macpherson, "An Assessment of Surrogates for Lung Tumour Motion", ESTRO 2006 Meeting, Leipzig Germany

S. Godfrey, A. Juste et al., "Report of the 2005 Snowmass top/QCD working group, Contributed to 2005 International Linear Collider Physics and Detector Workshop and 2nd ILC Accelerator Workshop ", Snowmass, Colorado, 14-27 Aug 2005. Published in ECONF C0508141:PLEN0043,2005.

S. Godfrey, Pat Kalyniak, Alexander Tomkins, "Distinguishing between models with extra gauge bosons at the ILC", Presented at 2005 International Linear Collider Physics and Detector Workshop and 2nd ILC Accelerator Workshop, Snowmass, Colorado, 14-27 Aug 2005. Published in ECONF C0508141:ALCPG0108,2005.

S. Godfrey, S. Heinemeyer et al., "Toward High Precision Higgs-Boson Measurements at the International Linear e^+e^- Collider", Higgs working group summary to appear in the proceedings of the 2005 International Linear Collider Physics and Detector Workshop, Snowmass Colorado, August 14-27 2005. Published in ECONF C0508141:ALCPG0214, 2005.

S. Godfrey and Shouhua Zhu, "Study of $V_L V_L \rightarrow t\bar{t}$ at the ILC Including $O(\alpha_s)$ QCD Corrections", Contributed talk to appear in the proceedings of the 2005 International Linear Collider Physics and Detector Workshop, Snowmass Colorado, August 14-27 2005. Published in ECONF C0508141:ALCPG0427,2005.

S. Godfrey, "Towards an Understanding of the New Charm and Charm-Strange Mesons", First Meeting of the APS Topical Group on Hadronic Physics (GHP2004), Batavia, Illinois, 24-26 Oct 2004. J. Phys. Conf. Ser. 9 59-62 (2005).

S. Godfrey, "Production of the h_c and h_b and Implications for Quarkonium Spectroscopy", First Meeting of the APS Topical Group on Hadronic Physics (GHP2004), Batavia, Illinois, 24-26 Oct 2004. J. Phys. Conf. Ser. 9, 123-126 (2005)

S. Godfrey and Shouhua Zhu, "Higgs Boson Production in $\gamma\gamma$ Collisions via Resolved Photon Contributions", Meeting of the Division of Particles and Fields of the American Physical Society, August 26 -31 2004, Riverside California. Int. J. Mod. Phys. A20, 3381-3384 (2005).

S. Godfrey, "P-wave Charm Mesons as a Window to the D_{Sj} States", Meeting of the Division of Particles and Fields of the American Physical Society, August 26 -31 2004, Riverside California. Int. J. Mod. Phys. A20, 3771-3773 (2005)

Joós, B., The rigidity transition in diluted disordered networks and polymer melts, Gordon Research Conference on Elastomers, Networks and Gels, Colby-Sawyer College, New London, NH, July 17-22, 2005, Chair: Gregory B. McKenna.

D. R. Boreham, S.M. Miller, C. L. Ferrarotto, **R. C. Wilkins** and J-A.Dolling. Canadian Cytogenetic

Emergency Network (CEN) for biological dosimetry following radiological/nuclear accidents. Great Lakes Chromosome Conference, May 2005, Toronto

Other Conference Presentations and Posters in 2005

Jorge Fonseca-Campos, Yong Wang, Bo Chen, Chang-qing Xu, Shiquan Yang, Evgueni A. Ponomarev, and **X. Bao**, "Picosecond-pulse wavelength conversion based on SHG nonlinear interaction in a PPMGLN waveguide" Proc. SPIE Int. Soc. Opt. Eng. 5971, 59710B (2005).

Shiquan Yang, Evgueni A. Ponomarev, and **X. Bao**, "Repetition-rate-doubled or -tripled FM mode-locking fiber laser by using phase modulated optical fiber loop mirror", Proc. SPIE Int. Soc. Opt. Eng. 5971, 597120 (2005).

J. Campos, Y. Wang, B. Chen, C. Xu, S. Yang, E. Ponomarev and **X. Bao**, "Picosecond pulse wavelength conversion based on SHM nonlinear interaction in a PPMGLN waveguide", Photonics North 2005.

Shiquan Yang and **X. Bao**, "The dynamics of Q degradation in system with polarization mode dispersion", LEOS 18th Annual Meeting, 2005, paper TuCC2, page 416-417.

X. Bao, F. Ravet, Q. Yu, L. Zou, L. Chen, "Distributed Brillouin sensors using different fibers with sub-pulse length resolution", European Optical Fiber Measurement Conference 2005, invited talk.

L. Zou, **X. Bao**, F. Ravet, Y. Li, L. Chen, M. Du, D. J. DiGiovanni, "Investigation of Brillouin effects in carbon coating single-mode fiber using for inspection of pipeline buckling", SPIE Symposium on Optics East _Fiber Optic Sensor Technology and Applications IV. 6004, 600405-page1-8.

X. Bao, Lufan Zou, Fabien Ravet, and Liang Chen, "Distributed Strain Sensor Based on Brillouin Scattering for Energy Pipeline Buckling test". Proceeding of International Conference of Composites in Construction (CCC) 2005. Pages: 1069-1077.

Z.L. Chou, JJR Cheng, **X. Bao**, Lufan Zou, "Health monitoring of buried pipelines using Brillouin scattering FOS". The second International Conference on Structural Health Monitoring of Intelligent Infrastructure. V. 1, P. 507-512.

Lufan Zou, **X. Bao**, Y.D. Wan, L. Chen, "Crack detection using distributed fibre Brillouin strain sensor with a coherent pump-probe technique". The second International Conference on Structural Health Monitoring of Intelligent Infrastructure. V. 1, P. 445-448.

Lufan Zou, **X. Bao**, F. Ravet, L. Chen, "Prediction of pipeline buckling using distributed fibre Brillouin sensor". The second International Conference on Structural Health Monitoring of Intelligent Infrastructure. V. 1, P. 393-396.

X. Bao, Fabien Ravet, L. Zou, "Nonlinear strain response of the concrete beam to detect the de-bonding and cracks using distributed Brillouin sensor", Invited talk. The second International Conference on Structural Health Monitoring of Intelligent Infrastructure. V. 1, P. 235-242.

Saeed Hadjifaradji, Liang Chen, and **X. Bao**, "Analytical evaluation of the effect of amplifier noise on eye diagram for communication systems having PMD, PDL, and CD", Proc. SPIE Int. Soc. Opt. Eng. 5970, 59702U (2005)

L. Zou, **X. Bao**, Y. Wan and L. Chen, "Coherent pump-probe based Brillouin sensor for 1cm crack detection". Proceeding 17th International Optical Fiber Sensor Conference, pages: 68-71. 2005

L. Zou, **X. Bao**, F. Ravet, L. Chen, J. Zou, K. Adams, "Distributed strain sensor based on Brillouin scattering for inspection of pipeline buckling". Proceeding of 17th International Optical Fiber Sensor Conference. 571-574. 2005.

F. Ravet, **X. Bao** and L. Chen, "Criterion for sub-pulse-length resolution and minimum frequency shift in distributed Brillouin sensors". Proceeding of 17th International Optical Fiber Sensor Conference, 527-530. 2005.

Fabien Ravet, **X. Bao**, Togay Ozbakkaloglu, Muslim Majeed, Murat Saatcioglu, Graham Ferrier, Lufan Zou, and Liang Chen, "Column structure deformation monitoring with the distributed Brillouin sensor" Proc. SPIE Int. Soc. Opt. Eng. 5855, 531 (2005).

X. Bao, Y. Wan, L. Zou, L. Chen, "The effect of optical phase to the Brillouin spectrum in the distributed sensor system". Proceeding of 17th International Optical Fiber Sensor Conference. 543-546. 2005.

S. Afshar, L. Chen and **X. Bao**, "CW pre-injection of pump-probe Brillouin sensors for high spatial and strain (temperature) resolutions". Proceeding of 17th International Optical Fiber Sensor Conference. 567-570. 2005.

Li Xie, Liang Chen, Saeed Hadjifaradji, and **X. Bao**, "Eye diagram evaluation of WDM DPSK fiber optical system in presence of PMD, PDL, and CD", Proc. SPIE Int. Soc. Opt. Eng. 5970, 59701U (2005).

Liang Chen, Ziyi Zhang, and **X. Bao**, "Polarization dependent loss vector measurements in a system with polarization mode dispersion", Proc. SPIE Int. Soc. Opt. Eng. 5970, 59701W (2005).

Shiquan Yang, Liang Chen, and **X. Bao**, "Wavelength dependence study on the transmission characteristics of the concatenated PDL and PMD elements", Proc. SPIE Int. Soc. Opt. Eng. 5970, 59702M (2005)

Waddy, D.S.; Liang Chen; **X. Bao**; Fast PMD and PDL measurement of aerial fiber, Optical Fiber Communication Conference, 2005. Technical Digest. OFC/NFOEC, Volume 3, March 6-11, 2005 Page(s):360 - 362

A. Bellerive, "Neutrino Oscillation Experiments", Phenomenology Symposium, The University of Wisconsin-Madison, May 2006

Nezamzadeh, **I. G. Cameron**, "Diffusion Studies of Human Brain Tissue in vivo by MRI". M Canadian Organization of Physicists In Medicine Annual Meeting, Hamilton, ON, July 2005

Saeed Hadjifaradji, **Liang Chen**, and X. Bao, "Analytical evaluation of the effect of amplifier noise on eye diagram for communication systems having PMD, PDL, and CD", Proc. SPIE Int. Soc. Opt. Eng. 5970, 59702U (2005)

X. Bao, Lufan Zou, Fabien Ravet, and **Liang Chen**, "Distributed Strain Sensor Based on Brillouin Scattering for Energy Pipeline Buckling test". Proceeding of International Conference of Composites in Construction (CCC) 2005. Pages: 1069-1077.

Li Xie, **Liang Chen**, Saeed Hadjifaradji, and X. Bao, "Eye diagram evaluation of WDM DPSK fiber optical system in presence of PMD, PDL, and CD", Proc. SPIE Int. Soc. Opt. Eng. 5970, 59701U (2005).

S. Afshar, **L. Chen** and X. Bao, "CW pre-injection of pump-probe Brillouin sensors for high spatial and strain (temperature) resolutions". Proceeding of 17th International Optical Fiber Sensor Conference. 567-570. 2005.

F. Ravet, X. Bao and **L. Chen**, "Criterion for sub-pulse-length resolution and minimum frequency shift in distributed Brillouin sensors". Proceeding of 17th International Optical Fiber Sensor Conference, 527-530. 2005.

L. Zou, X. Bao, Y. Wan and **L. Chen**, "Coherent pump-probe based Brillouin sensor for 1cm crack detection". Proceeding 17th International Optical Fiber Sensor Conference, pages: 68-71. 2005.

X. Bao, Y. Wan, L. Zou, **L. Chen**, "The effect of optical phase to the Brillouin spectrum in the distributed sensor system". Proceeding of 17th International Optical Fiber Sensor Conference.543-546. 2005.

Waddy, D.S.; **Liang Chen**; X. Bao; Fast PMD and PDL measurement of aerial fiber, Optical Fiber Communication Conference, 2005. Technical Digest. OFC/NFOEC, Volume 3, March 6-11, 2005 Page(s):360 - 362

Lufan Zou, X. Bao, Y.D. Wan, **L. Chen**, "Crack detection using distributed fibre Brillouin strain sensor with a coherent pump-probe technique". The second International Conference on Structural Health Monitoring of Intelligent Infrastructure. V. 1, P. 445-448.

L. Zou, X. Bao, F. Ravet. **L. Chen**, J. Zou, K. Adams, "Distributed strain sensor based on Brillouin scattering for inspection of pipeline buckling". Proceeding of 17th International Optical Fiber Sensor Conference. 571-574. 2005.

Fabien Ravet, X. Bao, Togay Ozbakkaloglu, Muslim Majeed, Murat Saatcioglu, Graham Ferrier, Lufan Zou, and **Liang Chen**, "Column structure deformation monitoring with the distributed Brillouin sensor" Proc. SPIE Int. Soc. Opt. Eng. 5855, 531 (2005).

Lufan Zou, X. Bao, F. Ravet, **L. Chen**, "Prediction of pipeline buckling using distributed fibre Brillouin sensor". The second International Conference on Structural Health Monitoring of Intelligent Infrastructure. V. 1, P. 393-396.

Liang Chen, Ziyi Zhang, and X. Bao, "Polarization dependent loss vector measurements in a system with polarization mode dispersion", Proc. SPIE Int. Soc. Opt. Eng. 5970, 59701W (2005).

Shiquan Yang, **Liang Chen**, and X. Bao, "Wavelength dependence study on the transmission characteristics of the concatenated PDL and PMD elements", Proc. SPIE Int. Soc. Opt. Eng. 5970, 59702M (2005)

J.E. Cygler, "Use of MOSFET detectors in clinical dosimetry", IAEA meeting on in-vivo dosimetry, Vienna, Austria, April 4-8, 2005, invited talk

J.E. Cygler, "In-vivo dosimetry with MOSFET detectors", 2005 Radiological and Medical Physics Society (RAMPS) of New York Spring Symposium "Technical Innovations in Day-to-Day Practice of Radiation Therapy", Memorial Sloan Kettering Cancer Center, New York, NY, May 14, 2005, invited talk

L. Grimard, A. Cheung, A. Lamothe, B. Esche, **J.E. Cygler**, V. Gallant, "Brachytherapy for Squamous Cell Carcinoma of the Nasal Vestibule" presented at Columella, Brachytherapy Meeting of GEC – ESTRO, Budapest, Hungary, May 5-7, 2005

T. Berrang, **J.E. Cygler**, B. Esche, L. Eapen, P. Shokrani, V. Gallant, "Electron Treatment of The Nose: A Comparison of Monte Carlo and Water Tank Dosimetry", Presented at Canadian Association of Radiation Oncology (CARO) Scientific Meeting, Victoria, BC, September 7-10, 2005

J. E. Cygler, T. Berrang, B. Esche, P. Shokrani, C. Lochrin, L. Grimard, V. Gallant, "Effect of tissue inhomogeneities on MU required to deliver prescribed dose - Monte Carlo study" AAPM 47th Annual Meeting, Seattle, Washington, USA, July 24 – 28, Medical Physics 32, 2016 (2005)

J. E. Cygler, T. Berrang, B. Esche, L. Eapen, "Switching from water tank to real patient dosimetry – clinical impact of implementation of Monte Carlo based treatment planning system". 8th Biennial ESTRO Meeting on Physics and Radiation Technology for Clinical Radiotherapy, September 24 – 29, Lisbon, Portugal, Radiotherapy and Oncology, 76, Suppl. 2, p.S149

S. Desgreniers, G. Weck and P. Loubeyre. "Solid Oxygen under Extreme Conditions: Structural Changes Across the e-z Phase Line as Studied by X-ray Diffraction using Synchrotron Radiation". Annual Users Meeting, Canadian Light Source, Saskatoon, SK November 2005.

J. Smith and **S. Desgreniers**. "Materials under Extreme Pressures and Temperatures: Study of Their Crystalline Structures by X-Ray Diffraction with the Use of Synchrotron Radiation". Annual Users Meeting, Canadian Light Source, Saskatoon, SK. November 2005.

P. Finnie, Y. Homma, J. Lefebvre, "Photoluminescence from SWNTs Suspended on Pillars in Free Space", June 30, 2005, International Conference on the Science and Application of Nanotubes 2005, Gothenburg, Sweden (poster).

P. Finnie, A. Li-Pook-Than, M. Beaulieu, T. Quance, J. Lefebvre, G. Austing, "Reliable Cold Wall Chemical Vapor Deposition of Single Walled Carbon Nanotube Structures and Devices", Aug. 19, 2005, Ottawa, ON, Canada (oral)

J. M. Caudrelier, S. Morgan, B. Nyiri, M. S. MacPherson, **L. H. Gerig**, "Forward-Planned Dose Compensation for Intensity Modulated Radiotherapy of the Breast and Internal Mammary Nodes using MLC Sub-fields". 5th European Breast Cancer Conference, Nice, France, March 21-25

B. Clark, L. Montgomery, G. Fox, K. Carty, M. Macpherson, S. Malone, R. McRae, **L. Gerig**, L. Grimard, "Implementation and Workflow for a Clinical Tomotherapy Unit", CARO 2006 Meeting, Calgary AB

J. Pantarotto, E. Ghasroddashti, R. McRae, M. Macpherson, **L. Gerig**, "External Surrogates of Respiration That Predict Lung Tumor Motion: Does the Relationship Hold During a Course of Radiotherapy", CARO 2006 Meeting, Calgary AB

B. Clark, M. Macpherson, **L. Gerig**, L. Montgomery, G. Fox, K. Carty, R. McRae, S. Malone, L. Grimard, "Implementing Image-Guided Radiation Therapy using Helical Tomotherapy", ESTRO 2006 Meeting, Leipzig Germany

E. Ghasroddashti, R. MACRAE, **L. Gerig**, "Correlation of Lung Tumor Motion with Ventral Surface Movement at Multiple Locations Using a 3-D Optical Motion-Tracking System". J. Pantarotto, Canadian Association of Radiation Oncologists Annual Meeting, Victoria, BC, September 2005

E. Ghasroddashti, J. Pantarotto, R. MacRae, **L. Gerig**, "Correlation of Ventral Surface Motion with Respiration and Lung Tumor Motion Using a 3-D Optical Motion-Tracking System". Radiological Society of North America Annual Meeting, Chicago, Illinois, USA, November, 2005

J. Szanto, **L. Gerig**, Z. Gao, D. Wilkins, L. Eapen, C. Morash, J. Wassef, "Probability Volume Histograms: Quantifying Systematic and Random Prostate Delineation Error", ESTRO 2006 Meeting, Leipzig Germany

Z. Gao, **L. Gerig**, J. Szanto "Image analysis of inter-leaf radiation leakage, a new approach to the correction of EPIC mechanic inconsistencies". Canadian Organization of Medical Physicists Annual Meeting, Hamilton, ON, June 2005, Medical Physics 32(7), P191, July 2005

K. Myint, M. Niedbala, D. E. Wilkins, **L. Gerig**, "An evaluation of treatment dose error due to beam attenuation from a carbon fiber table top", Canadian Organization of Medical Physicists Annual Meeting, Hamilton, ON, June 2005, Medical Physics 32(7), P40, July 2005

Z. Gao, **L.H. Gerig**, J. Szanto, "Correcting geometric distortion of EPID images," Canadian Organization of Medical Physicists Annual Meeting, Hamilton, ON, June 2005, Medical Physics 32(7), P72, July 2005

S. Godfrey, "New Physics at the TeV Scale and Precision Electroweak Studies", Invited talk at 2005 International Linear Collider Workshop (LCWS 2005), Stanford, California, 18-22 Mar 2005.

P. Hawrylak, "Designing solid state quantum systems for quantum information processing", International Workshop on Quantum Optics, Obergugl-Innsbruck, Austria, Feb.2005.

P. Hawrylak, "Quantum dots, quantum computing, and attosecond pulses", Attosecond Science Workshop, ITAMP, Harvard University, USA, May 2005.

P. Hawrylak, "Optical processes in two-dimensional electron gas in the fractional quantum Hall regime", W.I.Heraeus Seminar, Bad Honef Physik Centrum, Germany, June 2005.

P. Hawrylak, "Fractionally Charged Quasiparticles in Confined 2D Electron Systems", Tutorial Session, 34th International School on the physics of Semiconductor Compounds, Jaszowiec, Poland, June 2005.

P. Hawrylak, "Pairing of spin excitons in lateral quantum dots", International Workshop on Correlations in quantum systems: quantum dots, quantum gases and nuclei, Palma de Mallorca, Spain, Sept.2005.

P. Hawrylak, "Nanospintronics with quantum dots", Polish-Canadian Workshop on Nanospintronics, Wroclaw, Poland, Oct.2005

P. Hawrylak, "Artificial atoms and molecules as elements of nano-spintronic circuit", California NanoScience Institute and Canadian Institute for Advanced Research workshop "Seeing the end of the NanoRoadMap", Santa Barbara, CA, USA, Nov.2005

R. Hodgson, Optimization of Depth-graded Multilayer Reflectors for EUV and X-Ray Optics. CAP Congress 2005, Vancouver.

B. J. Jarosz, "Effects of External Temperature on Therapeutic Heating with Interstitial Instrumentation", Proceedings, 22nd IEEE Instrumentation and Measurement Technology Conference, 17-19 May 2005, Ottawa, Canada, 384-8, 2005

L'Heureux, I. Effects of quenched porosity fluctuations in nonlinear reaction-diffusion porous systems, Annual Congress of the Canadian Association of Physicists, Vancouver (BC), June 5-8, 2005 (oral presentation).

L'Heureux, I. Elimination of the intermediate product C in models of periodic precipitation patterns, $A+B \leftrightarrow C \rightarrow P$, Pacificchem Meeting, Honolulu, Dec.15-20, 2005 (oral presentation).

Wallace, Matthew and **Joós, B**, Overaging and rejuvenation of a polymer glass subjected to shear deformation, APS Meeting, Los Angeles, CA, March 2005 (Abstract no. S24.005).

Boucher, Pierre-Alexandre, **Joós, B**, and Zuckermann, Martin, Kinetics of rupture of a lipid bilayer under tension, with and without peptides in solution, APS Meeting, Los Angeles, CA, March 2005 (Abstract no. J21.009).

Joós, B and Wallace, Matthew, Shear induced overaging in a polymeric glass, CAP Congress, June 2005, Vancouver, BC (Abstract no. MO-A2-3).

Zhou, Zicong, Lai, Pik-Yin, and **Joós, B** , Elasticity and Stability of a Helical Rod, CAP Congress, June 2005, Vancouver, BC (Abstract no. TU-P3-3).

H.E. Logan, "Higgs Working Group Summary", 2005 International Linear Collider Physics and Detector Workshop, Snowmass, Aug 2005. Invited talk

H.E. Logan, "Neutralino annihilation at next-to-leading order", Argonne Theory Institute, Argonne National Laboratory, May 2005

G.P. Raaphorst, "The impact and implications of modern radiobiology in planning and treatment for radiotherapy", Alberta Cancer Board 2005 Annual Research Meeting, Banff, AB, November 8-10.

D.W.O. Rogers, "A status report on the EGSnrc and BEAMnrc Monte Carlo packages", at 6th International Topical Meeting on Industrial Radiation and Radioisotope Measurement Applications, IRRMA6, at McMaster University in Hamilton, June 20-24, 2005

D.W.O. Rogers, "Fast Monte Carlo dose calculations for brachytherapy", at ESTRO Physics Meeting in Lisbon, Portugal, Sept 26, 2005 (European Society for Therapeutic Radiology)

L. A. Buckley and **D. W. O. Rogers**, Calculated Pwall Values in Clinical Electron Beams at AAPM Annual Meeting in Seattle, WA, July 2005 Medical Physics 32 1890-1891 (2005)

L. A. Buckley and **D. W. O. Rogers**, Calculated Pwall values in clinical photon beams at the COMP Annual Meeting in Hamilton, ON July 2005 Proc. of 2005 COMP Annual Meeting, 141-143 (2005)

D. Sinclair, 4th SNOLAB Workshop on Science and Experiments for SNOLAB, Sudbury, Canada Aug 15-17, 2005

G W. Slater (2005) Studying nanofluidics and nano-sieving devices using coarse-grained Molecular Dynamics simulations. Oral presentation at the Summer School : Micro- and Nano-fluidic systems descriptions, Banff International Research Station, May.

G W. Slater (2005) Control of EOF with polymer brushes: a MD investigation. Oral presentation at the Summer School : Micro- and Nano-fluidic systems descriptions, Banff International Research Station, May.

T. Yergou, **G. W. Slater** (2005) A Simulation Model of Biofilms with Autonomous Cells: Analysis of a Two-Dimensional Version. Poster presentation at the CAP Congress, Vancouver, June 5-8.

E. Oliver, **G. W. Slater** (2005) Mixing of fluids in nanochannels. Poster presentation at the March Meeting of the American Physical Society, Los Angeles.

M. Bertrand, **G. W. Slater** (2005) Counteracting the electrophoretic motion of a polyelectrolyte: a Molecular Dynamics study. Poster presentation at the March Meeting of the American Physical Society, Los Angeles.

S. Bekhechi, **G. W. Slater** (2005) Diffusion in a system of vibrating obstacles: Exact numerical results. Poster presentation at the March Meeting of the American Physical Society, Los Angeles.

S. Nedelcu, **G. W. Slater** (2005) Theory of End-Labeled Free-Solution Electrophoresis: Using Branched Polymeric Labels with ssDNA. Poster presentation at the March Meeting of the American Physical Society, Los Angeles.

S. Al-Ghamdi, S. Malone, **J. Szanto**, G. Victor, "Radiotherapy for the management of unresectable / recurrent benign and malignant meningiomas". The Canadian Radiosurgical Society Meeting, Volume 32, No. 3, August 2005, Banff, Alberta, March 4-5, 2005

R.C. Wilkins, S.M. Miller, C.L. Ferrarotto, B.C/ Kutzner, J.P. McNamee, S. Vlahovich, D. Buchanan, Y. Deventier, D.P. Morrison, D.R. Boreham, N. McFarlane, M-E Bahen, L. Ryan, K. Schnarr, J. Lavoie, J.A. Dolling, "Biological Dosimetry and Markers of Nuclear and Radiological Exposures - Recent progress on the National Biological Dose Response Plan and Biological Dosimetry Research", 2005 CRTI Summer Symposium, Gatineau, PQ, June, 2005

S. M. Miller, C. L. Ferrarotto, S. Vlahovich, **R.C. Wilkins**, D.R. Boreham, J. Dolling, "Canadian Cytogenetic Emergency Network For Biological Dosimetry Following Radiological/nuclear Accidents", 52nd Annual meeting of the Radiation Research Society, Denver ,CO in October, 2005

P. Reinhardt, M. Cybulski, S. M. Miller, C. L.Ferrarotto, **R. C. Wilkins** and Y. Deslauriers. "Can broad-spectrum sunscreens prevent the secretion of proinflammatory cytokines in human keratinocytes when exposed to the phototoxic drug lomefloxacin and UVA radiation?" European Society of Photobiology, September 2005, France

Other Presentations in 2005

A. Bellerive, "What can we learn about Neutrinos at SNOLAB", McGill University, January 2005.

A. Bellerive, Solar Neutrinos and the Sudbury Neutrino Observatory", York University, March 2005.

I.G. Cameron, "Medical Imaging in Ottawa: From Pinhole to 3D and Beyond", R. L. Clarke Symposium in Celebration of 15 Years of the Ottawa Medical Physics Institute, Invited Speaker, Carleton University, Ottawa, Nov 5, 2005.

D. Asner, "On the Impact of CLEO-c Results", Physics Seminar, McGill, November 30, 2005

D. Asner, "Charm School for the Holidays," Ottawa-Carleton Institute for Physics Christmas Symposium, December 19, 2005

J.E. Cygler, "Clinical Application of Electron Beams, Physics mini-Symposium", 10th Annual National Canadian Preparatory Course in Clinical and Radiation Oncology, Ottawa, January 24-28, 2005, invited talk.

J.E. Cygler, "Old Brachytherapy - Recent Revival", Physics mini-Symposium, 10th Annual National Canadian Preparatory Course in Clinical and Radiation Oncology, Ottawa, January 24-28, 2005, invited talk.

J.E. Cygler, "Clinical Experiences Treating Head and Neck Cancers Using an Electron Monte Carlo Calculation Module", Physics mini-Symposium, 10th Annual National Canadian Preparatory Course in Clinical and Radiation Oncology, Ottawa, January 24-28, 2005, invited talk.

J.E. Cygler, "Brachytherapy for skin cancer", Physics mini-Symposium, 10th Annual National Canadian Preparatory Course in Clinical and Radiation Oncology, Ottawa, January 24-28, 2005, invited talk.

J.E. Cygler, "Monte Carlo based treatment planning for electron beams", TOHRCC Special Radiotherapy Education Session, Ottawa, February 23, 2005, invited talk.

J.E. Cygler, "MOSFET detectors in in-vivo dosimetry, Radiation Oncology Physics Rounds", TOHRCC Ottawa, June 1, 2005, invited talk.

M. Kaern, Invited speaker. Progress in Systems Biology. Inaugural symposium of the Ottawa Institute of Systems Biology. Ottawa. Ontario. November 2005.

M. Kaern, Invited speaker. DCDIS 4th International Conference on Engineering Applications and Computational Algorithms. Guelph. Ontario. July 2005.

M. Kaern, Invited speaker. Systems and Biology. Keystone. Colorado. April 2005.

I. L'Heureux, Nonlinear effects in reaction-diffusion geochemical systems: some examples, University of Alberta, Sept. 2005.

H.E. Logan, "A recycled gift: radiative corrections to dark matter annihilation", talk at OCIP Christmas Symposium, Dec 2005.

H.E. Logan, "Higgs physics at hadron colliders", seminar at University of Toronto, Oct 2005.

H.E. Logan, "Seeing an invisible Higgs at Tevatron and LHC", seminar at Fermilab, Apr 2005.

H.E. Logan, "Higgs Physics at Hadron Colliders", seminar at University of Kansas, Apr 2005.

H.E. Logan, "Higgs Physics at Hadron Colliders", seminar at Carleton University, Ottawa, Mar 2005.

H.E. Logan, "Higgs Physics at Hadron Colliders", seminar at University of Wisconsin, Madison, Mar 2005.

H.E. Logan, "An Invisible Higgs at Hadron Colliders", seminar at Argonne National Lab, Feb 2005.

A. Longtin, Ottawa Institute of Systems Biology, Inaugural Conference, Ottawa, Nov. 2005.

A. Longtin, Newton Institute, Cambridge University, UK, Theory and Applications of Coupled Cell Networks, September 2005.

A. Longtin, 2nd Annual Meeting, Leverhulme Trust Network in Theoretical Neuroscience, Loughborough, UK, September 2005

A. Longtin, One Hundreds Years of Brownian Motion (Centennial of Einstein's paper), Ettore Majorana Intern. Physics Center, Erice, Sicily, July 2005.

A. Longtin, IAS/Park City Mathematics Institute Summer Session on Mathematical Biology, Salt Lake City, USA, July 2005. (declined)

A. Longtin, European Committee on Mathematical and Theoretical Biology Annual Meeting, Dresden, Germany, July 2005 (declined)

A. Longtin, 13th International IEEE workshop on Nonlinear Dynamics in Electronic Systems, Potsdam, Germany, September 2005. (declined)

A. Longtin, 5th ASME International Conf. On Multibody Systems, Nonlinear Dynamics and Control, Symposium on Dynamics and Control on time-varying and time-delayed systems and structures, Long Beach, CA, September 2005. (declined)

A. Longtin, Unsolved Problems on Noise, Gallipoli, Italy, June 2005 (declined due to conflict)

A. Longtin, SPIE conference on Fluctuations and Noise, Austin, Texas, May 2005 (declined due to conflict)

A. Longtin, Oscillations and Instability; control, near and far from equilibrium in Biology. Lorentz Center, University of Leiden, May 2005.

A. Longtin, American Math Society special session on Dynamical Systems in Neuroscience, UC Santa Barbara, April 2005 (declined)

G. W. Slater (2005) Electroosmotic flow and polymer coating: a microscopic view using Molecular Dynamics Simulations. INVITED talk at the Gordon Research Conference on The Physics and Chemistry of Microfluidic Devices, Oxford, UK, August.

G.W. Slater (2005) The next generation of Microfluidic DNA analysis devices. INVITED talk at The CMC Microsystems 2005 Annual Symposium. Ottawa, 13 October.

R.C. Wilkins "Increasing Throughput for Cytogenetic Biological Dosimetry " at a two day workshop entitled "Biodosimetry: Current and Evolving Technologies" sponsored by the National Institute of Allergy and Infectious Diseases (NIAID) in Bethesda in February

Technical Reports in 2005

R. Barnett., **J.E. Cygler**, "CAPCA Quality Control Standards: Brachytherapy Remote Afterloaders", COMP web page, <http://www.medphys.ca/article.asp?id=165>

P.L. Drouin, "Signal Extraction of the B8 Neutrino Flux", SNO Technical Note, 2005.

S. Godfrey, N. Brambilla et al., "Heavy Quarkonium Physics", CERN Yellow Report, CERN-2005-005, (Geneva, CERN, 2005)

J. A. Aguilar-Saavedra, **H.E. Logan**, et al., "Supersymmetry Parameter Analysis: SPA Convention and Project" arXiv:hep-ph/0511344

S. Heinemeyer, S. Kanemura, **H.E. Logan**, A. Raspereza, T. Tait, et al. [Snowmass 2005 Higgs Working Group], "Toward High Precision Higgs-Boson Measurements at the International Linear e⁺e⁻ Collider" arXiv:hep-ph/0511332,

H.E. Logan, Report of the Higgs Working Group of the 2005 International Linear Collider Physics and Detector Workshop, Snowmass, USA, August 14-27, 2005.

E. Rollin, "Wavelength Shifters", SNO Technical Note, 2005.

L. Sinclair, "Monte Carlo of the Laserball Source", SNO Technical Note, 2005.

O. Simard, "Optical Calibration of the SNO Detector", SNO Technical Note, 2005.

G. Tesic, "Physics Interpretation and Extraction of the Oscillation Parameters", SNO Technical Note, 2005.

D. Waller, "hep Neutrinos", SNO Physics Note, 2005.

Graduating Students and Thesis

Student	Degree	Supervisor	Defence Date
Chen, Ou(O) Development of the offset locking based distributed sensor and study on Polarization effects in optic fiber.	M.Sc.	Bao	April 25, 2005
Gorjanc, Timothy(O) Electronic and Photonic Devices Based on Modified Oligo-p-phenylenevnylenes.	Ph.D.	D'Iorio	April 22, 2005
Gratton, Yannick(O) Tethered polymers in a shear flow: A molecular dynamics study of the good and bad solvent cases.	M.Sc.	Slater	May 30, 2005
Pegoraro, Adrian(O) Modelling Heterogeneous Nonlinear Subwavelength Systems with the Finite Difference Time Domain Method.	M.Sc.	Brabec	September 2, 2005
Tsandev, Iana(O) Numerical Study of the Factors Affecting the Cycling of Iron, Sulfur and Phosphorus in Lake Sediments.	M.Sc.	L'Heureux/Rancourt	September 9, 2005
Bouchard, Line(O) Stabilization of an FM Active Harmonic Mode-Locked Fiber Laser at High Repetition Rates.	M.Sc.	Bao	November 29, 2005
Allen, Claudine(O) Points Quantiques sur des substrats d'INP : Plate-forme pour des composantes opto-électroniques accordables.	Ph.D.	Raymond/Fafard	December 20, 2005
Boucher, Pierre-Alexandre(O) D'un modèle pour la formation de pores alignés de peptides dans une bi-couche lipidique sous une rampe de tension.	M.Sc.	Joos	December 13, 2005
Tessier, Frédéric(O) Modelling of electrokinetic phenomena involving confined polymers : applications to DNA separation and electrosmotic flow control.	Ph.D.	Slater	December 19, 2005
Gauthier, Alain(O) The Permeability of a Lipid Bilayer.	M.Sc.	Joos	December 16, 2005
Abdeen, Nishard(C) Thesis Title: Measurement of Xenon Diffusing Capacity by Hyperpolarized ^{129}Xe MRI and Dynamic Spectroscopy in Rats with <i>Stachybotrys chartarum</i> Spore-Induced Pneumonitis	M.Sc.	Santyr	June 30, 2005
Buckley, Lesley(C) Thesis Title: An EGSnrc Investigation of Correction Factors for Ion Chamber Dosimetry	Ph.D.	Rogers	August 31, 2005
Garcia-Fernandes, Lourdes Maria(C) Thesis Title: Fitting the Linear-Quadratic Model to Detailed Data Sets for Different Dose Ranges	M.Sc.	Raaphorst	September 9, 2005
Heelen, Louise(C) Thesis Title: A Search for Periodic Time Variations in the Solar Neutrino Data from the Sudbury Neutrino Observatory	M.Sc.	Hemingway	June 28, 2005
Nisar, Mohammad(C) Thesis Title: Coherent Scatter X-Ray Imaging of Plastic and Water Phantoms	M.Sc.	Johns	January 4, 2005

Tonkopi, Elena(C) M.Sc. Kawrakow August 14, 2005
 Thesis Title: Monte Carlo Investigation of the Influence of Ion Chamber Response on In-Air Measurements in Megavoltage Photon Beams

Wassenaar, Richard(C) Ph.D. deKemp June 3, 2005
 Thesis Title: Extravascular Density Imaging for Regional Partial Volume Correction of ¹⁸F₂FDG Cardiac PET Images

Graduate Students at the Institute in 2005

<u>Student</u>	<u>Registered</u>	<u>Supervisor(s)</u>	<u>Completed</u>
Al-Qadi, Khalid	(O) Ph.D.	Stadnik	
Abuzanida, Suad	(O) Ph.D.	Chen	
Al-Marzoug, Saeed	(O) Ph.D.	Hodgson	
Andrievski, Andrei	(C) M.Sc.	Wilkins	
Babineau, David	(O) M.Sc.	Longtin/Lewis	
Barrie, Gregory	(O) Ph.D.	Longtin	
Beckwith, Paul	(O) Ph.D.	Bao/L. Chen/K.Chen	Withdrew
Bertrand, Martin	(O) M.Sc.	Slater	
Bouchard, Line	(O) M.Sc.	Bao	
Boucher, Pierre-Alexandre	(O) M.Sc.	Joos	
Bond, Jeffery	(O) M.Sc.	Finnie	
Buckley, Lesley A	(C) Ph.D.	Rogers	
Chen, Ou	(O) Ph.D.	Chen	May 2005
Cherpak, Amanda	(C) M.Sc. Sep-05	Cyglar	
Drouin, Pierre-Luc	(C) Ph.D.	Bellerive	
Dugal, Cliffq	(C) M.Sc.	Wilkins	
Elsayed, Ali	(C) M.Sc.	Rogers	
Footit, Claire	(C) M.Sc.	Cameron	
Flacau, Roxana	(O) Ph.D.	Desgreniers	
Gao, Junqi	(O) Ph.D.	Bao	
Gao, Z	(C) Ph.D.	Gerig	
Garcia, Marie Lourdes	(C) M.Sc.	Wilkins/Raaphorst	
Gauthier, Alain	(O) M.Sc.	Joos	
Gauthier, Michel	(O) Ph.D.	Slater	
Ghasroddashti, E.	(C) Ph.D.	Gerig	
Gratton, Yannick	(O) M.Sc.	Slater	
Hamza, M.	(O) Ph.D.	Chen/Tariq	
Heelan, Louise	(C) Ph.D.	Hemingway/Oakham	
Kenward, Martin	(O) Ph.D.	Slater	
King, Brian	(C) Ph.D. Sep-04	Johns	
Knight, Gary	(O) Ph.D.	Hodgson/	
Kochermin, A.	(C) Co-op	Bellerive	
Kwiecinski, Mark	(O) M.Sc.	Desgreniers	
La Russa, Dan	(C) Ph.D.	Rogers	
Lefebvre, Jérémie	(O) M.Sc.	Longtin/LeBlanc	
Li, Yun	(O) M.Sc.	Bao	
Martin, Travis	(C) M.Sc.	Godfrey	
Marinez Ortega, Jose M.	(C) Ph.D.	Jarosz	
Middleton, Jason	(O) Ph.D.	Longtin	
Moats, Ken	(C) M.Sc.	Godfrey	
Myint, K.	(C) Ph.D.	Gerig	
Nezamzadeh, Marzieh	(C) Ph.D.	Cameron	

Olariu, Elena	(C) M.Sc.	Cameron
Ravet, Fabien	(O) Ph.D.	Chen/Bao
Rollin, Etienne	(C) Ph.D.	Bellerive
Schram, Malachi	(C) Ph.D.	Oakham
Sego, Zdenko	(C) M.Sc.	Rogers
Simard, Olivier	(C) Ph.D.	Bellerive
Smith, Jesse	(O) Ph.D.	Desgreniers
Snoddy, Jeffrey	(O) M.Sc.	Bao
Stojanovic, Severin	(O) M.Sc.	L'Heureux
Sutherland, Connie	(O) M.Sc.	Longtin
Taylor, Randy	(C) M.Sc.	Rogers
Tesic, Gordana	(C) Ph.D.	Bellerive
Tessier, Frédéric	(O) Ph.D.	Slater
Torres, Francis	(O) M.Sc.	Slater
Truica, Sorino	(C) Ph.D.	Cameron
Tsandev, Iana	(O) M.Sc.	L'Heureux/Rancourt
Walker, Robert	(O) Ph.D.	Bao
Wang, Lilie	(C) Ph.D.	Rogers
Wang, Pu	(O) Ph.D.	Stadnik
Xie, Li	(O) M.Sc.	Chen
Yu, Qinrong	(O) Ph.D.	Chen/Bao
Zhang, Ziyi	(O) Ph.D.	Chen/Bao

Research Associates at the Institute in 2005

<u>Name</u>	<u>Period</u>	<u>Supervisor(s) or Group</u>
R. Abolfath		P. Hawrylak
A. Bandhar	2005-2006	G. Slater
S. Bekhechi	2004-2006	G. Slater
K. Boudjemlin		ILC Team
X. DaiN	Nov 2002 -	TheSNO/SNOLAB Group
S. Hadjifaradji		L. Chen
H. Hou		S. Godfrey
V. Kalosha		L. Chen/X. Bao
M.Khakzad		G.Oakham/M. Vincter
B. Lindner		Longtin
J.-F. Mercier	2004-2006	G. Slater
C. Mifflin	years back - present	The SNO/SNOLAB Group
J. Miyamoto		ILC Team
F. Mirrashed		I. Cameron
S. Nedelcu	July 2004 – present	G. Slater
E. Ponomarev		X. Bao
F. Qu		P. Hawrylak
P. Salvam		D.W.O. Rogers
W. Sheng		P. Hawrylak
L. Sinclair		The SNO/SNOLAB Group
K. Szalischnyo		Longtin
D. Waller	Feb 2003 - present	The SNO/SNOLAB Group
H. Wang		X. Bao/L. Chen
S. Yang		X. Bao
Z. Yang		G. Oakham/M. Vincter
G. Yegin		D.W.O. Rogers
F. Zhan		The SNO/SNOLAB Group

L. Zou
J. Zukrowski

X. Bao
Z.M. Stadnik

Funding in 2005

<u>Name</u>	<u>Source</u>			<u>Amount Per Year</u>
X. Bao	CIPI	C	Research	\$ 50,000
	Cable Bahamas		Research	\$ 25,943.28
	TCPL	I	Field Test	\$ 12,383.60
	U of O	G	Research	\$ 20,000
	NCIT	C	Research	\$ 8,000
	CIPI-NCE	C	Research	\$ 36,800
	CIPI-TEN	C	Research	\$ 50,000
	U of O/CRC Chair	G	Research	\$ 70,000
	AAPN-NSERC	C	Research	\$ 85,000
	NSERC	C	Research	\$ 60,000
	NCE-ISIS	C	Research	\$ 60,000
	NCE-ISIS	C	Field and Research	\$ 15,000
A. Bellerive	PREA			\$ 25,000
I. Cameron	Heart & Stroke Foundation of Ontario			\$ 53,643
	ORDCF			\$150,000
L. Chen	NSERC	C	Research	\$ 17,000
J. Cygler	ORC Foundation			\$ 5,500
	CCO Harold Johns Scholarship for Summer Student			\$ 12,000
	Thomson & Neilsen – in-kind support			\$ 1,200
	Nucletron			\$ 15,000
	Varian			\$ 20,000
S. Desgreniers	NSERC		Discovery	\$ 32,000
	NSERC		RTI	\$ 85,110
D. Dixit	NSERC			\$170,000
P. Finnie	NSERC Discovery Grant	C		\$ 18,000
L. Gerig	Ottawa Regional Cancer Foundation Grant			\$ 20,000
S. Godfrey	NSERC			\$ 70,000
P. Hawrylak	Canadian Institute for Advanced Research/NRC VP - Grant supporting RA – Computational Nano-Spintronics - 2000-present			\$ 50,000/yr
	Principal Investigator – NSERC Grant: Electronic Properties of Quantum Dots			\$ 13,000/yr
	Principal Investigator (with M. Bayer) – NRC – Helmholtz Grant			\$300,000/yr
P. Johns	NSERC			\$ 20,000

B. Joos	NSERC	C Research	\$ 30,000
P. Kalyniak	NSERC	Discovery Grant	\$ 33,000
I. L'Heureux	NSERC NSERC	Discovery Strategic Grant with D. Rancourt as P.I.	\$ 25,000 \$153,061/yr
H. Logan			\$ 30,000
A. Longtin	NSERC	Discovery	\$ 50,000
		CIHR (shared with Len Maler in Medicine)	\$ 93,000
		CIHR Group Grant (4 PI's)	\$180,000
		NATO Postdoctoral Researcher Award	\$ 30,000
G. Oakham	NSERC (Atlas Operating)		\$257,200
	NSERC (MFA/MRS)		\$210,000
	NSERC (Atlas CCC)		\$170,000
	NSERC (Atlas Cost to Complete)		\$750,000
	NSERC (Atlas SCA Controllers)		\$395,000
D.W.O. Rogers	NSERC		\$ 32,000
	CRC		\$200,000
	EGSnrc Course		\$ 7,500
	BEAMnrc Courses		\$ 74,000
	MDS-Nordion		\$ 10,000
	Tomotherapy		\$ 13,080
	Varian		\$ 18,500
D. Sinclair	NSERC (EXO)		\$230,000
G. Slater	University of Ottawa	Research (Dean of FGPS)	\$ 30,000
	Univ. of Ottawa & Fac. of Science	Research	\$ 35,000
	(Univ. Res. Chair in Biological Physics)		
	Networks of Centres of Excellence (NCE) – Research		\$ 22,500/my part
	(Advanced Food and Biomaterials Network NCE (AFMNet)		
	Growth of Biofilms		
	Networks of Centres of Excellence (NCE) Research		\$ 56,000/yr/my part
	Advanced Food and Biomaterials Network NCE (AFMNet)		
	Design of drug delivery systems		
	NIH (USA) - Research - DNA sequencing by End-Labeled		\$250,000
	Free Solution Electrophoresis (ELFSE) on microfluidic		\$ 70,060US/my part
	Devices. PI: A. Barron, NWU		
	NSERC – Research – Polymer Dynamics and Nanofluidics		\$ 69,000
	(5-yr Discovery Grant)		
Z.M. Stadnik	2005 NSERC Discovery Grant Installment:		\$ 29,000
	2005 NSERC Research Tools and Instruments Grant:		\$ 21,685
SNO Collaboration	NSERC		\$360,000