

Ottawa Carleton Institute for Physics

L'Institut de physique d'Ottawa Carleton

2006 Annual Report

In 2006 Bela Joos continued as Director and Stephen Godfrey as Associate Director. Other members of the 2006 OCIP board were T. Brabec, R. Hodgson, P. Johns, and D. Rogers.

The Ottawa Carleton Institute for Physics is a dynamic organization that continues to grow. It consists of 65 faculty including 32 regular faculty and 33 adjunct, visiting, emeritus and cross appointed faculty, 52 Research Associates, and 99 Graduate Students. During 2006 11 MSc and 7 PhD students graduated. The total research funding grew to \$23.1M (including \$17M for the SNOLab Cryopit). Members of the Institute published 212 papers in peer reviewed journals.

The Carleton University Physics Department welcomed two new faculty. **Kevin Graham** works in experimental particle physics on the SNO experiment and DEAP and EXO experiments which have been proposed for SNOLab. **Tong Xu** is a medical physicist working on real time tracking using positron emission isotopes.

The University of Ottawa Physics Department welcomed two new regular Faculty members in 2006: **Ralf Metzler** (Canada Research Chair, Tier 2) applies methods of statistical physics to study biomaterials. **James Harden** investigates the properties of biomaterials and soft materials, and conducts research in biological physics using of combination of computational, experimental, and theoretical methods. **Chris Willott** has joined the Department as a visiting faculty. His research focuses on the evolution of galaxies and their supermassive blackholes. He now teaches the astronomy and astrophysics courses. Finally, **Henry Schriemer** (from the School of Information Technology and Engineering) has been cross-appointed with our Department in 2006. His research interest is in nanophotonics, optoelectronics, integrated photonic components and optical metamaterials.

Our members continued their active involvement in the affairs of the physics community. **James Harden** is an Associate Editor for the journal *Soft Materials* since 2002, of which he is a co-founder. **Xiaoyi Bao** was a Council member of the the International Society for Structural Health Monitoring of Intelligent Infrastructure (ISHMII). She was a member of the Research Management Committee of ISIS Canada (Intelligent Sensing for Innovative Structures). Finally, Xiaoyi was also topical editor of Applied Optics. **Béla Joós** became the chief Editor of *Physics in Canada* in June 2006, after having served as associate editor of PIC for ten years and on its editorial committee since 1987. **Ivan L'Heureux** is still Associate Editor of the *Canadian Journal of Physics* (condensed matter section). **André Longtin** has joined the editorial board of *Biological Cybernetics* (published by Springer Verlag). He was a guest editor of a special issue of *Chaos* on noise in neural and genetic systems. **Gary Slater** is still Dean of the Faculty of Graduate and Post-Doctoral Studies. He is still a member of the Board of Directors of the Canadian Organization for the Development of High Performance Computing. **Marie D'Iorio** is the Director-General of the Institute for Microstructural Sciences at NRC. She is responsible for 150 staff members with a budget of \$20 million. She served as member of the Conseil d'administration of ACFAS; member of the boards of National Capital Institute for Telecommunications and of Agile All Photonics Network; member of the scientific

committee of the Canadian Institute for Photonics Innovation. She also served on the Strategy and Priority Committee and member of the Advisory board of SIMS and IIT. She was also member of the NRC Vision 2006-2011 team. **Pawel Hawrylak** was elected associate member of the International Union of Pure and Applied Physics (IUPAP) (Commission on Low Temperature Physics). He was member of the International Advisory Committee for the 4th International Conference on "Quantum Dots" (Chamonix, May 2006) and a member of the International Advisory Committee for the International School of Physics of Semiconductor Compounds, based in Jaszowiec, Poland. **John Tse** acted as chairman of the NSERC Scholarship and Fellowship committee. He was a member of the European Young Investigator Awards – Natural Science II of the European Science Foundation and was a member of the International Advisory Committee on the Symposium on the Physics and Chemistry of Ice (Germany). **David Villeneuve** became a member of the grant selection committee for the US Department of Energy and the US National Science Foundation. **David Asner** was appointed to be member of SuperB International Steering Committee, **Steve Godfrey** was a member of the Polanyi Prize selection committee, **Heather Logan** was a volunteer judge for Ottawa Regional Science Fair, and **Pat Kalyniak** was a member of the TRIUMF Board of Management. **Malcolm McEwen** was Director of the Ottawa Medical Physics Institute (OMPI). **Dave Rogers** was appointed to the International Advisory Board of the journal Physics in Medicine and Biology 2006. He was also appointed as on-going member of a newly formed IAEA International Advisory Committee on "Phase-space database for external beam radiotherapy". **David Sinclair** served on many international review committees: DOE Board of Visitors for Nuclear Physics, DOE Review of Fermilab, Chair of the ANTARES Scientific Review Committee for European agencies, Chair of the MINOS Review Committee for PPARC (UK), member of the T2K Review Committee for SFRC (UK), and a member of PANAGIC (Particle and Nuclear Astrophysics and Gravity committee for IUPAP).

This brings us to the usual participation of our members in the organization of conferences. **James Harden** was a session organizer on "Rheology and Dynamics of Complex Fluids" at the 80th ACS Colloids and Surface Science Symposium (Boulder Colorado, June 18-21, 2006). **Xiaoyi Bao** participated in the organization of many national and international conferences: she was a member of the 2006 International Steering Committee of the 2nd International Conferences on Structural Health Monitoring and Intelligent Infrastructure; she was a member of the 2006 Technical Program Committee of the S16-19 (International optical fiber sensor) conference and chair of "Smart structures and field tests" at that conference; she was a member of the 2006 International Organizing Committee of the 2nd International Symposium on Advances and Trends in Fiber Optics and Applications; she was a member of the 2006 Program Committee for SPIE Smart Structures and Material Annual Conferences; she was a committee member of the 2006 "Optical fiber sensors for civil engineering applications" (subcommittee of International Union of Laboratories and Experts in Construction Materials, Systems and Structures or RILEM); she was a co-chair at the 2006 6th Asia-Pacific conference on "Fundamental Problems of Opto and Microelectronics". **Stephen Godfrey** was on the Local Organizing Committee, the Program Committee, and a convener of the ALCPG Physics Summary session of the Vancouver Americas Linear Collider Physics Groups Workshop and GDE (VLCW06), UBC Vancouver, July 19-22 2006, and on the organizing committee of the 2006 18th annual TRIUMF Summer Institute at TRIUMF (TSI'06), The High Energy Frontier, TRIUMF Vancouver, July 10-22, 2006. **Heather Logan** was a conference parallel session co-organizer for: 1) Higgs and Electroweak Symmetry Breaking session, 9th International Conference on Linear Colliders (LCWS 2006), Bangalore, India (March 2006). 2) Terascale Physics parallel session, Vancouver Linear Collider Workshop (July 2006). **David Sinclair** was on the TAUP Conference Organizing Committee and the Neutrino conference organizing committee.

Our members were distinguished by honorary appointments and awards. **Ravi Bhardwaj** received the prestigious Ontario Early Researcher Award. **Marie D'Iorio** became a fellow of the Royal Society of Canada in November 2006, and **Pawel Hawrylak** was elected fellow of the Royal Society of Canada and was also appointed fellow of the Canadian Institute for Advanced Research. **John Tse** was appointed honorary professor at the National Laboratory of Superhard Materials (Jilin University, China). **Stephen Godfrey** was awarded a Carleton University Research Achievement Award, 2006.

In other news, **Xiaoyi Bao** has enjoyed excellent media coverage of her research. She was featured in the April 20 issue of the *New Scientist* in the *Lasers bring quake-cracks to light* article; in the May issue of *Physics Update* in the *Fiber optics pinpoints structural problems* article and in the March 9 *Physics News Update* of the AIP in a paper by Phil Schewe and Ben Stein untitled *Using Fiber Optics to Pinpoint Structural Problems Early*. She made the front cover of the *Research Perspectives* magazine published by the University of Ottawa in an article untitled "Diagnosing the health of structures". The distributed Brillouin sensor work by Xiaoyi's group was reported on Radio-Canada/RDI (French language news broadcast channel of CBC *NewsWorld*) through an interview with the journalist Roger Carron (10:30am, 10 October 2006). They discussed the possibility to use such sensor to monitor civil engineering structures and anticipate fatal failures as it has happened to the Concorde Bridge (Laval) on Sept 30, 2006. Dr. Bao's group contributed to a debate on TFO (the francophone public channel of Ontario) on October 17, 2006 at 7:30pm on the use of distributed Brillouin sensor for structural health monitoring. The subject of the debate was "What is the status of Ontario's infrastructure?"

Members of the Ottawa-Carleton Institute of Physics

REGULAR PROFESSORS

J. C. Armitage (C)
D. Asner (C)
Xiaoyi Bao (O)
A. Bellerive (C)
Ravi Bhardwaj (O)
Thomas Brabec (O)
B. Campbell (C)
Liang Chen (O)
Andrzej Czajkowski (O)
Serge Desgreniers (O)
M.S. Dixit (C)
S. Godfrey (C)
K. Graham (C)
James Harden (O)
R.J. Hemingway (C)
Richard Hodgson (O)
B.J. Jarosz (C)
P.C. Johns (C)
Béla Joòs (O)
P. Kalyniak (C)
H. Logan (C)
André Longtin (O)
Ivan L'Heureux (O)

Ralf Metzler (O)
F.G. Oakham (C)
Peter Piercy (O)
Denis Rancourt (O)
D.W.O. Rogers (C)
W.D. Sinclair (C)
Gary Slater (O)
Zbigniew Stadnik (O)
M. Vincter (C)
P.J.S. Watson (C)
T. Xu (C)

VISITING PROFESSOR

Chris Willott (O)

CROSS-APPOINTED PROFESSORS

Javier Giorgi (O)
Mads Kaern (O)
Réjean Munger (O)
Henry Schriemer (O)

ADJUNCT PROFESSORS

I. Cameron (C)
Sylvain Charbonneau (O)
Kuiying Chen (O)
Paul Corkum (O)
B. Clark (C)
J. Cygler (C)
R. deKemp (C)
Marie D'lorio (O)
Simon Fafard (O)
Paul Finnie (O)
L.H. Gerig (C)
C.K. Hargrove (C)
Pawel Hawrylak (O)
I. Kawrakow (C)
G.K.Y.Lam (C)
Gilles Lamarche (O)
M. McEwen (C)
H.J.A.F. Mes (C)
Stephen Mihailov (O)
C. Ng (C)
Guenadi Rabinski (O)
G.P. Raaphorst (C)
Sylvain Raymond (O)
C.K. Ross (C)
G. Santyr (C)
K. Shortt (C)
Tom Smy (O)
Rod Taylor (O)

John Tse (O)
 David Villeneuve (O)
 A.J. Waker (C)
 Paul White (O)
 Robin Williams (O)
 D. Wilkins (C)
 R. Wilkins (C)

EMERITUS PROFESSORS

R. Carnegie (C)
 Emery Fortin (O)
 Marcel LeBlanc (O)
 M.K. Sundaresan (C)
 Yatendra Varshni (O)

2006 OCIP Seminar Series

**OCIP - Spring Graduate Student Seminar Day 1
 University of Ottawa - Wednesday, May 10, 2006**

14:00	Esmael Ghasroddashti (Carleton U.) <i>The Challenge Presented by Tumour Motion during External Beam Radiation Therapy.</i>
14:30	Eric Oliver (U. Ottawa) <i>Forced Rotational Motion of a Fluid in a Nanocavity: A Molecular Dynamics Study.</i>
15:00	<i>Break with refreshments / Pause avec rafraîchissements</i>
15:30	Mihai Gherase (Carleton U.) <i>Characterization of Hyperpolarized Xe-129 Dissolved in PFOB emulsions as a Novel Magnetic Resonance Contrast Agent for Cancer Detection.</i>
16:00	Martin Bertrand (U. Ottawa) <i>A Tethered Polyelectrolyte under the Action of an Electric Field.</i>

OCIP - Spring Graduate Student Seminar Day 2
University of Ottawa - Wednesday, May 17, 2006

14:00	Fabien Ravet (U. Ottawa) <i>Brillouin Spectrum Shape Analysis and its Implication on Distributed Brillouin Sensor Performance.</i>
14:30	Andrei Andrievski (Carleton U.) <i>Characterizing H2AX Response of Human Lymphocytes to Ionizing Radiation.</i>
15:00	Mark Kwiecinski (U. Ottawa) <i>All Optical Thermal Conductivity Measurement Utilizing Raman Spectroscopy.</i>
15:30	<i>Pause avec rafraîchissements / Break with refreshments</i>
16:00	Randy Taylor (Carleton U.) <i>Monte Carlo Calculations for Brachytherapy.</i>
16:30	Michael Corrigan (U. Ottawa) <i>Investigation of Pressure and Power effects on Saturated Absorption Lines using Frequency Stabilized Lasers in the 1.5 μm Regime.</i>

OCIP – Fall Graduate Student Seminars
University of Ottawa - Friday, December 8, 2006

13:30	Jean-Paul Prévost (U. Ottawa) <i>Theoretical Studies of the First-Row Transition Metals: Emphasis on Thermal Expansion.</i>
14:00	Elsayed Ali (Carleton U.) <i>Efficiency Improvements of X-ray Simulations in Carleton U. EGSnrc User-codes using Bremsstrahlung Cross Section Enhancement (BCSE).</i>
14 :30	Simon Frédérick (U. Ottawa) <i>Single Photon Source for Fibre-Based Quantum Cryptography: an InAs/InP Quantum Dot in a Microcavity.</i>

15:00 ***Break with refreshments /Pause avec rafraîchissements***

15:30	Tyler Dumouchel (Carleton U.) <i>Initial Performance Evaluation Results with the LabPET Animal Scanner.</i>
16:00	Jeffrey Bond (U. Ottawa) <i>Chemical Vapour Deposition Growth and Characterization of Single and Multi-walled Carbon Nanotubes.</i>
16:30	Kenji Myint (Carleton U.) <i>Treatment Dose Errors Resulting from the Use of Diagnostic CT images for Treatment Planning.</i>

OCIP – Christmas Symposium
Carleton University - Friday, December 15, 2006

9:00	Jim Harden (U. Ottawa) <i>Computational Modeling of the Endothelial Glycocalyx.</i>
9:30	Kevin Graham (Carleton U.) <i>Search for Dark Matter with DEAP.</i>
10:00	Chris Willott (U. Ottawa) <i>The Search for the First Stars.</i>

10:30 Break with refreshments / Pause avec rafraîchissements

11:00	Tong Xu (Carleton U.) <i>Dual-Energy X-ray Imaging and its Medical Applications.</i>
11:30	Andrzej Czajkowski (U. Ottawa) <i>Experiments with Optical Frequency Standards.</i>
12:00	Richard Hemingway (Carleton U.) <i>50 years of Physics ... A Personal Retrospective View.</i>

2006 Departmental Seminars

Name	Institution	Title	Date	
Brenda Clark	Ottawa Regional Cancer Centre	The Impact on the Physicist's Workload of Increased Resolution in External Beam Radiation Therapy	Jan 10	C
Roger Zemp	Texas A & M University	Biomedical Imaging with Light and Ultrasound: Imaging of Gene Expression, Blood Oxygenation, and Beyond	Feb 1	C
Stephane Coutu	Penn State University	The Nature and Origin of Cosmic Rays	Feb 2	C
Frank Petriello	University of Wisconsin, Madison	Precision physics at the LHC	Feb 28	C
Raphael Galea	Columbia University	Development of Cryogenic Tracking Detectors for low-energy Solar Neutrinos	Mar 2	C
Walter Huda	SUNY Upstate Medical University	Proposal for a paradigm shift in CT dosimetry	Mar 7	C
David Waller	Carleton University	Solar neutrinos and beyond with the Sudbury Neutrino Observatory	Mar 8	C
Andrzej Czarnecki	University of Alberta	Inclusive b-quark Decays and the Search for New Physics	Mar 20	C

Juergen Wendland	University of British Columbia	Neutrino Oscillations and the T2K Experiment	Mar 20	C
Bruce Faddegon	University of California, SF	The A-B-C's of Monte Carlo in radiotherapy: Applications and Benchmarks	Mar 22	C
Viktor Zacek	Université de Montreal	The Physics of Flight (CAP Lecture)	Mar 24	C
Kevin Graham	Queen's University	Elusive Particles: Neutrinos to Dark Matter	Mar 27	C
Jonathan L. Rosner	Enrico Fermi Institute	A Snapshot of Hadron Spectroscopy	Apr 4	C
Maxim Perelstein	Cornell University	Little Higgs Model with T Parity	Apr 18	C
Zisis Papanou	University of Regina	Rare decays of the eta meson	Apr 19	C
Dave Nygren	Lawrence Berkeley National Lab	Quest for neutrino-less double beta decay -- Is there a better way?	May 29	C
Dave Nygren	Lawrence Berkeley National Lab	IceCube: Neutrino astronomy at the south pole with a gigaton of ice	May 30	C
Gordana Tesic	Carleton University	The cosmic neutrino background	Sep 5	C
Martin Lepage	Université de Sherbrooke	MRI of cancer in humans and small animal models	Sep 11	C
Bei Cai	University of Minnesota	Studies of the Highest Energy Cosmic Ray Air Showers with the Pierre Auger Observatory Hybrid Detector	Oct 3	C
Berta Beltran Lizarraga	CERN	Axion searches in the CAST experiment at CERN	Oct 10	C
Matt Dobbs	McGill University	Probing the Opposite Ends of Time with the Cosmic Microwave Background	Oct 17	C
Guy Moore	McGill	Plasma instabilities in Quantum Chromodynamics	Oct 24	C
Juergen Reuter	Carleton University	Multi-Step Grand Unification -- From Model Building to Pheno	Nov 10	C
Ismail Turan	Concordia U.	Flavour changing neutral currents in top quark decay and single top production at LHC/ILC	Nov 17	C
Christine Davies	University of Glasgow	The quandary of the quark	Nov 24	C
Rouzbeh Allahverdi	Perimeter Institute	Probing primordial inflation at LHC	Nov 28	C
Luc Beaulieu	Laval University	Translating physics knowledge into useful concepts for radiation therapy	Dec 12	C
Dr. Igor Sokolov	Dept. of Physics, Chemistry Clarkson University	Biological Physics of Human Cells at Nanoscale with AFM	Jan 19	O
Dr. Dorothy Godfrey-Smith	Defence Scientist, Nuclear/Radiological Warfare National Defence Headquarters	Radiation dosimetry: nuclear Age to antiquity and back Again	Feb 2	O

Dr. Henry Schriemer	School of Information Technology and Engineering (SITE) University of Ottawa	Photons in Complex Systems	Feb 16	O
Dr. Louis Marmet	Institute for National Measurement Standards National Research Council of Canada	Cooled Cesium Standards and Beyond: Building Better Atomic Clocks	Mar 2	O
Dr. Albert Stolow	Steacie Institute for Molecular Sciences National Research Council of Canada	Time, Phase and Intensity: The Three Pillars of Femtosecond Science	Mar 9	O
Dr. Marc Spooner	Faculty of Education University of Ottawa	Research to praxis: How a fully-engaged academy should act as community-engaged agents of change in the public interest	Mar 30	O
Poster Session 4 th -year students	Dept. of Physics University of Ottawa	Honours Research Projects	Apr 7	O
Dr. Daniel Gauthier	Dept. of Physics Duke University	Slow-Light: From Basics to Applications	June 20	O
Dr. Louis-P. Lamoureux	Centre for Quantum Information and Communication Université Libre de Bruxelles, Belgium	Aspects of Quantum Computations, Cryptography and Non-Locality	Aug 19	O
Dr. Connie Roth	Dept. of Chemical & Biological Engineering Northwestern University	Mobility of Polymer Molecules in Confined Geometries: Impact of Free Surface and Substrate Interactions on Thin Polymer Films	Sept 22	O
Dr. David Broun	Dept. of Physics Simon Fraser University	Tuning a high temperature superconductor through the quantum transition to Mott insulator	Sept. 28	O
Dr. Thomas Fennel	Visiting Researcher University of Rostock	Metal clusters – a nanoscale laboratory for plasma physics	Oct 12	O
Physics Fest 2006	Dept. of Physics University of Ottawa	Short Research Presentations by Members of the OCIP	Oct 19	O
Dr. Michael Lomhold	Dept. of Physics University of Ottawa	Active membranes	Oct 26	O
Dr. Luc Thevenez	EPFL Swiss Federal Institute of Technology	Slow and Fast Light in Optical Fibres: a novel field for Stimulated Brillouin scattering	Nov 1	O
Dr. Weijun Zhang	Anhui Institute of Optics & Fine Mechanics Chinese Academy of Sciences	Single Particle Laser Mass Spectrometer and its Application	Nov 8	O

Dr. Kevin McLeod	(4 th -yr. History student) Carleton University	The Secret Life of Physicists	Nov 9	O
Dr. Maria Kilfoil	Dept. of Physics University of McGill	Colloids as Probes in Biology	Nov 16	O
Dr. Nikolay Shtinkov	Dept. of Physics University of Ottawa	Computational Nanophysics: Geometry, Materials, Self-Organization	Nov 23	O
Dr. Mikko Kartunnen	Dept. of Applied Mathematics University of Western Ontario	Simple views on complex systems: Identifying basic physical mechanisms in biological systems	Nov 30	O
Dr. Alexander Neiman	Physics and Astronomy Ohio University	Stochastic dynamics of electroreceptors in paddlefish	Dec 21	O

Publications in Refereed Journals and Book Series in 2006

J.F. Campos, Y. Wang, B. Chen, C. Q. Xu, S. Yang, E. Ponomarev, **X. Bao**, "40-GHz Picosecond-Pulse Second-Harmonic Generation in A MgO-Doped PPLN Waveguide" IEEE J.-LT, 24, 3698-3708, 2006.

L. Zou, **X. Bao**, S. Yang, **L. Chen**, Fabien Ravet, "Effect of Brillouin slow light on distributed Brillouin fiber sensor" Optics Letters 31 (18): 2698-2700, 2006.

Xiaoyi Bao, Fabien Ravet, Lufan Zou, "Distributed Brillouin Sensor Based on Brillouin Scattering for Structural Health Monitoring" The e-Journal of Nondestructive Testing. 11, No. 6. Document ID: 3388, 2006.

Shiquan Yang, **Xiaoyi Bao**, "Experimental observation of excess noise in a detuned phase-modulated harmonic mode-locking laser" Phys Rev. A. 74 (3), 33805, 2006.

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Yong Wang, Jorge Fonseca-Campos, Chang-Qing Xu, Shiquan Yang, Evgueni. A. Ponomarev, and **Xiaoyi Bao**, "Picosecond-Pulse Wavelength Conversion Based on Cascaded SHG/DFG in A MgO-Doped PPLN Waveguide" Applied Optics. 45, 5391-5401, 2006.

Shiquan Yang, **Xiaoyi Bao**, "Generating a high-extinction-ratio pulse from a phase modulated optical signal with a dispersion imbalanced nonlinear loop mirror" Opt. Lett. 31, 1032-1034, 2006.

Lufan Zou, **Xiaoyi Bao**, Fabien Ravet, **Liang Chen**, "Distributed Brillouin optical fiber sensor for detecting pipeline buckling in an energy pipe under internal pressure" Applied Optics, 45, 3372-3377, 2006.

Xiaoyi Bao, Qinrong Yu, V.P. Kalosha, and **Liang Chen**, "The influence of prolonged phonon relaxation on the Brillouin loss spectrum for the nanosecond pulses" *Opt Lett.* 31, 888-890, 2006.

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F. Ravet, **Xiaoyi Bao**, "Signatures of structure failure using asymmetric and broadening factors of Brillouin spectrum" *IEEE Photonics Technology Lett.* 18, 394-396, 2006.

Y. Ding, B. Shi, **X. Bao**, J.Q. Gao, "Jacket effects on the strain measurement accuracy for distributed strain sensors based on Brillouin scattering" *Optica Applicata* 36 (1): 57-67, 2006.

L. Bouchard, E. Ponomarev, S. Yang, **X. Bao**, "Development and performance comparison of two different approaches for stabilizing a harmonic mode-locking fibre laser at 40GHz" *Applied Optics.* 45, 3826-3838, 2006.

P.P. Rajeev, M. Gerstvolff, E. Simova, C. Hnatovsky, R.S. Taylor, **V.R. Bhardwaj**, **P.B. Corkum** and D.M. Rayner, Memory in strong field ionization of transparent solids; *Phys. Rev. Lett.*, **97**, 253001 (2006).

V.R. Bhardwaj, P.P. Rajeev, P.B. Corkum and D.M. Rayner, Strong field ionization inside transparent solids; *J. Phys. B*, **39**, S397 (2006).

V.R. Bhardwaj, C. Hnatovsky, E. Simova, P.P. Rajeev, R.S. Taylor, D.M. Rayner and **P.B. Corkum**, Optically induced arrays of planar nanostructures inside fused silica; *Physical Review Letters*, **96**, 057404 (2006).

C. Hnatovsky, R.S. Taylor, E. Simova, P.P. Rajeev, , D.M. Rayner, **V.R. Bhardwaj** and **P. B. Corkum**, *Applied Physics A*, **84**, 47 (2006).

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F. Ravet, **L. Chen**, **X. Bao**, L. Zou, V. Kalosha, "Theoretical study of the effect of slow light on BOTDA spatial resolution" *Optics Express*. 14, 10351-10358, 2006.

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Liang Chen, Ziyi Zhang, **Xiaoyi Bao**, "Polarization dependent loss vector measurement in a system with polarization mode dispersion" *Optical Fiber Technology*, 12, 251-254, 2006.

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CLEO Collaboration: (G. S. Huang *et al.*). Search for Exclusive Multibody Decays of the $\psi(3770)$. Phys. Rev. Lett. 96, 032003 (2006).

CLEO Collaboration: (N. E. Adam *et al.*). Observation of $\psi(3770) \rightarrow \pi\pi J/\psi$ and Measurement of $\Gamma_{ee}(\psi(2S))$. Phys. Rev. Lett 96, 082004 (2006).

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CLEO Collaboration: (S. Dobbs *et al.*). Phys Measurement of $\psi(2S)$ Decays to Two Pseudoscalar Mesons. Rev. D 74, 011105 (2006).

CLEO Collaboration: (O. Aquines *et al.*). First Measurements of the Exclusive Decays of the $Y(5S)$ to B Meson Final States and Improved Bs^* Mass Measurement. Phys. Rev. Lett 96, 152001 (2006).

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CLEO Collaboration: (P. Rubin *et al.*). An Investigation of D^+ to $\tau^+ \nu$. Phys. Rev. D 73, 112005 (2006).

CLEO Collaboration: (S.B. Athar *et al.*). Search for Radiative Decays of $Y(1S)$ into η and η' . Phys. Rev. D 76, 072003 (2007).

CLEO Collaboration: (M.R. Shepherd *et al.*). Model Independent Measurement of Form Factors in the Decay D to $K-\pi^+ e^+ \nu_e$. Phys. Rev. D 74, 052001 (2006).

SNO Collaboration, Carleton Members: A.Bellerive, D.Sinclair, R.J.Hemingway, K.Graham, P.Watson, D.Waller, F.Zhang, P-L.Drouin, E.Rollin, O.Simard, G.Testic, C.Mifflin.

SNO Collaboration (B. Aharmim *et al.*). Jul 2006. 11pp. Search for Neutrinos from the Solar hep Reaction and the Diffuse Supernova Neutrino Background with the Sudbury Neutrino Observatory. Published in Astrophys.J.653:1545-1551,2006.

Invited Talks and Publications in Refereed Conference Proceedings in 2006

X. Bao Feb 27, 06: "A simple method to identify the spatial location complication due to the transient phonon relaxation on the Brillouin loss spectrum". Invited talk, smart sensor monitoring systems and applications (SSM02).

X. Bao March 6, 06 International Conference on Optical Fiber Communication 2006, "*Distributed Strain and Temperature Sensors Based on Brillouin Scattering for Application in Structural Health Monitoring*".

X. Bao March 24, 06: Optical Fiber Sensor Workshop – Application of photonic sensing in manufacturing and energy sectors, Hamilton Ontario. Keynote Speaker: "Distributed Brillouin sensing for pipeline monitoring".

X. Bao March 29, 06: Software Human Resource of Canada (SHRC) Technology Vision Conference Ottawa, Keynote Talk, "ISIS Technologies for Civil Engineering Intelligent Infrastructure".

X. Bao August 29, 06: IMI (Industrial Material Institute), NRC, "Distributed fiber sensors and their applications, and mode-locked fiber lasers".

X. Bao September 13, 06: 6th Asia-Pacific Conference "Fundamental Problems of Opto- and Microelectronics (APCOM2006), Harbin, China. Keynote Lecture "Distributed fiber sensors and their applications in civil structures".

X. Bao Sept 14, 06: 2nd International Forum for Development and Industrialization of Optical Fiber Sensor (IFDI- OFS2006), Harbin, China. Keynote speaker: Distributed fiber sensors and their applications.

X. Bao Sept 19, 06: The 5th International Conference on Optical Communications and Networks/ the 2nd International Symposium on Advances and Trends in Fiber Optics and Applications (ICOON/ATFO 2006): The location accuracy in the distributed sensor based on Brillouin loss due to Brillouin slow light.

X. Bao Oct 13, 06: Development of the distributed Brillouin sensors for health monitoring of civil structures-I-Fundamentals. Oct 14, 06: Distributed fiber sensors and their applications in civil structures. NATO workshop: ADVANCED STUDY INSTITUTE OPTICAL WAVEGUIDE SENSING & IMAGING in Medicine, Environment, Security and Defense, October 12-21, 2006, Holiday Inn Plaza la Chaudière, Gatineau, Québec. Invited.

V.R. Bhardwaj 19th annual meeting of IEEE lasers and electro-optics society, Montreal, *Multiphoton interaction of light with dielectrics*.

L. Ramunno, Ch. Jungreuthmayer, and **T. Brabec**, "Attosecond kinetic physics," to be published in a special issue (ICOMP), J. Phys. B (2006).

L. Ramunno, Ch. Jungreuthmayer, and **T. Brabec**, "Vuv laser cluster interaction: strongly coupled plasma dynamics," Progress in ultrafast intense laser science I, (eds. K. Yamanouchi, S.L. Chin, P. Agostini, and G. Ferrante), Springer, page 95 (2006).

A. Astbury, (ed.), **B. Campbell**, (ed.), F. Khanna, (ed.), R. Moore, (ed.), **M. Vincter**, (ed.). Fundamental interactions. Proceedings, 20th Winter Institute, Lake Louise, Canada, February 20-26, 2005. (Victoria U. & Carleton U. & Alberta U.) 2006. 336pp.

Effect of motion and medium heterogeneity on PET tracer quantification and target volume delineation for radiotherapy treatment planning. A. Saoudi, A. Pourmoghadas, P. St. Laurent, F. Raymond, L. Eapen, **J.E. Cygler**. 53rd Annual Meeting of the Society of Nuclear Medicine, San Diego, CA, USA, June 3-7.

Effect of tumor motion on the use of PET images for target volume delineation in radiation treatment planning. A. Saoudi, A. Pourmoghadas, **J.E. Cygler**. AAPM 48th Annual Meeting, Orlando, FL, USA, July 30-August 3, Med. Phys, 33(6): 2032, 2006.

Evaluation of first macro Monte Carlo based commercial dose calculation module for electron beam treatment planning and new issues for clinical consideration. G. Ding, D. Duggan, C. Coffey, A. Schulman, **J.E. Cygler**. AAPM 48th Annual Meeting, Orlando, FL, USA, July 30-August 3, Med. Phys, 33(6): 2099, 2006.

Treatment Planning to achieve skin sparking with tomotherapy. R. Studinski, A. Cherpak, **J.E. Cygler**, **L.H. Gerig**, A. Saoudi, K. Carty, G. Fox, L. Montgomery. AAPM 48th Annual Meeting, Orlando, FL, USA, July 30-August 3, Med. Phys, 33(6): 2146, 2006.

S. Desgreniers. "Materials under Extreme Conditions: Their Crystalline Structures by X-Ray Diffraction with the Use of Synchrotron Radiation". ACA 2006, Honolulu, USA. July 2006.

S. Desgreniers. "New Insights on the Possible Structure of the Metallic Phase of Solid Oxygen", ESRF 2006 Users' Meeting, High Pressure Workshop, February, 2006. Grenoble, France.

P. Finnie, K. Kaminska, J.M. Bond, D.G. Austing, J. Lefebvre, "Optical studies of nanotubes suspended in air" 209th Meeting of the Electrochemical Society, May 9, 2006, Denver, Colorado.

J. Harden, "An associating macromolecular model for the endothelial surface layer, 5th World Congress of Biomechanics, Munich, Germany, August 1, 2006.

P. Hawrylak, "Nanospintronics with quantum dots", International Workshop on Spin and Mesoscopic Physics, National Center for Theoretical Science, NCTU, Hsinchu, Taiwan, January 2006.

P. Hawrylak, "Controlling magnetism in semiconductor quantum dots with magnetic ions", ONR International Workshop in Multifunctional Materials, Bariloche, Argentina, March 2006.

P. Hawrylak, "Nanospintronics with quantum dots", Kavli Institute for Theoretical Physics, UCSB, Santa Barbara, CA March 2006.

P. Hawrylak, "Quantum information –future of Microelectronics?", International Workshop on Future of Microelectronics, Crete, Greece, June 2006.

P. Hawrylak, "Nanoscale semiconductor structures", International Workshop "Perspectives in Nanoscience and Nanotechnology", San Sebastian, Basque Country (Spain), September 2006.

Joós, B., "Membrane rupture", at *From Spins to Fats and Back again*, a symposium in honor of Professor Martin Zuckermann, August 5th, 2006, Simon Fraser University.

M. Kearn - Invited speaker. The Canadian Institute of Advanced Research. Mount Tremblant. Quebec. March 2006.

M. Kearn - Invited speaker. Organizational Workshop for Systems Biology in Canada. Toronto. Ontario. February 2006.

A. Longtin Brain-Mind Institute, Ecole Polytechnique Federale de Lausanne (5 talks, Jan.-March 2006).

A. Longtin Laboratoire de Neurophysique, CNRS et Universite Paris 5 (2 talks, April 2006)

H. Schriemer "Photons in Complex Systems" Dept. of Physics, University of Ottawa, Ottawa, ON (16 February 2006).

G.W. Slater (2006) "From Fluidics to NanoFluidics: When the whole device can be simulated at the molecular level". Invited talk at the HPCVL Celebration 2006 Symposium, Queen's University, Kingston, 15 June.

G.W. Slater, F. Tessier, E. C. J. Oliver (2006) "Polymers, electrophoresis and electroosmotic flows in nanochannels: A molecular dynamics study". Invited talk at the 231st American Chemical Society National Meeting, March 26-30, Atlanta.

Other Conference Presentations and Posters in 2006

D. Asner, "Impact of Charm Results on the CKM Matrix," presented at the 4th International Workshop on the CKM Unitarity Triangle, Nagoya, Japan, December 11-16, 2006.

D. Asner, "Opportunities in Charm Physics: Recent Results and Future Prospects," presented at the 4th Workshop on the Super B-factory based on Linear Collider Technology, Frascati, Italy, November 13-15, 2006.

D. Asner, "Future Opportunities in Charm Physics," presented at the Future of Heavy Flavour Physics in the UK Workshop, London, United Kingdom, October 6, 2006.

D. Asner, "Review of Charm Sector Mixing and CP Violation," presented at Heavy Quarks and Leptons, Munich, Germany, October 10-16, 2006.

D. Asner, "Review of Charm Sector Mixing and CP Violation," presented at the 11th International Conference on B-Physics at Hadron Machines, Oxford University, September 25-29, 2006.

D. Asner, "Charm School for Physicists: On the Impact of CLEO-c Results," presented at the Canadian Association of Physicists Congress 2006, Brock University, St. Catharines, Ontario, Canada, June 11-14, 2006.

D. Asner, "Why do we need a Super-Charm Factory," presented at the International Workshop on Discoveries in Flavour Physics at e+e- Colliders, Frascati, Italy, March 3, 2006.

D. Asner, "Charm Inputs for the CKM angle gamma" presented at the 4th International Workshop on the CKM Unitarity Triangle, December 11-16, 2006.

D. Asner, "Physics at Charm Threshold: Recent Results from CLEO-c and Prospects for BESIII," presented at the 4th meeting of Flavour in the Era of the LHC, CERN, October 9-11, 2006.

D. Asner, "Charm Physics at Threshold: Anticipated Results from CLEO-c and BESIII," presented at the 3rd Workshop on the Super B-factory based on Linear Collider Technology, SLAC, June 14-17, 2006.

D. Asner, "D0 anti-D0 Quantum Correlations, Mixing and Strong Phases," presented at Charm 2006, IHEP, Beijing, June 5-7, 2006 "BEPICII/BESIII Status and Physics Goals," presented at the 3rd meeting of Flavour in the Era of the LHC, CERN, May 15-17, 2006.

D. Asner, "Constraints on Charm Mixing, Strong Phases and Doubly-Cabibbo Suppressed Decays from CLEO-c," presented at International Workshop on Discoveries in Flavour Physics at e+e- Colliders, Frascati, Italy, March 1, 2006.

Lufan Zou, **Xiaoyi Bao**, Shiquan Yang, and Liang Chen, Fabien Ravet, "*Influence of Brillouin slow light on distributed sensor due to depletion of pump beam*", OFS-18. ThC6, 2006.

Yong Wang, Jorge Fonseca-Campos, Chang-Qing Xu, Shiquan Yang, Evgueni. A. Ponomarev, **Xiaoyi Bao**, "*Comparison of wavelength conversions based on cascaded second-harmonic generation/difference-frequency generation under continuous-wave and pulsed pumping*" Presented at Photonics North, Quebec City, June 6, 2006.

Xiaoyi Bao, Lufan Xou, Fabien Ravet, Liang Chen, "*The location accuracy in the distributed sensor based on Brillouin loss due to Brillouin slow light*" Invited talk. ICOCN-AFTO 2006.

Lufan Zou, **Xiaoyi Bao**, Shiquan Yang, and Liang Chen, "*Pulse Time Delay of Different Pulse Durations via Brillouin Slow Light in an Optical Fiber*" OFS-18. ThE47.

Fabien Ravet, Liang Chen, **Xiaoyi Bao**, Lufan Zou, "*BOTDA location accuracy in depleted pump regime in presence of the Brillouin slow light*" International Conference in Optical Fiber Sensors-18. ThE39, 2006.

Fabien Ravet, **Xiaoyi Bao**, Qunrong Yu, Lufan Zou, Liang Chen, "*A Simple Model For BOTDA Spectral Deconvolution Under Short Spatial Resolution (<50cm) And Non-Uniform Strain Conditions*" International Conference in Optical Fiber Sensors-18. ThE41, 2006.

Shiquan Yang, **Xiaoyi Bao**, "*High extinction ratio pulse generation from fm modulated signal by using dispersion imbalanced fiber loop mirror*" 2006 OFC/NFOEC conference_OWJ.

Xiaoyi Bao, Fabien Ravet, Lufan Zou, "*Distributed Brillouin Sensor Based on Brillouin Scattering for Structural Health Monitoring*" Optical Fiber Communications 06 and NFOEC_OTUL7. Invited Talk.

Xiaoyi Bao, Qunrong Yu, Vladimir Kalosha, Fabien Ravet and Liang Chen, "*A Simple Method to*

Identify the Spatial Location Complication due to the Transient Phonon Relaxation on the Brillouin Loss Spectrum Invited Talk, Smart Sensor Monitoring Systems and Applications (SSM02), February 2006.

Fabien Ravet, **Xiaoyi Bao**, Lufan Zou, Vladimir Kalosha, Quinrong Yu, Liang Chen, "Accurate Strain Detection and Localization with the Distributed Brillouin Sensor Based on Phenomenological Signal Processing Approach" Proc. SPIE, v. 6176, 61761C1-9 (2006). Non-Destructive Evaluation and Health Monitoring of Aerospace materials, Composites, and Civil Infrastructure v; Aftab A. Mufti, Anw L. Gyekenyesi, Peter J. Shull; Eds.

P. P. Rajeev, E. Simova, C. Hnatovsky, M. Gertszov, R. S. Taylor, **V. R. Bhardwaj**, P. B. Corkum and D. M. Rayner, Memory and Nanostructure Formation in the Intense Field Ionization of Fused Silica, Proceedings of Ultrafast Phenomena XV (2006, Springer series).

T. Brabec, "Attosecond kinetic physics," OSA annual meeting in Rochester, 2006 (invited).

T. Brabec, "Many-body aspects of intense field physics," Ultrafast dynamics imaging workshop, London, 2006 (invited).

M. Nezamzadeh and **I.G. Cameron**, A New Rician Noise Bias Correction, International Society of Magnetic Resonance in Medicine, Seattle, May 2006, p. 346.

M. Nezamzadeh and **I.G. Cameron**, Rician Noise Corrected and Multi-Component Analyzed Diffusion Signal Decays for Human Brain Tissue In Vivo at High b-values, International Society of Magnetic Resonance in Medicine, Seattle, May 2006, p. 710.

M. Yousaf Hamza, S. Tariq, and **Liang Chen**, "Dispersion Compensation in the Presence of Nonlinearity in Optical Fiber Communications", Communication Systems, 2006. ICCS 2006. 10th IEEE International Conference on. Oct. 2006 Pages 1-5, Digital object identifier 10.1109/ICCS2006.301421.

Implementation and Workflow for a Clinical Tomotherapy Unit. **B.G. Clark**, L. Montgomery, G. Fox, K. Carty, **M.S. MacPherson**, S. Malone, R. McRae, **L.H. Gerig**, L. Grimard. Canadian Association of Radiation Oncologists Annual Meeting, Calgary, Alberta, September 2006.

Treatment Planning Comparison of Stereotactic Radiotherapy, 3D Conformal Radiotherapy, and Helical Tomotherapy for Benign Tumors in the Base of Skull. A Cheung, S Malone, J Szanto, **B Clark**, M MacPherson, B Nyiri, G Fox, L Montgomery, K Carty, Y Deshaies, R Zohr, J Spaans. Canadian Association of Radiation Oncologists Annual Meeting, Calgary, Alberta, September 2006.

Electron Beam Monte Carlo Treatment Planning. **J.E. Cygler**, invited speaker. 2006 AAPM Summer School "Integrating New Technologies Clinic: Monte Carlo and Image Guided Radiation Therapy", University of Windsor, Ontario, June 18-22.

Simulation of Applicators, Cutouts, and Relative Output Factors for Electron Beams. **J.E. Cygler**, invited speaker. 2006 AAPM Summer School "Integrating New Technologies Clinic: Monte Carlo and Image Guided Radiation Therapy", University of Windsor, Ontario, June 18-22.

Treatment Planning to Achieve Skin Sparking with Tomotherapy. **J.E. Cygler**, invited speaker. MOSFET User Group Meeting at AAPM 48th Annual Meeting, Orlando, FL, USA, August 1.

Experience with a commercial Monte Carlo treatment planning system for electron beams – a happy voice from the clinical trenches. **J.E. Cygler**, invited speaker. First European Workshop on Monte Carlo Treatment Planning, Gent, Belgium, October 22-25.

MOSFET Detectors in Quality Assurance of Tomotherapy Treatments. R. Studinski, A. Cherpak, **J.E. Cygler**, A. Saoudi. 2006 World Congress on Medical Physics and Biomedical Engineering, Seoul, South Korea, August 27 – September 1.

Clinical implementation of the first Macro Monte Carlo based commercial dose calculation module for electron beam treatment planning. G.X. Ding, D. Duggan, C. Coffey, A. Schulman, P. Shokrani, **J.E. Cygler**. 2006 World Congress on Medical Physics and Biomedical Engineering, Seoul, South Korea, August 27 – September 1.

H. Sternemann, C. Sternemann, J. S. Tse, **S. Desgreniers**, G. Vanko, A Schacht, J. A. Soininen and M. Tolan.. “Study of the Ba N edges in Ba_8Si_{46} with non-resonant inelastic X-ray scattering”. Presented at the SNI2006 Conference, Hamburg, 2006.

L. F. Lundegaard, G. Weck, M. I. McMahon, **S. Desgreniers**, and P. Loubeyre.. “Observation of an O_8 Molecular Lattice in the α Phase of Solid Oxygen”. Presented at the 2006 Gordon research Conference “Research at High Pressure”.

J. S. Smith and **S. Desgreniers**. “Nature’s comfort zone: Using powder diffraction to study the structure of dense clathrate hydrates”. GSEAD 9th Annual Interdisciplinary Conference, Ottawa (Feb. 2006).

R. Flacau and **S. Desgreniers**, “Maximum Entropy Method- a window to exotic transitions at extreme conditions”. GSEAD 9th Annual Interdisciplinary Conference, Ottawa (Feb. 2006).

M. Kwiecinski and **S. Desgreniers**, “Light Scattering Based Thermal Conductivity Measurement”. GSEAD 9th Annual Interdisciplinary Conference, Ottawa (Feb. 2006).

M. S. Dixit, “Resistive anode to improve the resolution of MPGD TPCs”, 3rd Symposium on Large TPCs for Low Energy Rare Event Detection”, Paris Dec. 2006.

M. S. Dixit, “Resistive MPGD Readout and TPC Test Beam Studies”, TPC Applications Workshop, Lawrence Berkeley Lab, California 2006 April 2006.

An Assessment of Surrogates for Lung Tumor Motion. **L.H. Gerig**, E. Ghasroddashti, J. Pantarotto, R. McRae, M.S. MacPherson. ESTRO Meeting on Physics and Radiation Technology for Clinical Radiotherapy, Leipzig, Germany, October 2006.

A Comparison of the Predictive Ability for Lung Tumor Motion. E. Ghasroddashti, J. Pantarotto, R. McRae, M.S. MacPherson, **L.H. Gerig**. Canadian Association of Radiation Oncologists Annual Meeting, Calgary, Alberta, September 2006.

External Surrogates of Respiration that Predict Lung Tumor Motion: Does the Relationship Hold During a Course of Radiotherapy. J. Pantarotto, E. Ghasroddashti, R. McRae, M.S. MacPherson, **L.G. Gerig**. Canadian Association of Radiation Oncologists Annual Meeting, Calgary, Alberta, September 2006.

Implementing Image-Guided Radiation Therapy Using Helical Tomotherapy. M.S. MacPherson, **L.H. Gerig**, **B.G. Clark**, L. Montgomery, G. Fox, K. Carty, R. McRae, S. Malone, L. Grimard. ESTRO Meeting on Physics and Radiation Technology for Clinical Radiotherapy, Leipzig, Germany, October 2006.

Probability Volume Histograms: Quantifying Systematic and Random Prostate Delineation Error. **J. Szanto**, **L.H. Gerig**, Z. Gao, **D.E. Wilkins**, L. Eapen, C. Morash, J. Wassef. ESTRO Meeting on Physics and Radiation Technology for Clinical Radiotherapy, Leipzig, Germany, October 2006.

S. Godfrey, "Discovery and Identification of New Gauge Bosons at the LHC and ILC", ILC-LHC Session of the Vancouver Americas Linear Collider Physics Groups Workshop and GDE (VLCW06), UBC Vancouver, July 19-22 2006.

S. Godfrey, "The XYZ's of c anti- c : Hints of exotic new mesons", Invited talk at the 4th Flavor Physics and CP Violation Conference (FPCP 2006), Vancouver, British Columbia, Canada, 9-12 Apr 2006. Proceedings of 4th Flavor Physics and CP Violation Conference (FPCP 2006), pp 015. [hep-ph/0605152].

J. Harden, Evolution of particle-scale dynamics in suspensions of weakly attractive colloids undergoing structural arrest, Annual meeting of the American Physical Society, Baltimore, MD, March 13, 2006.

J. Harden, Microscopic dynamics of recovery in sheared concentrated depletion gels, Annual meeting of the American Physical Society, Baltimore, MD, March 14, 2006.

J. Harden, A macromolecular model for the endothelial surface layer, Annual meeting of the American Physical Society, Baltimore, MD, March 16, 2006.

J. Harden, Microscopic dynamics of recovery in sheared concentrated depletion gels, 80th ACS Colloids and Surface Science Symposium, Boulder, Colorado, June 20, 2006.

J. Harden, Enhanced elasticity and soft glassy rheology of a smectic liquid crystal confined to a colloidal silica gel, 80th ACS Colloids and Surface Science Symposium, Boulder, Colorado, June 20, 2006.

B. King and **P.C. Johns**, "Measurement of Coherent Scattering Form Factors using Polychromatic X-Ray Sources and Imaging Detectors", Proceedings of 52nd Annual Meeting of the Canadian Organization of Medical Physicists, Saskatoon, 245-247 (June 2006) [Abstract: Medical Physics 33, 2673 (2006)].

Wallace, Matthew and **Joós, B**, "Microstructure of a polymer glass overaged by application of instantaneous shear strains", APS Meeting, Baltimore, MD, March 2006 (Abstract no.G34.006).

Gauthier, A. and **Joós, B**, "Stretching Effects on the Permeability of Water Molecules across a Lipid Bilayer" CAP Congress, June 2006, Brock University, St-Catharines, ON (Abstract no.WE-A2-4).

Zhou, Zicong, **Joós, B**, and Lai, Pik-Yin, "Elasticity and Stability of a Helical Filament with Isotropic Bending Rigidity", CAP Congress, June 2006, Brock University, St-Catharines, ON (Abstract no.WE-A2-7).

L'Heureux, I. , *A new model of volatile bubble growth in silicate melt: Towards a better understanding of volcanic degassing*, Gordon Research Conference on Chemical Instabilities and Oscillations, Oxford UK, Jul. 30- Aug. 4, 2006 (poster).

L'Heureux, I. *A new model of volatile growth in silicate melt*. Annual Congress of the Canadian Association of Physicists, St. Catharines (ON), June 11-14, 2006 (oral presentation).

H. E. Logan, "What if the LHC finds only a Higgs?" Vancouver Linear Collider Workshop, Jul 2006.

H. E. Logan, "Exotic Higgs (at the LHC)" ATLAS Canada Workshop, Carleton University, Aug 2006.

H. E. Logan, "QCD corrections to neutralino annihilation", Pheno 2006 Symposium, University of Wisconsin, Madison, May 2006.

H. E. Logan, "QCD corrections to neutralino annihilation", 14th International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 06), Irvine, California, Jun 2006.

A. Longtin Joint Conference of the Can. Applied and Industrial Math Society and MITACS, York University, Toronto, June 2006.

A. Longtin Gordon Research Conference in Theoretical Biology and Biomathematics, Session Chair "Noise in Biological Systems". Tilton, New Hampshire, June 2006. (FS).

A. Longtin "Constructive Role of Noise in Complex Systems", Max Planck Institute for Physics of Complex Systems, sden, Germany, June 26-July 21, 2006.

M. R. McEwen, Sephton J P and Sharpe P H G 2006 Alanine as a precision validation tool for reference dosimetry (PTB Workshop PTB-Dos-51 on Alanine dosimetry for clinical applications, Braunschweig, Germany).

M. R. McEwen, Palmans H and Williams A J 2006 An empirical method for the determination of wall perturbation factors for parallel-plate chambers in high energy electron beams (48th Annual Meeting of the American Association of Physicists in Medicine, Orlando, FL).

M. R. McEwen and Ross C K 2006 Direct calibration of ionization chambers in linac electron beams (World Congress on Medical Physics, Seoul, South Korea).

M. R. McEwen and Ross C K 2006 On the effective point of measurement of ionization chambers (World Congress on Medical Physics, Seoul, South Korea).

P. Piercy, «Sub-Angstrom surface deformation due to low energy ion bombardment», Surface Canada 2006, Kingston, ON.

D.W.O. Rogers, Fast Monte Carlo dose calculations for brachytherapy, at the Varian Research partners Symposium, Charleston SC, Feb 9, 2006.

D.W.O. Rogers, Thoughts on Beta-ray dosimetry standards, at the ISO/TC85 Meeting in Ottawa, June 20, 2006.

D.W.O. Rogers, Fast Monte Carlo dose calculations for brachytherapy with seeds, HDR and X-ray sources, at the European Workshop on Monte Carlo Treatment Planning in Gent Belgium, Oct 24, 2006.

Michael Ott, Jason Abt, Udit Sharma, Edward Keyes, Trevor Hall and **Henry Schriemer**, "SPM Capacitance Measurements of MOS Structures", OCE Student Poster Showcase and Competition, Discover 2006: Bridging the Innovation to Commercialization Gap (Toronto, 7 February 2006).

D. Sinclair, Facilities for underground Science, Neutrino 2006, Sante Fe.

G.W. Slater, F. Tessier (2006) "Using polymer brushes to control electroosmotic flows in a microchannel: a Molecular Dynamics study". Oral presentation at the Annual Congress of Canadian Association of Physicists, Brock University, 12 June.

G.W. Slater, L. C. McCormick (2006) "Deformation of DNA and Polymer Labels during End-Labelled Free-Solution Electrophoresis". Oral presentation at the March Meeting of the American Physical Society, Baltimore.

A. Bhandar, Y. Tatek, **G.W. Slater** (2006) "Analysis of a 2D simulation model of biofilms with autonomous cells". Poster presentation at the March Meeting of the American Physical Society, Baltimore.

J.-F. Mercier, C. Kingsbury, B. Lafay, **G.W. Slater** (2006) "Quantitative prediction for two-dimensional bacterial genomic displays". Poster presentation at the March Meeting of the American Physical Society, Baltimore.

E.C.J. Oliver, **G.W. Slater** (2006) "Enhanced Fluid Mixing in Nanochannels: A Molecular Dynamics Study". Poster presentation at the March Meeting of the American Physical Society, Baltimore.

M.G. Gauthier, **G.W. Slater** (2006) "A new Monte Carlo approach for exact calculation of polymer translocation time through a channel". Poster presentation at the March Meeting of the American Physical Society, Baltimore.

Stadnik Z.M., Wang P., Żukrowski J., and Cho B.K., 2006, "Absence of Charge Fluctuations of Europium in Metallic Single Crystals of EuCu_2Si_2 ", *Hyperfine Interact.* **169** 1295-1299.

Stadnik Z.M. and Zhang, G., 2006, "Mössbauer Effect Study of the Decagonal Quasicrystal $\text{Al}_{65}\text{Co}_{15}\text{Cu}_{20}$ ", *Hyperfine Interact.* **1694** 1291-1294.

SNO Collaboration, D.Waller, Recent Results from the Sudbury Neutrino Observatory, Congress of the Canadian Association of Physicists (CAP), St-Catherines, June 2006.

SNO Collaboration, K.Graham, Report on Solar Neutrinos at SNO, XXXIII International Conference on High Energy Physics (ICHEP), Moscow, Russia, 26 Jul - 2 Aug, 2006.

Tse, J. Workshop on High Pressure Science, European Synchrotron Radiation Facility, Grenoble (February, 2006).

Tse, J. Symposium on Hydrogen Storage, American Physical Society General Meeting, Baltimore (March, 2006).

Tse, J. Stockholm Meeting on Water, Stockholm (June, 2006).

Tse, J. 12th International Conference on High Pressure Semi-conductor Physics, Spain, (July-August 2006).

Tse, J. Asian High Pressure Conference, Lijiang (October, 2006).

Tse, J. High Pressure Workshop, Electra, Trieste (November, 2006).

D.M. Villeneuve Gordon Research Conference on Photoions, Photoionization and Photodetachment, Buellton, California, 29 January - 3 February 2006.

D.M. Villeneuve Dynamic Molecular Imaging, Far Hills, Quebec, 14-18 February 2006.

D.M. Villeneuve American Physical Society March Meeting, Division of Chemical Physics, 13-17 March 2006, Baltimore.

D.M. Villeneuve Ultrafast Dynamic Imaging, Imperial College London, 9-11 April 2006.

D.M. Villeneuve APS DAMOP (Division of Atomic, Molecular and Optical Physics), Knoxville Tennessee, 16-20 May 2006.

D.M. Villeneuve CLEO/QELS, Long Beach, California, May 21-26, 2006.

D.M. Villeneuve Gordon Research Conference on Multiphoton Processes, Tilton, NH, 11-16 June 2006.

D.M. Villeneuve Gordon Research Conference on Electron Spectroscopy and Dynamics, 10-15 September 2006, Les Diablerets, Switzerland.

D.M. Villeneuve International Conference on the Interaction of Atoms, Molecules and Plasmas with Intense Ultrashort Laser Pulses, Szeged, Hungary, 1-5 October 2006.

Dertinger, S.D., Avlasevich, S.L., Bryce, S.M., Sugunan, S., Torous, D.K., Chen, Y., Ware, R., Bishop, J., Witt, K., **Wilkins, R.**, McNamee, J. Flow cytometric methods for scoring micronuclei in erythrocytes and nucleated cells, Human Micronucleus Workshop, Prague (2006).

C.J. Willott High redshift quasars", invited review talk at Cosmology, Galaxy Formation and Astroparticle Physics on the pathway to the SKA conference.

Yankeelov, T., Cron, G.O., Addison, C., Wallace, J., **Wilkins, R.**, Pappas, B., Santyr, G., Gore, J.C. Comparison of a Reference Region Model to Direct AIF Measurement in the Analysis of DCE-MRI Data, The 14th scientific meeting of the International Society for Magnetic Resonance in Medicine, Seattle, WA (2006).

Wilkins R.C., Miller, S.M., Ferrarotto, C.L., Vlahovich, S., Wilkinson, D., Morrison, D., Boreham, D., Dolling, J-A. Increasing Canadian biological dosimetry capacity through the Cytogenetic Emergency Network (CEN), 2nd International Conference on Biodosimetry and 7th International Symposium on EPR Dosimetry and Applications, Bethesda, MD.(2006).

Wilkinson, D., Segura, T., Prud'homme-Lalonde, L., Qutob, s., Thorleifson, E., **Wilkins, R.**, Morrison, D., Boreham, D., Mullins, D., Lachapelle, S., Stodilka, R.Z., Waller, E.J. Canadian Biodosimetry Capacity.2nd International Conference on Biodosimetry and 7th International Symposium on EPR Dosimetry and Applications, Bethesda, MD.(2006).

Wilkins, R.C., Kutzner, B.C., Ferrarotto, C.L., Dertinger, S., McNamee, J.P. Development of a high-throughput assay for radiation biological dosimetry. 53rd Annual Meeting of the Radiation Research Society, Philadelphia, PA.. (2006).

Wilkinson, D. Segura, T., Prud'homme-Lalonde, L., Qutob, S., Thorleifson, E., Mullins, D., Lachapelle, S., **Wilkins, R.C.** Stodilka, R.Z., Waller, E.J. and Burton, G. Developing Canadian Biodosimetry Capabilities. 53rd Annual Meeting of the Radiation Research Society, Philadelphia, PA. (2006).

Other Presentations in 2006

D. Asner, "Prospects for a Super Flavor Factory & Recent Results from CLEO-c," presented at the Institute for High Energy Physics, Beijing, June 2, 2006.

D. Asner, "Charm School for Physicists: Recent Results from CLEO," Physics Seminar, University of Illinois, Urbana-Champaign, February 20, 2006.

A. Bellerive, Le neutrino, particule fantomatique, Conferencier invité au Congrès de la Fédération des Astronomes Amateurs du Québec (FAAQ), Montreal, Canada, 9 septembre, 2006.

T. Brabec, "Extreme nonlinear optics: atto meets nano," University of Erlangen, 2006 (seminar).

T. Brabec, "Extreme nonlinear optics: atto meets nano," Max-Planck Institute for Quantum Optics, 2006 (seminar).

T. Brabec, "Extreme nonlinear optics: atto meets nano," University of Rostock, 2006 (seminar).

T. Brabec, "Extreme nonlinear optics: atto meets nano," University of Kaiserslautern, 2006 (colloquium).

T. Brabec, "Attosecond science," University of Waterloo, 2006 (seminar).

S. Desgreniers Probing Materials under Extreme Conditions Using Synchrotron Radiation". Department of Physics, McGill University, February 23, 2006.

M. D'Iorio, 'Prototyping of Photonic Components, International Workshop on Multifunctional Materials III, Bariloche, Argentina, March 5th -9th 2006.

M. D'Iorio, 'IMS Activities in Nanotechnology', Nanotechnology Workshop, NRC-NINT, February 2, 2006.

M. D'Iorio, 'Nanotechnology Activities at NRC', presentations at Albany Nanotech- University of Albany, Cornell University, New York State Office of Science and Technology, November 7-9, 2006.

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. [hep-ph/0601112].

J. Harden, Self-Assembling Protein Hydrogels via Engineered Coiled-Coil Domain Aggregation Max Planck Institute for Polymer Research, Mainz, Germany, August 3, 2006.

J. Harden, Self-Assembling Protein Hydrogels via Engineered Coiled-Coil Domain Aggregation, Eduard-Zintl-Institut for Inorganic and Physical Chemistry, Technical University of Darmstadt, Darmstadt, Germany, August 7, 2006.

P. Hawrylak, Universitat Regensburg, Regensburg, Germany (Oct 2006).

P. Hawrylak, Technical University of Wroclaw, Wroclaw, Poland (Oct 2006).

P. Hawrylak, Dalhousie University, Halifax, NS, Canada (Sept 2006).

P. Hawrylak, NEST-Scuola Normala Superiore, Pisa, Italy (May 2006).

P. Hawrylak, Nicolas Copernicus University, Torun, Poland (Oct 2006).

ILC Group, K. Boudjemline et al., "MPGD Readouts with Charge Dispersion", IEEE Nuclear Science Symposium, San Diego, California, Oct. 2006.

ILC Group, *K. Boudjemline et al, "Resolution studies in a MPGD-TPC with charge dispersion on a resistive anode", CAP2006, St. Catherines, Canada, June, 2006.

ILC Group, M. S. Dixit et al., "MPGD-TPC resolution studies with charge dispersion in a beam test in a magnet", Vancouver Linear Collider Workshop, July 2006.

ILC Group, M. S. Dixit et al, "Test beam performance of MPGD-TPC readout concept of charge dispersion in a magnetic field", International Linear Collider Workshop, Bangalore, March 2006.

B. King and **P.C. Johns**, "Measurement of Coherent Scattering Form Factors using Polychromatic X-Ray Sources and Imaging Detectors", Proceedings of 52nd Annual Meeting of the Canadian Organization of Medical Physicists, Saskatoon, 245-247 (June 2006) [Abstract: Medical Physics 33, 2673 (2006)].

H. E. Logan, "Neutralino annihilation beyond leading order", Universite de Montreal, Mar 2006.

M. R. McEwen, 2006 Recent Activities at the NRC (Korean Research Institute for Standards and Science, Daejon, South Korea).

D. Sinclair, Penn State, SNOLAB & EXO (February 2007).

D. Sinclair, TRIUMF, EXO (March 2007).

D. Sinclair, College de France, EXO.

D. Sinclair, Kingston, SNOLAB – Royal Society Symposium.

J. Tse, Carnegie of Washington, Geophysical Laboratory, Washington D.C. (January, 2006).

J. Tse, Eidgenössische Technische Hochschule ETH, Zurich (May, 2006).

D.M. Villeneuve, Rutherford Appleton Laboratory Specialist Seminar, Oxford UK, 13 April 2006.

D.M. Villeneuve, Departmental seminar, ETH Zurich, Switzerland, 11 September 2006.

M. Vincter, University of Lethbridge, (March 6, 2006)

Wilkins, R.C., Increasing Human Biological Dosimetry Capacity using the Dicentric Assay, Golden Horseshoe 2006: Low-Dose Radiation Symposium, Rochester, NY.

Wilkins, R.C., Development of a high-throughput assay for radiation biological dosimetry, Annual Meeting of the Radiation Research Society, Philadelphia (2006).

Technical Reports in 2006

Mads Kaern, Co-organizer of the 1st ³Organizational Workshop for Systems Biology in Canada² February 2006. Toronto. Ontario.

H. E. Logan, G. Weiglein, et al. [LHC/LC Study Group], "Physics interplay of the LHC and the ILC," Phys. Rept. 426, 47 (2006) [arXiv:hep-ph/0410364].

H. E. Logan, S. Kraml, et al., "CP Studies and Non-Standard Higgs Physics," arXiv:hep-ph/0608079, CERN-2006-009.

R Capote, R Jeraj, C-M Ma, **D .W. O. Rogers**, F Sanchez-Doblado, J Sempau, J Seuntjens and J V Siebers, Phase-space Database for External Beam Radiotherapy: Summary Report of a Consultants' Meeting, International Nuclear Data Committee, INDC, IAEA, 2006, Vienna, Austria, Report INDC(NDS)-0484.

D. W. O. Rogers, B. Walters, and I. Kawrakow, BEAMnrc Users Manual, NRC Report PIRS 509(a)revK (2006).

T. P. Selvam and **D. W. O. Rogers**, Inclusion of Bragg-Gray theory stopping-power ratios in the SPRRZnrc code, Technical Report CLRP 06-01, Carleton Laboratory for Radiotherapy Physics, Carleton University, Ottawa, 2006.

Z. Sego and **D. W. O. Rogers**, Update of BEAMDP multiple source modelling capabilities, Technical Report CLRP 06-02, Carleton Laboratory for Radiotherapy Physics, Carleton University, Ottawa, 2006.

Gary W. Slater, A Method for the separation of polymeric compounds@ Laurette C. McCormick, Annelise E. Barron, Robert J. Maegher US patent application 11/241,990. Filed 4 October 2005. Published 10 August 2006. This patent describes various methods to improve upon previous ELFSE patents.

P.L.Drouin, Vertex Reconstruction during the NCD Phase, **SNO Technical Note**, 2006.

O.Simard, Optical Calibration of the SNO Detector with NCD, **SNO Technical Note**, 2006.

G.Tesic, Physics Interpretation and Sterile Neutrinos, **SNO Technical Note**, 2006.

M. Vincter, 2006 ATLAS North American Physics Workshop, Boston (July.06).

P.Watson, Update on SNO and gamma-ray Astronomy, **SNO Physics Note**, 2006.

F.Zhang, Atmospheric Neutrino Background, **SNO Physics Note**, 2006.

Graduating Students and Thesis

Student	Degree	Supervisor(s)	Defence Date
Andrievski, Andrei	(C) M.Sc.	Wilkins	Jan. 2006
Thesis Title : Characterizing of gammaH2AX response of human lymphocytes to ionizing radiation			
Babineau, David	(O) M.Sc.	Longtin	June 2006
Thesis Title : Modelling the Electric Field and Natural Environment of Weakly Electric Fish			
Bouchard, Line	(O) M.Sc.	Bao	March 2006
Thesis Title : Stabilization of an FM Active Harmonic Mode-locked Fiber Laser at High Repetition Rates			
Corrigan, Michael	(O) M.Sc.	Czajkowski	Dec. 2006
Thesis Title : Measurements of Absorption Line Frequency Shifts and Line Broadening Effects Using Frequency Stabilized 1.5 Micron Lasers			
Dugal, Cliff	(C) M.Sc.	David Wilkins	Oct. 2006
Thesis Title : Application of Monte Carlo to Linac Bunker Shielding Design			
Gagnon, Justin	(O) M.Sc.	Corkum	Dec. 2006
Thesis Title : Laser Coulomb Explosion Imaging of Polyatomic Molecules			

Gao, Zhanrong	(C) Ph.D.	Gerig	June 2006
Thesis Title: Investigating Geometric Uncertainties in Prostate Cancer Radiotherapy			
Gherase, Mihai Raul	(C) Ph.D.	Santyr	May 2006
Thesis Title: Characterization of Hyperpolarized ^{129}Xe Dissolved in Perfluorooctyl Bromide Emulsions as a Novel Magnetic Resonance Contrast Agent			
Knight, Gary	(O) Ph.D.	Hodgson	Dec. 2006
Thesis Title: Transport and Optical Response in Cu Damascene Lines with Grain and Texture			
McCormick, Laurette	(O) Ph.D.	Slater	May 2006
Thesis Title: Advancements to the Theory of Free Solution Electrophoresis of Polyelectrolytes			
Middleton, Jason	(O) Ph.D.	Longtin	March 2006
Thesis Title: Neural Information Processing: Temporal Features and Spike Train Statistics			
Nezamzadeh, Marzieh	(C) Ph.D.	Cameron	Aug. 2006
Thesis Title: Rician Noise Corrected Multi-Component Analysis of the MR Diffusion Signal Decay for Human Brain In Vivo			
Oliver, Eric	(O) M.Sc.	Slater	Dec. 2006
Thesis Title: Spinning and Mixing: Two Studies of Microfluidic Problems Using Molecular Dynamics Simulations			
Przemyslaw Mark Kwiecinski	(O) M.Sc.	Desgreniers	June 2006
Thesis Title: Non Contact All Optical Thermal Conductivity Measurement Utilizing Raman Spectroscopy			
Sego, Zdenko	(C) M.Sc.	Rogers	April 2006
Thesis Title: Multiple Source Models for the Beams from an Elekta SL25 Clinical Accelerator			
Sutherland, Connie	(O) M.Sc.	Longtin	March 2006
Thesis Title : Spatio-temporal Feedback in Stochastic Neural Networks			
Taylor, Randle	(C) M.Sc.	Rogers	Sept. 2006
Thesis Title: Monte Carlo Calculations for Brachytherapy			
Yu, Qinrong	(O) Ph.D.	Chen/Bao	Sept. 2006
Thesis Title: Using PM Fibers for distributed Brillouin Sensors			

Graduate Students at the Institute in 2006

Student	Registered	Supervisor(s)	Completed
Abuzariba, Suad M.	(O) Ph.D.	Chen, L.	
Ali, Elsayed	(C) M.Sc.	Rogers	
Al-Marzoug, Saeed	(O) Ph.D.	Hodgson	
Al-Qadi, Khalid	(O) Ph.D.	Stadnik	

Andrievski, Ani	(C) M.Sc.	R. Wilkins	Jan. 2006
Archambault, J.P.	(C) Ph.D.	Vincter	
Awirothananon, Sunida	(O) Ph.D.	Fafard	
Babineau, David	(O) M.Sc.	Longtin	May 2006
Barrie, Gregory	(O) Ph.D.	Longtin	
Beaton, Lindsay	(C) M.Sc.	R. Wilkins	
Bektursunova, Rimma	(O) Ph.D.	L'Heureux	
Bertrand, Julien	(O) Ph.D.	Villeneuve/Corkum	
Bertrand, Martin	(O) M.Sc.	Slater	
Bolen, Ryan	(O) M.Sc.	Bao	
Bond, Jeffery	(O) M.Sc.	Finnie	
Bouchard, Line	(O) M.Sc.	Bao	March 2006
Boucher, Pierre-Alexan	(O) Ph.D.	Joós	
Casault, Sébastien	(O) M.Sc.	Slater	
Cherpak, Amanda	(C) M.Sc.	Cygler	
Chigodaev, Alexander	(C) M.Sc.	Logan	
Cieniak, Jakub	(O) M.Sc.	Longtin	
Clark, Cynthia	(O) Ph.D.	Munger	
Cojocaru, Claudiu	(C) Ph.D.	Vincter	
Corrigan, Michael	(O) M.Sc.	Czajkowski	Dec. 2006
Drouin, Pierre-Luc	(C) Ph.D.	Bellerive	
Dugal, Cliff	(C) M.Sc.	D. Wilkins	Oct. 2006
Footit, Claire	(C) M.Sc.	Cameron	
Fraser, K. Dawn	(O) M.Sc.	Kaern	
Frédérick, Simon	(O) Ph.D.	Williams	
Gagnon, Justin	(O) M.Sc.	Corkum	
Garcia, Marie Lourdes	(C) M.Sc.	D. Wilkins	
Gauthier, Michel	(O) Ph.D.	Slater	
Gertsvolf, Marina	(O) Ph.D.	Corkum	
Ghasroddashti, E.	(C) Ph.D.	Gerig	
Guy, Hervé	(C) M.Sc. (Part Time)	Watson	
Heelan, Louise	(C) Ph.D.	Oakham	
Hickey, Owen	(O) M.Sc.	Slater	
Hsieh, Chang-Yu	(O) M.Sc.	Hawrylak	
Jesse, Smith	(O) Ph.D.	Desgreniers	
Joly, Jean-François	(O) M.Sc.	Joós	
Junqi, Gao	(O) Ph.D.	Bao	Jan. 2006
Kamran, Sami	(O) M.Sc.	Chen,K./Chen,L.	
Kenward, Martin	(O) Ph.D.	Slater	
King, Brian	(C) Ph.D.	Johns	
Kingsburry, Christine	(O) M.Sc.	Slater	
Knight, Gary	(O) Ph.D.	Hodgson/Smy	Dec. 2006
Kwiecinski Przemyslaw, Mark	(O) M.Sc.	Desgreniers	June 2006
La Russa, Dan	(C) Ph.D.	Rogers	
Latorre, Malcom	(O) Ph.D.	Munger	
Leblanc, Serge	(O) Ph.D.	Munger	
Lefebvre, Jérémie	(O) M.Sc.	Longtin	
McCormick, Laurette	(O) Ph.D.	Slater	May 2006
McDonald, Chris	(O) Ph.D.	Brabec	
Marchand, Philippe	(O) M.Sc.	Rancourt	
Martin, Travis	(C) M.Sc.	Godfrey	

Middleton, Jason	(O) Ph.D.	Longtin	Nov. 2006
Moats, Ken	(C) M.Sc.	Godfrey	
Murphy, Tara	(C) M.Sc.	Cygler	
Myint, K.	(C) Ph.D.	Gerig	
Nezamzadeh, Marzieh	(C) Ph.D.	Cameron	Aug. 2006
Olariu, Elena	(C) M.Sc.	Cameron	
Oliver, Eric	(O) M.Sc.	Slater	Dec. 2006
Payette, Nathalie	(O) M.Sc.	Rancourt	
Prévost, Jean-Paul	(O) Ph.D.	Rancourt	
Ravet, Fabien	(O) Ph.D.	Bao/Chen	
Reimer, Michael	(O) Ph.D.	Williams	
Rollin, Etienne	(C) Ph.D.	Sinclair	
Roxana, Flacau	(O) M.Sc.	Desgreniers/Tse	
Samadifard, Nazanin	(O) M.Sc.	Harden	
Schram, Malachi	(C) Ph.D.	Oakham	
Sego, Zdenko	(C) M.Sc.	Rogers	Apr. 2006
Shiner, Anw	(O) Ph.D.	Villeneuve/Bhardwaj	
Simard, Olivier	(C) Ph.D.	Bellerive	
Smeenk, Christopher	(O) M.Sc.	Corkum	
Smelser, Christopher	(O) M.Sc.	Mihailov	
Snoddy, Jefferey	(O) M.Sc.	Bao	
Soleimani, Mojgan	(C) M.Sc.	Xu	
Stojanovic, Severin	(O) M.Sc.	L'Heureux/Rancourt	
Strydhorst, Jared	(C) M.Sc.	Clark	
Sutherland, Connie	(O) M.Sc.	Longtin	Dec. 2006
Taylor, Jason (SITE)	(O) Ph.D.	Schriemer/Hall	
Taylor, Randy	(C) M.Sc.	Rogers	Sept. 2006
Tesic, Gordana	(C) Ph.D.	Bellerive	
Torres, Francis	(O) M.Sc.	Slater	
Truica, Sorina	(C) Ph.D.	Cameron	
Tselikhovich, Dmitriy	(C) M.Sc.	Kalyniak	
Vachon, Martin	(O) M.Sc.	Raymond	
Van Vlack, Cole	(O) M.Sc.	Brabec	
Waldron, Jonathan	(O) M.Sc.	Kaern	
Walker, Robert	(O) Ph.D.	Bao/Mihailov:	
Wan, Fan	(O) M.Sc.	Harden	
Wang, Lilie	(C) Ph.D.	Rogers	
Wang, Pu	(O) Ph.D.	Stadnik	
Wheeldon, Jefferey (SITE)	(O) Ph.D.	Hall/Schriemer	
Wong, Michael	(O) Ph.D.	Bhardwaj	
Xie, Li	(O) M.Sc.	Chen, L	
Yu, Qinrong	(O) Ph.D.	Bao/Hoa	Oct. 2006
Yun, Li	(O) Ph.D.	Bao	
Zhang, Ziyi	(O) Ph.D.	Chen, L.	

Research Associates at the Institute in 2006

Name	Period	Supervisor(s) or Group
R. Abolfath	Jan. 2004-July 2006	Hawrylak

A. Bandhar	2005-2006	Slater
S. Bekhechi	2004-2006	Slater
K. Boudjemline		ILC Team
J. Cameron	Sept. 2005-May 2007	Bao
A. Cardenas-Blanco		I. Cameron
G. Cron		I. Cameron
M.-Z. Dang	1996-present	Rancourt
F. Delgado	Sept. 2006-present	Hawrylak
C. DeStefani	Jan. 2004-present	Brabec
S. Dick	Jan. 2006-present	Harden
N. Dudovich	Sept. 2004-May 2007	Villeneuve
T. Fennel	Sept. 2006-Sept. 2007	Brabec
S. Hadjifaradji	May 2002-Oct. 2006	Chen
H. Hou		S. Godfrey/P.Kalyniak
W. Huo		S. Godfrey
A. Hutt	June 2006-July 2007	Longtin
K. Kaminska	July 2005-June 2007	Finnie
D. Kartashov	Oct. 2005-June 2007	Villeneuve
M. Khakzad		Bao
V. Kalosha	Oct. 2004-present	Chen/Bao
M. Korkusinski	Oct. 2005-Oct. 2006	Hawrylak
W. Li	Nov. 2006-present	Chen/Bao
L. McCormick	Dec. 2006	Slater
Y. Mairesse	Oct. 2005-Dec. 2006	Villeneuve
G. Marsat	July 2006	Longtin (co-supervisor)
J.-F. Mercier	2004-2006	Slater
C. Mifflin	years back - present	The SNO/SNOLAB Group
S. Nedelcu	July 2004-present	Slater
H. Niikura	Aug. 2000-present	Villeneuve
D. Pavicic	July 2004-June 2007	Villeneuve
L. Ramunno	Jan. 2004-Dec. 2006	Brabec
J. Reuter	Oct. 1, 2006	H.E.Logan/P.Kalyniak/S.Godfrey
P. Selvam	Apr. 2004 – March 2006	D.W.O. Rogers
W. Sheng	June 2002-June 2006	Hawrylak
Y.P. Shim	Nov. 2006-present	Hawrylak
A. Staudte	Dec. 2005-present	Villeneuve
S. Sukanasyan	May 2005-present-	Brabec
F. Tessier	Apr. 2004-2006	Slater
C. Varin	Sept. 2006-present	Brabec
D. Waller	Feb. 2003 – present	The SNO/SNOLAB Group
G. Xiong	July 2006 – present	D.W.O. Rogers
S. Yang	Sept. 2003-March 2007	Bao
Z. Yang		M. Vinciter
G. Yegin	Sept. 2005 – Sept. 2006	D.W.O. Rogers
F. Zhan		The SNO/SNOLAB Group
C. Zhang	Aug. 2006-July 2007	Bao
J. Zhang	2006-present	Harden
W. Zhang	Oct. 2006-Nov. 2006	Bao
Z. Zhang	Jan. 2006-present	Chen/Bao
P. Zhu	June 2006-June 2007	Bao
M. Zielinski	Sept. 2006-present	Hawrylak

L. Zou

July 2002-Oct. 2006

Chen

Funding in 2006

Name	Source	Amount Per Year
D. Asner	NSERC Discovery – (Cleo) and Atlas	\$ 52,500
X. Bao	MMO/OZ Optics I/G Research	\$ 20,000
X. Bao	NSERC RTI C Research	\$147,523
X. Bao	Sunrise Telecom I US Royalty	\$ 12,500
X. Bao	CIPI-NCE C Research	\$ 36,800
X. Bao	AAPN C Research	\$ 6,800
X. Bao	NSERC C Research	\$ 60,000
X. Bao	NCE-ISIS C Research	\$ 80,000
A. Bellerive	PREA	\$ 30,000
R.V. Bhardwaj	2006-2011 NSERC Research	\$ 23,350
R.V. Bhardwaj	NSERC RTI Research	\$150,000
R.V. Bhardwaj	NSERC RTI Research	\$147,523
R.V. Bhardwaj	2006-2011 Ontario Early Researcher Award (Operational)	\$ 30,000
T. Brabec	2007-11 NSERC (discovery grant) G Research	\$ 32,000
T. Brabec	2006-09 CIHR G Research	\$ 10,000
T. Brabec	2005-08 NSERC (SRO) G Research	\$ 60,000
T. Brabec	2004-08 CIPI G Research	\$ 40,000
T. Brabec	2001-06 FWF Austria G Research	\$240,000
I. G. Cameron	Ontario Research & Development Challenge Fund	\$150,000
L. Chen	2006 NSERC C Research	\$ 17,000
L. Chen	CIPI C Research	\$ 1,554
L. Chen	NRC C Research	\$ 9,000
B.G. Clark	Elekta	\$ 83,000
	+ (J.E. Cygler, M. MacPherson)	
S. Desgreniers	NSERC Discovery	\$ 32,000
S. Desgreniers	CFI – New Initiatives Fund (as co-applicant)	\$ 11,135
S. Desgreniers	CFI – New Initiatives Fund (as co-applicant)	\$519,823
M. S. Dixit/A. Bellerive	NSERC Discovery	\$ 37,000
S. Godfrey	NSERC Discovery	\$ 70,000
P. Hawrylak	Canadian Institute for Advanced Research/NRC VP – Grant supporting RA	\$ 50,000
	Computational nano-spintronics – 2000-present	
P. Hawrylak	Principal investigator – NSERC Grant: Electronic Properties of quantum dots	\$ 13,000
	Principal investigator – Canadian Institute for Advanced	
P. Hawrylak	Research/McGill/NRC – grant supporting RA	\$100,000
	Computational Nanoscience – 2006	
R.J. Hemingway	NSERC	\$296,000
	+ (A. Bellerive, D. Sinclair)	
P. Johns	NSERC Discovery	\$ 20,000
B. Joós	2006-2011 NSERC C Research	\$ 40,348
M. Kaern	2006 CIHR C Research	\$101,963
	Principal investigator: Mads Kaern	
	Co-applicants: none	

M. Kaern	2006 NSERC C Research Principal investigator: Mads Kaern Co-applicants: none	\$ 34,000
M. Kaern	2006 U of O O Operating Principal investigator: Mads Kaern Co-applicants: none	\$ 46,320
P. Kalyniak	NSERC Discovery	\$ 35,000
L'Heureux	NSERC Discovery Grant Apr. 06 – Dec. 06	\$ 26,800
H. E. Logan	NSERC	\$ 45,000
H. E. Logan	IPP/Perimeter Institute Postdoctoral Fellowship	\$ 2,500
A. Longtin	NSERC Discovery	\$ 50,000
A. Longtin	CIHR (shared with Len Maler in the Fac. of Medicine)	\$ 93,000
A. Longtin	CIHR Group Grant (4 PI's)	\$180,000
F.G. Oakham	NSERC Atlas Detector – SAP Project	\$316,000
+ (M. Vinciter)		
F.G. Oakham	NSERC MFA (Technical Support for Particle Physics) + 9 others at Carleton University Physics (HEP Group)	\$210,000
F.G. Oakham	NSERC MEG (shared with 26 investigators across Canada) ATLAS Canada Payments – Integration & Common Fund	\$260,000
F.G. Oakham	NSERC MEG (shared with 29 investigators across Canada) ALTAS Cost to completion	\$375,000
D.W.O. Rogers	NSERC	\$ 32,000
D.W.O. Rogers	BEAMnrc courses	\$ 18,900
D.W.O. Rogers	Varian	\$ 18,500
D.W.O. Rogers	CFI	\$150,000
H. Schriemer	Trevor J. Hall and 2 others Nanowire quantum dot arrays OCE-PRO	(50%) \$ 83,727
H. Schriemer	Trevor J. Hall and 1 other Intelligent control and development of fast Reconfigurable Optical Add Drop Modules in an agile metro-network environment NSERC SPG	(20%) \$184,000
H. Schriemer	Henry P. Schriemer and 1 other Nanowire quantum dot arrays Ontario Photonics Consortium	(100%) \$ 16,500

H. Schriemer	Trevor J. Hall and 1 other Building blocks for next-generation monolithic photonic integrated circuits in InP-based material system CMC Microsystems Request for Manufacturing Resources (50%)	\$ 84,000
H. Schriemer	Nanoscale absolute capacitance measurement Semiconductor Insights	\$ 1,665
H. Schriemer	Engineered electrophotonic nanosystems NSERC Discovery	\$ 25,000
H. Schriemer	Trevor J. Hall + 3 others III-V Semiconductor Photonic Device Integration on Group-IV Substrates CPFR (ORDCF)	(20%) \$ 75,000
D. Sinclair	NSERC (EXO R&D)	\$170,000
D. Sinclair	Cryopit Construction (CFI, MRI, NOHFC, FedNor)	\$17M
G. Slater	2006-2008 Networks of Centres of Excellence (NCE) Advanced Food and Biomaterials Network NCE (AFMNet) Growth of Biofilms Research	\$ 20,000
G. Slater	2004-2009 Univ. of Ottawa & Fac. of Science University Research Chair in Biological Physics Research	\$ 35,000
G. Slater	2004-2006 Networks of Centres of Excellence (NCE) Advanced Food and Biomaterials Network NCE (AFMNet) Growth of Biofilms Research	\$ 22,500
G. Slater	2004-2006 Networks of Centres of Excellence (NCE) Advanced Food and Biomaterials Network NCE (AFMNet) Design of drug delivery systems Research	\$ 56,000
G. Slater	2003-2007 NIH (USA) DNA sequencing by End-Labeled Free Solution Electrophoresis (ELFSE) on microfluidic devices. PI: A. Barron, NWU Research my part:	US\$250,000 US\$ 70,060
G. Slater	2002-2007 NSERC Polymer Dynamics and Nanofluidics (5-yr Discovery Grant) Research	\$ 69,000
Z.M. Stadnik	NSERC, DG, 2006-2007	\$ 29,000
J. Tse	2006 NSERC Discovery Grant Operational	\$ 47,600
D. Villeneuve	NSERC Discovery Grant	\$ 27,300
R.C. Wilkins	CRTI (Chemical, Biological, Radiological, and Nuclear Research and Technology Initiative)	\$200,000
R.C. Wilkins	CIHR	\$ 20,400