

Ottawa-Carleton Institute for Physics

L. Institut de physique d. Ottawa Carleton

1998 Newsletter

The research activities in the institute continue to be vigorous. Members of the institute gave nearly 200 talks at conferences and institutions around the world. The publication rate continues to be equally strong, with nearly 200 articles published in 1998. The total research funding of institute members is an impressive 3.6 million dollars.

There were 5 Ph.D. graduates and 8 M.Sc. graduates during 1998. There were 14 new registrants into our graduate program, leading to a slight increase in our number of graduate students over the year.

The year 1998 was one of great changes, particularly in the Physics Department at Carleton University. The science departments now form the new College of Natural Sciences, whereby the administrative support staff are shared by all departments. At the same time two new undergraduate Physics programs were introduced. Dean Karlen became the new Director of OCIP during this busy time. Help from the outgoing Associate Director, Pat Kalyniak, the new Associate Director, Ivan L'Heureux, and the new graduate administrator at the CNS, Sheila Thayer, simplified the transition. Ivan and Pat completed the preparations of the documents for the OCGS review early in the year, and consultants visited our departments in 1999.

In 1998, there were several significant awards bestowed upon our members. Emery Fortin was named the Researcher of the Year at the University of Ottawa for his work in understanding the properties of excitons. A report by Denis Rancourt on the analyses of sediment samples from Lake Biwa, Japan, won the prize for the best foreign report in 1998 from the Japanese Ministry of the Environment. This 125 page report has since been translated into Japanese. Giles Santyr was one of only two winners at Carleton University of a Canada Foundation for Innovation award in October 1998. The award was given to support the Carleton Magnetic Resonance Facility.

Several members of the institute continue to offer their services to the physics community at large. Some of their new activities in 1998 are listed below.

Robert Carnegie joined the Advisory Committee on TRIUMF and the BABAR financial review committee. He also is the new Canadian representative on the International Committee on Future Accelerators, taking over from Richard Hemingway. Richard is at CERN for a full year acting as physics coordinator for the OPAL experiment.

Pat Kalyniak continued as a member of the NSERC subatomic physics grant selection committee, and will take over as the GSC chair in 1999.

Dean Karlen now represents Canada on the ICFA standing committee on interregional connectivity. He was a session organizer for the conference on Computing for High

Energy Physics in Chicago, and gave a plenary talk at the major international particle physics conference at Vancouver.

Ivan L'Heureux was the chair and co-organizer of the First Gordon Conference on Pattern Formation in the Earth Science, held in New Hampshire in July 1998.

Clive Greenstock became an associate editor and member of the editorial board for Health Physics Journal. He was also a member of the organizing committee and session chairman of the Canadian Radiation Protection Association Annual Conference held in Ottawa in 1998. In addition, he chaired the steering committee for the CRL Open House, at AECL in 1998.

Finally we would like to welcome three new members to the institute, Simon Fafard, Pawel Hawrylak, and John Tse. They were appointed Adjunct Professors to the University of Ottawa physics department in 1998.

Activities at the Institute can be consulted online at <http://www.ocip.carleton.ca>, which has links to the departmental web sites at the University of Ottawa and Carleton University.

Dean Karlen, Director

Richard Hodgson, Acting Associate Director

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1998 OCIP Seminar Series

Spring Graduate Student Seminar Day – University of Ottawa – 7 May 1998

Tanya Hewitt	Pinhole SPECT and the Thyroid Organ: A New Look
Bruce Calder	Surface Acoustic Wave Devices
Genivieve Hay	Coupled Channel Contribution to the Final State Interactions in the Reaction $\gamma\gamma \rightarrow \pi\pi$.
Robert Leclair	A Systematic Approach to Quantify the Information Content of X-Ray Scatter Images versus Primary Photon Images
Charles Nadeau	Étude comparative des niveaux spectroscopiques du Krypton et du Xénon doublement et triplement excités

Spring Graduate Student Seminar Day – Carleton University– 11 May 1998

Gosia Niedbala	Comparison of Pulse Simulated Low Dose Rate to Low Dose Rate Irradiation with/without hyperthermia
Jean-Francois Mercier	Numerically Exact Diffusion Coefficients for Systems with Periodic Boundary Conditions
Darren Grant	Development of a Membrane Degasser at SNO
Sherry Towers	Three-prong tau decays with charged kaons at OPAL

Fall Graduate Student Seminar Day – Carleton University – 27 November 1998

Tim Gorjanc	Novel Electrodes for Molecular Electronics
Narine Kizilian	Predicting Radiosensitivity using the Comet Assay
Mingyu Li	Cation distribution in $\text{Eu}_3 \text{Fe}_{(5-x)}\text{Al}_{(x)}\text{O}_{12}$ series
Joan Hayson	Quantum well intermixing for opto-electronics integration

OCIP Christmas Symposium – Carleton University – 18 December 1998

Simon Fafard	Semiconductor Quantum Dots
Bog Jarosz	Ultrasound interstitial applicators for cancer thermal therapy
Richard Hodgson	The Global Optimization Problem – recent approaches and applications
Tony Noble	Neutrino Physics with the Sudbury Neutrino Observatory
Yatendra Varshni	10^{39} , 10^{78}
Madhu Dixit	Developments in Gas Avalanche Microdetectors

1998 Departmental Seminars

DATE	U	SPEAKER	INSTITUTION	TITLE
Jan. 5	C	Don Wiles	Carleton University	Canada's Approach to High-Level Nuclear Waste Disposal
Jan. 12	C	Cliff Hargrove	Centre for Research in Particle Physics	Measurement of Neutrino Oscillations and the Pb-neutrino cross section at the RAL ISIS facility
Jan. 19	C	John Weinstein	University of Guelph	The Multichannel Quark Model
Jan. 26	C	Catherine Kallen	McMaster University	Antiferromagnetism and Superconductivity in the High T _c Cuprates
Feb. 2	C	Randy Sobie	University of Victoria	Tau Physics at LEP
Feb. 9	C	Ken Ragan	McGill University	Gamma Ray Astrophysics at the CAT
Feb. 12	O	Milton From	University of Toronto	Physics of Music
Feb. 16	C	Terry Thompson	University of Western Ontario	NMR Spectroscopy: No Medical Relevance or New Medical Revolution?
Feb. 19	O	R. Catalfamo	Oracle Telecomputing Carleton Place, ON	Dynamic Modeling of Speed Skiing
Mar. 2	C	Arnd Leike	University of Munich	Phenomenology of Neutral Extra Gauge Bosons
Mar. 5	O	Tarso Kist	Department of Biophysics UFRGS	Experimental Observation of Solitary Waves in Capillary Electrophoresis
Mar. 9	C	John Schreiner	Kingston Regional Cancer Center and Queen's University	Gel Dosimeters for Volumetric Radiation Dosimetry
Mar. 13	O	Benoit Roux	University of Montreal	Computer Studies of Membrane Proteins
Mar. 16	C	Jim Drummond	University of Toronto	CAP Colloquium: The view from space
Mar. 19	O	Z. R. Wasilewski	NRC	Molecular Scattering in an Ultra High Vacuum Environment
Mar. 23	C	William Trischuk	University of	B. Physics at CDF

Toronto				
Mar. 30	C	Vicky Kaspi	MIT	Neutron Stars Get Their Kicks
Apr. 7	C	Andre Joly	University of Montreal	Strange baryon production in e+e collisions
Apr. 16	O	David Boal	Simon Fraser University	Why Your Cells Are Stable: The Statistical Mechanics of Holes
Apr. 23	O	Didier Long	University of Minnesota, Dept. of Chemical Eng. & Materials Science	Symmetry Properties of the Electrophoretic Motion of Charged Polymers and Patterned Particles in Ionic Solutions
Apr. 27	C	Howard B. Michaels	University of Toronto	Medical Phsics Considerations for Stereotactic Radiosurgery and Radiotherapy
May 12	O	John Bechhoefer	Simon Fraser University, Physics	Generic Features of Solidification into Viscous Melts
July 15	O	Birger Bergerson	University of British Columbia	When are Stochastic Effects Important in Modeling?
Sept. 14	C	Adreas Gellrich	DESY-Zeuthen	HERA-B and its online reconstruction farm
Sept. 24	O	Peter Watson	Carleton University	Time and the Neutron
Sept. 28	C	Kate Scholberg	Boston University	Evidence for neutrino oscillations from Super-Kamiokande
Oct. 5	C	C.-M. Ma	Stanford University	Monte Carlo treatment planning for intensity-modulated radiotherapy
Oct. 8	O	Louis Dubé	Université Laval	Is von Neumann's dream becoming a reality? The control of unstable systems.
Oct. 13	O	Michel Gingras	University of Waterloo	The Search for Spin Liquids in Geometrically Frustrated Antiferromagnets.
Oct. 19	C	M. Finke-Keeler	University of Victoria	Atlas – an LHC experiment under construction
Oct. 26	C	Dipak Basu	Carleton University	Blue shifts in extragalactic objets (sic)
Nov. 2	C	M. K. Sundaresan	Carleton University	Development of a Computerised System for Serological Tests in Blood Banks

Nov. 9	C	Leszek Ropelewski	CERN	GEM Gas Electron Multiplier: Recent Developments.
Nov. 16	C	Aaron Fenster	Robarts Research Institute, London, Ontario	Basic Principles and Applications of 3-D Ultrasound Imaging
Nov. 19	O	Marie D'lorio	NRC, IMS	Molecular Materials – From the lab bench into your computer.
Nov. 23	C	Scott Menary	York University	BTeV – Getting to the Bottom of CP Violation
Nov. 26	O	Churung Fu	University of Ottawa	The Role of the Excited Electron in the Diffusion of interstitials in AgCl and AgBr
Nov. 30	C	Basim Kamal	Carleton University	Drell-Yan at Fermilab and $\sin^2\theta_W$
Dec. 7	C	Jozef Straus	JDS Fitel	Expand the Boundaries, be a Leader OR From Schrodinger's Cat to Shredding the Cat
Dec. 8	O	Paul Finnie	NTT Basic Research Lab., Japan	Atomic Step Dynamics and patterning with Applications

Publications in Refereed Journals and Book Series in 1998

Author(s)	Title	Publication
J. C. Armitage, M.S. Dixit, J. Dubeau, H. Mes, and F.G. Oakham	Charged Particle Measurement	The Measurement, Instrumentation and Sensors Handbook, Section IX, Chapter 67, CRC Press, 1999
Y.S. Huang, W.D. Sun, Fred H. Pollak, J.L. Freeouf, I.D. Calder , and R.E. Mallard	Contactless Electroreflectance Characterization of GaInP/GaAs Heterojunction Bipolar Transistor Structures	Appl. Phys. Lett. 73, 214 (1998)
S. Charbonneau, P.J. Poole, G.C. Aers, H. Chen, R.M. Feenstra, P.G. Piva, R.D. Goldberg and I.V. Mitchell	Cross-sectional scanning tunneling microscopy of ion induced quantum well intermixing in InGaAs/InP heterostructures	Physics in Canada 54, 76 (1998)
P.J. Poole, J. Hong, A. Stollow and S. Charbonneau	Time and frequency-resolved photoluminescence up-conversion using broadly tunable picosecond infra-red pulses	Rev. Sci. Instrum. 69, 1943 (1998)
P.G. Piva, H. Chen, R.D. Goldberg, R.M. Feenstra, G.C. Aers, P.J. Poole, G.C. Weatherley, B.W. McComb, I.V. Mitchell and S. Charbonneau	A comparison of spectroscopic and microscopic observations of ion-induced intermixing in InGaAs/InP quantum wells	Appl. Phys. Lett. 72, 1599 (1998)
P.G. Piva, S. Charbonneau , R.D. Goldberg, I.V. Mitchell, G. Hillier and C. Miner	Ion implantation enhanced intermixing of Al-free 980 nm laser structures	Appl. Phys. Lett. 73, 67 (1998)
R. Driad, Z.H. Lu, S. Charbonneau , W.R. McKinnon, S. Laframboise. P.J. Poole and S.P. McAlister	Passivation of InGaAs surfaces and InGaAs/InP heterojunction bipolar transistors by sulfur treatment	Appl. Phys. Lett. 73, 665 (1998)
M. Paquette, V. Aimez, J. Beauvais, J. Beerens, P.J. Poole, S. Charbonneau and A.P. Roth	Blue-shifting of InGaAsP/InP laser diodes using a low energy ion implantation technique: comparison between strained and lattice-matched quantum well structures	IEEE J. Selected topics in quantum electronics 4, 741 (1998)

S. Charbonneau, E.S. Koteles, P.J. Poole, J.J. He, G.C. Aers, J. Haysom, M. Buchanan, Y. Feng, F. Yang, P.G. Piva, R.D. Goldberg and I.V. Mitchell	Photonic integrated circuits fabricated using ion implantation	Review article in IEEE J. Selected topics in quantum electronics 4, 772 (1998)
P.J. Poole, S. Charbonneau et al.	Defect diffusion in ion implanted AlGaAs and InP: Consequences for quantum well intermixing	Selected Papers on Quantum Well Intermixing for Photonics, SPIE Milestone Series, Vol. MS 145, p 125, Ed. E. Herbert Li (1998)
J.-J. He, S. Charbonneau et al.	Bandgap shifted InGaAsP/InP quantum well waveguides using MeV ion implantation	Selected Papers on Quantum Well Intermixing for Photonics, SPIE Milestone Series, Vol. MS 145, p 431, Ed. E. Herbert Li (1998)
S. Charbonneau et al.	Bandgap tuning of semiconductor quantum well laser structures using high energy ion implantation	Selected Papers on Quantum Well Intermixing for Photonics, SPIE Milestone Series, Vol. MS 145, p 474, Ed. E. Herbert Li (1998)
P.J. Poole, S. Charbonneau et al.	The fabrication of a broad-spectrum light-emitting diode using high energy ion implantation", p.521	Selected Papers on Quantum Well Intermixing for Photonics, SPIE Milestone Series, Vol. MS 145, p 521, Ed. E. Herbert Li (1998)
J.-J. He, S. Charbonneau et al.	Polarization insensitive InGaAs/InGaAsP/InP amplifiers using quantum well intermixing	Selected Papers on Quantum Well Intermixing for Photonics, SPIE Milestone Series, Vol. MS 145, p 524, Ed. E. Herbert Li (1998)
S. Charbonneau et al.	Quantum well intermixing for optoelectronic integration using high energy ion implantation	Selected Papers on Quantum Well Intermixing for Photonics, SPIE Milestone Series, Vol. MS 145, p 563, Ed. E. Herbert Li (1998)
P.M. Meaney, R.L. Clarke , G.R. ter Haar, IH Rivens	A 3-D finite element model for computation of temperature profiles and regions of thermal damage during	Ultrasound in Med. & Biol. 24 1489-1499,1998

	focused ultrasound surgery exposures	
N.V. Klassen, L.van der Zwan, J.Cygl	Gafchromic MD-55 investigated as a precision dosimeter	Med. Phys. 24: 1924-1934, 1997
G.X.Ding, J.E. Cygl	Measurement of electron beam peak scatter factors	Med. Phys. 25: 251-253, 1998
G.X.Ding, J.E.Cygl	Measurement of P_{repl} P_{wall} factors in electron beams and in ^{60}Co beam for plane-parallel chambers	Med. Phys 25: 1453-1457, 1998
G.G. Zhang, D. W. O. Rogers, J.E. Cygl , T.R. Mackie	Effects of changes in stopping-power ratios with field size on electron beam ROFs	Med. Phys. 23: 1711-1724, 1998
S. Desgreniers	High-Density Phase of ZnO: Structural and Compressive Parameters	Phys. Rev. B, 58, 14102 (1998)
S. Desgreniers and Ken Lagarec	XRDA3.1 - a Program for X-ray Diffraction Analysis in a PC	J. Appl. Cryst., 31, 109 (1998)
M. D'lorio, J. Lam, D. Brown, and H. Lafontaine	Phase transitions at zero magnetic field in Si/SiGe quantum wells	Physica E2, 781-784 (1998).
M.S. Dixit, J.C. Armitage, J. Dubeau, D.G. Gobbi, P.C. Johns, D. Karlen, F.G. Oakham, and A.J. Waker	Development of Gas Microstrip Detectors for Digital X-Ray Imaging and Radiation Dosimetry	IEEE Trans. on Instrumentation and Measurements, Vol 47, 809-813 (1998)
Broussell, I., Fortin, E. , Kulyuk, L., Anedda, A.,	Optical Properties of ZnAl ₂ S ₄ Crystals	Journal of Applied Physics, 84, 533-540, 1998.
K.J. Lenton and C.L. Greenstock	Ability of Human Plasma to Protect against Radiation is Inversely Correlated with Age	Mech. Ageing Develop. 105, 256-260, 1998
R.B. Richardson, A. Trivedi and C.L. Greenstock ,	Dosimetry of Organically Bound Tritium Derived from Diet	Atomic Energy Control Board Publication RSP-0068, AECB Ottawa Canada, pp. 1-81, 1998
L. Jacak, P. Hawrylak , and A. Wojs	Quantum Dots	Springer-Verlag, 1998
J. A. Tuszynski, J A. Brown, J A; P.	Dielectric polarization, electrical conduction, information processing and	Philosophical Transactions – Mathematical Physical

Hawrylak	quantum computation in microtubules. Are they plausible?	and Engineering Sciences, V.356, p.1897, 1998
L. Rego, P. Hawrylak , J. A. Brum,	Hole energy levels in p-SiGe heterojunctions and quantum wells in a magnetic field	Solid State Comm.105, 139, (1998)
Gravier, L; Potemski, M; Hawrylak, P ; Etienne, B	Electron-Electron Interactions in Emission from a Two-Dimensional Electron Gas in Quantizing Magnetic Fields	Physical Review Lett.80, 3344, (1998)
P. Hawrylak and L. Rego	The two-dimensional D- complex in intense AC and strong magnetic fields	Physica E, v.3, 198, (1998)
Z. X. Jiang, B. D. McCombe, P. Hawrylak	Donor impurities as a probe of electron correlations in 2DEG in high magnetic fields	Phys. Rev. Lett. 80, 3344 (1998)
P. Hawrylak, M. Potemski, D. J. Lockwood, H. Labbe, H. Kamada, H. Weman, J. Temmyo, T. Tamamura	Light scattering from self-assembled quantum disks	Physica E, 2, 652 (1998)
B.J. Jarosz, D. Kaytar	Ultrasonic waveguide applicator arrays for interstitial heating: A model study	IEEE Trans. Ultrasonics, Ferroelectrics, and Freq. Contr., 45, 806-814, 1998
B.J. Jarosz, D. Kaytar	Ultrasonic heating with waveguide interstitial applicator array	IEEE Trans. Instr. Meas., 47, 703-707, 1998
B.J. Jarosz	3-D temperature distribution in ultrasound hyperthermia with interstitial waveguide applicator, 1998	Annals NY Acad. Sci., 858, 47-55
R.J. Leclair and P.C. Johns	A Semi-Analytic Model to Investigate the Potential Applications of X-Ray Scatter Imaging	Medical Physics 25, 1008-1020 (1998).
Plischke, M. and Joós, B.	Entropic Elasticity of Diluted Central Force Networks	Phys. Rev. Lett. 80; 4907-4910 (1998)
D. Karlen	Using projections and correlations to approximate probability distributions	Computers in Physics, Vol 12,No. 4, p 380 (1998)
LeBlanc, M.A.R.,	Vortex localization in single crystals of the Tl2Ba2CuO6+L with columnar	Phys. Rev. B 57: 10877-10884, 1998

Cameron, D.S.M.	defects: An empirical model.	
LeBlanc, M.A.R., Cameron, D.S.M., Celebi, S. and Pascal, J.-P.	Effect of the configuration of the trapped flux on the decay rate of remanent magnetic moments in type II superconductors	Supercond. Sci. Technol.11:359-368, 1998
Hubert,S., Krzywinski,M., L'Heureux, I. and Slater, G.	Reptation dynamics with random local interactions	Macromolecules, 31:181-192, 1998
Longtin, A. and Chialvo, D.	Stochastic and deterministic resonances in excitable systems	Phys. Rev. Lett. 81, 4012-4015 (1998)
Mensour, B. and Longtin, A.,	Synchronization of delay-differential equations with application to secure communication	Phys. Lett. A. 244, 59-70 (1998)
Mensour, B. and Longtin, A.,	Chaos control in maps and the singular limit of multistable delay-differential equations	Phys. Rev. E. 58, 410-422 (1998)
Mensour, B. and Longtin, A.	Power spectra and dynamical invariants for delay-differential and difference equations	Physica D 113, 1-25 (1998)
Ng, C.E., Cybulski, S.E., Bussey, A.M., Aubin, R.A. and Raaphorst, G.P.	DNA topoisomerase I content of a pair of human melanoma cell lines with very different radiosensitivities correlates with their in vitro sensitivities to camptothecin.	Anticancer Res., 18: 3119-3126, 1998
Raaphorst, G.P., Mao, J.P., and Ng, C.E.	Thermotolerance effects in thermo-radiosensitization in human glioma cells.	Int. J. Hyperthermia, 14:85-96, 1998
Brown, R.C., Ng, C.E. and Raaphorst, G.P.	A comparison of high dose rate, low dose rate and fractionation for optimizing differences in radiosensitivities in vitro.	Rad. Oncol. Inv., 6: 209-215, 1998
Raaphorst, G.P., Mao, J.P., Yang, H., Goel, R., Niknafs, B., Shirazi, F.H., Yazdi, H.M., Rippstein, P. and Ng, C.E.	Evaluation of apoptosis in four human tumor cell lines with differing sensitivities to cisplatin.	Anticancer Res., 18: 2945-2952, 1998.
G.P. Raaphorst, J.	Cisplatin and mild hyperthermia in	Anti Cancer Res. <u>17</u> , 3469-

Miao and C.E. Ng	radiosensitization to low dose rate irradiation in human ovarian carcinoma cells.	3472, 1998.
J.Dubeau, J.K. Mayer, G.Oakham , M.O'Neill, R.S. Orr, G.G. Stairs	Design and Development of Tungsten-Liquid Argon Modules for the ATLAS Forward Calorimeter System	Nucl. Phys. 61B (1998) 95-100
J.A. Dolling, D.R. Boreham, D.L. Brown, R.E.J. Mitchell and G.P. Raaphorst	Modulation of radiation-induced strand break repair by cisplatin in mammalian cells.	Int. J. Radiat. Biol. <u>74</u> , 61-69, 1998
G. Alsbeih and G.P. Raaphorst	Feasibility of induction of premature chromosome condensation by calyculin A in 2 fibroblasts and 2 melanoma cell lines of human origin.	Cahiers de Radiobiologie <u>7</u> , 12-23, 1998
A.E. Lalonde, D.G. Rancourt , and J.Y. Ping	Accuracy of Ferric/Ferrous Determinations in Micas: A comparison of Mössbauer spectroscopy and the Pratt and Wilson Wet-Chemical Methods.	Hyp. Int. 117(1998) 175-204
M.-Z. Dang, D.G. Rancourt , J.E. Dutrizac, G. Lamarche , and R. Provencher	Interplay of Surface Conditions, Particle Size, Stoichiometry, Cell Parameters, and Magnetism in Synthetic Hematite-like Materials.	Hyp. Int. 117 (1998) 271-319
A.A.T. Shabani, D.G. Rancourt , and A.E. Lalonde.	Determination of cis and trans Fe ²⁺ Populations in 2M ₁ Muscovite by Mössbauer Spectroscopy.	Hyp. Int. 117(1998) 117-129
I. S. Batkin, W. J. Romo and M. K. Sundaresan	Influence of plasma oscillations on the neutrino energy spectrum from the sun	J. Phys. G: Nucl. Part Phys. 24, pp. 1973-1982.(1998)
W. J. Romo and S. R. Valluri	A Study of the Momentum Dependence of the Phase Shift for Finite and Coulomb Potentials and its possible Applications	Nucl. Phys. A636, pp 467-483 (1998)
I. S. Batkin, W. J. Romo and M. K. Sundaresan	Effect of nuclear deformations on Solar neutrino capture rates	J. Phys. G: Nucl. Part Phys. 23 pp. 991-1004 (1997)
Niendorf E.R., T.M. Grist, F.T. Lee Jr., P.C. Brazy and G.E. Santyr	Rapid <i>in vivo</i> Measurement of Single Kidney Extraction Fraction and Glomerular Filtration Rate with MR Imaging	<i>Radiology</i> 206 , 791-798 (1998)
G.W. Slater, T.B.L.	Recent Developments in DNA Electrophoretic Separations.	Electrophoresis, 19, 1525-1541, 1998 (invited review)

Kist, H. Ren and G. Drouin		article)
J.-F. Mercier and G.W. Slater	An Exactly Solvable Ogston Model of Gel Electrophoresis IV: Sieving through Periodic Three-Dimensional Gels.	Electrophoresis 19, 1560-1565, 1998
C. Desruisseaux, G.W. Slater and G. Drouin	On Using DNA-Trapping Electrophoresis to Increase the Resolution of DNA Sequencing Gels.	Macromolecules 31, 6499-6505, 1998
C. Desruisseaux, G.W. Slater and T.B.L. Kist	Trapping Electrophoresis and Ratchets: A Theoretical Study for DNA-Protein Complexes.	Biophysical Journal 75, 1228-1236, 1998
C. Desruisseaux, G.W. Slater and T.B.L. Kist	Trapping Electrophoresis and Ratchets: A Theoretical Study for DNA-Protein Complexes.	Biophysical Journal 75, 1228-1236, 1998
G.W. Slater and G.I. Nixon	The Size of a Polymer Chain in an Imperfect Array of Obstacles. Monte Carlo Results.	J. Chem. Phys. 108, 3310-3312, 1998
S.J. Hubert, M. Krzywinski, I. L'Heureux, G.W. Slater	Reptation Dynamics with Random Local Interactions.	Macromolecules 31, 181-192, 1998
Heller, G.W. Slater , P. Mayer, N. Dovichi, D. Pinto, J.-L.	Viovy, G. Drouin (1998) Free-Solution Electrophoresis of DNA	J. Chromatography A 806, 113-121.
K. S. Song and C.-R. Fu	Exciton self-trapping and lattice defect creation in rare gas solids and other insulators	J. of Low Temp. Physics, 111 645-660 (1998)
C.-R Fu and K. S. Song	Theoretical Studies of lattice defect creation induced by exciton self-trapping in solid Ne	Nucl. Inst. Meth. B141, 35-41 (1998)
Z.M. Stadnik	"Spectroscopic Studies of the Electronic Structure", in "Physical Properties of Quasicrystals"	edited by Z.M. Stadnik, Springer Series in Solid-State Sciences, Vol. 126 (Springer, Berlin, 1999), p. 257-293
Z.M. Stadnik	"Introduction", in "Physical Properties of Quasicrystals"	edited by Z.M. Stadnik, Springer Series in Solid-State Sciences, Vol. 126 (Springer, Berlin, 1999), p. 1-4
Y. P. Varshni	Simple wavefunction for an impurity in a	Superlattices and

	parabolic quantum dot	Microstructures, 23, 145 (1998)
A. K. Ghatak, I.C. Goyal, R. Jindal, and Y. P. Varshni	MAF solution for bounded potential problems	Can. J. Phys. 76, 351 (1998)
Y. P. Varshni	Critical cage radii for a confined hydrogen atom	J. Phys. B: At. Mol. Opt. Phys. 31, 2849 (1998)

OPAL PUBLICATIONS

Carleton members: R.K. Carnegie, M.S. Dixit, M. Donkers, P.G. Estabrooks, P. Gagnon

C.K. Hargrove, R.J. Hemingway, T. Junk, D. Karlen, D. Koetke, P. Krieger

M.J. Losty, H. Mes, F.G. Oakham, S. Towers, D. Waller, J. White

Measurement of the Average Polarization of b Baryons in Hadronic Z^0 Decay,

G. Abbiendi et al., Phys. Lett. B 444 (1998) 539-554

Measurement of the Longitudinal Cross-Section using the Direction of the Thrust Axis in Hadronic Events at LEP,
G. Abbiendi et al., Phys. Lett. B 440 (1998) 393-402

First Measurement of Z/γ^* Production in Compton Scattering of Quasi-real Photons,

G. Abbiendi et al., Phys. Lett. B 438 (1998) 391-404

Production of χ_{c2} Mesons in Photon-Photon Collisions at LEP,

K. Ackerstaff et al., Phys. Lett B 439 (1998) 197-208

Search for Higgs Bosons and New Particles Decaying into Two Photons at $\sqrt{s} = 183$ GeV,

K. Ackerstaff et al., Physics Letters B437 (1998) 218-230

Multi-photon production in e^+e^- collisions at $\sqrt{s} = 183$ GeV,

K. Ackerstaff et al., Phys. Letters B 438 (1998) 379-390

Bose-Einstein Correlations of Three Charged Pions in Hadronic Z^0 Decays,

K. Ackerstaff et al., Eur. Phys. J. C5 (1998) 239-248

An Upper Limit for the tau-neutrino Mass from $\tau \rightarrow 5\pi \pm \nu_\tau$ Decays,

K. Ackerstaff et al., Eur. Phys. J. C5 (1998) 229-237

Photon and Light Meson Production in Hadronic Z^0 Decays,

K. Ackerstaff et al., Eur. Phys. J. C5 (1998) 411-437

Search for Stable and Long-lived Massive Charged Particles in e^+e^- Collisions at $\sqrt{s} = 130-183$ GeV, K. Ackerstaff et al., Phys. Letters B433 (1998) 195-208

An Upper Limit on the Anomalous Magnetic Moment of the tau lepton,

K. Ackerstaff et al., Phys. Lett. B431 (1998) 188-198

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K. Ackerstaff et al., Eur. Phys. J. C5 (1998) 19-40

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Author(s)	Title	Conference/Publication
K. Hinzer, S. Fafard , A.J. SpringThorpe, J. Arlett, E.M. Griswold, Y. Feng and S. Charbonneau	Room temperature operation of AlInAs/AlGaAs quantum dot lasers	Physica E2, 729 (1998)
P.G. Piva, R.D. Goldberg, I.V. Mitchell, S. Fafard , M. Dion, M. Buchanan, S. Charbonneau , G. Hillier and C. Miner	Reduced 980 nm laser facet absorption by band gap shifted extended cavities	J. Vac. Sci. Technol. A 16, (1998)
S. Fafard, K. Hinzer, A.J. SpringThorpe, Y. Feng, J.P. McCaffrey S. Charbonneau and E.M. Griswold	Temperature effects in semiconductor quantum dot lasers	Material Science and Engineering B 51 114 (1998)
J. Arlett, F. Yang, K. Hinzer, S. Fafard, Y. Feng, S. Charbonneau , and R. Leon	Temperature independent lifetime in InAlAs quantum dots	J. Vac. Sci. Technol. A 16, 578 (1998)
J.E. Haysom, P.J. Poole, Y. Feng, E.S. Koteles, J.-J. He, S. Charbonneau , R.D. Goldberg and I.V. Mitchell	Lateral selectivity of ion-induced quantum well intermixing	J. Vac. Sci. Technol. A 16, 817 (1998)
J.B. Webb, D. Northcott, S. Charbonneau , F. Yang, D.J. Lockwood, O. Malvezin, P. Singh and J. Corbett	Magnetron sputter epitaxy of gallium nitride on (0001) sapphire	J. Vac. Sci. Technol. A 16, 786 (1998)
J.E. Haysom, J.J. He, P.J. Poole, E.S. Koteles, A. Delage, Y. Feng and S. Charbonneau	Buried waveguides in a 1.5 μm InGaAs/InGaAsP structure fabricated by ion-induced quantum well intermixing	Integrated Photonics Research, Technical digest series 4, 158 (1998)
S. Charbonneau, A. Delage, J. Haysom, F. Yang, P.J. Poole, G.C. Aers, J.J. He, E. Koteles, P.G. Piva, T. Simpson and I.V. Mitchell	Photonic integrated circuits fabricated using quantum well intermixing	Proc. SPIE vol. 3413, 121 (1998)

V. Aimez, M. Paquette, J. Beauvais, J. Bereens, P.J. Poole and S. Charbonneau	Monolithic integration of multiple emission wavelength laser diodes using low energy ion implantation	Proc. SPIE vol. 3413, 133 (1998)
J.J. Dubowski, S. Charbonneau , P.J. Poole, A.P. Roth, C. Lacelle and M. Buchanan	Laser writing of quantum well intermixed InGaAs/InP microstructures	SPIE's Int. Symp. on laser application in microelectronic and optoelectronic manufacturing II, Proc. SPIE 3274, 53 (1998)
F. Yang, K. Hinzer, C.Ni. Allen, S. Fafard , G.C. Aers, Y. Feng, J. McCaffrey and S. Charbonneau	Quantum dot p-i-n structure in an electric field	J. Supperl. & Microstructures 25, 419 (1999)
S.M. Khanna, S. Charbonneau , P.G. Piva, M. Parenteau and C. Carlone	Effects of 3 MeV proton irradiation on the excitonic lifetime in GaAs	IEEE transactions on Nuclear Science, vol.45, 2430 (1998)
M. D'lorio, T.C. Gorjanc, M. Roussy, J. Lam, and B. Williams	Study of lanthanum-based cathodes for organic light emitting devices	Proceedings of the SPIE Conference on Organic Light-Emitting Materials and Devices, San Diego, SPIE 3476 , 349-354 (1998)
Fortin, E., Benson, E., Mysyrowicz, A.,	Superfluid Transport of Excitons in Cu ₂ O	Electrochemical Society Proceeding 98-25, 1-10, 1998
M. A. Doncheski, S. Godfrey	Leptoquark Production and Identification at High-Energy Lepton Colliders	Invited talk at The 20th Annual MRST (Montreal-Rochester-Syracuse-Toronto) Meeting on High-Energy Physics: MRST 98: Toward the Theory of Everything, Montreal, Canada, May 13-15, 1998 AIP Proceedings 452, ed. J. M. Cline, M. E. Knutt, G. D. Mahlon, and G. D. Moore (AIP Press, Woodbury NY 1998) p. 19. [hep-ph/9807290]
S. Godfrey	New Particles and Interactions at High Energy Muon Colliders	Invited Plenary Talk at the 4th International Conference on Physics Potential and Development of $\mu^+\mu^-$ Colliders, San Francisco California, December 10-12, 1997. AIP Proceedings 441, ed. D. B. Cline (AIP Press, Woodbury NY 1998) p. 98. [hep-ph/9802212]

<p>S. Godfrey</p>	<p>Strange, Charm, and Beauty: Mesons with One Heavy Quark</p>	<p>Invited Plenary Talk at the 7th International Conference on Hadron Spectroscopy, Brookhaven National Laboratory, August 24-30 1997. AIP Proceedings 432, ed. S-U. Chung and H. J. Willutzki (AIP Press, Woodbury NY 1998) p. 231. [hep-ph/9712545]</p>
<p>D.G. Jarrett, G.C. Norris, R. Mosebar, S.J.P. Livingstone, D.A. Schauer, R. Kehlet and C.L. Greenstock</p>	<p>Background and Overview. pp. 1-5, 1998</p>	<p>Proceedings of Workshop on Triage of Irradiated Personnel, Armed Forces Radiobiology Research Institute Publication 98-2, Bethesda MD</p>
<p>W.F. Blakely, T.M. Seed, P.G.S. Prasanna, A.J. Carmichael, N. Ramakrishnan. D.A. Schauer and C.L. Greenstock</p>	<p>Forward-field Bioindicators for Dose Assessment: Possible Alternatives.</p>	<p>Proceeding of Workshop on Triage of Irradiated Personnel, AFRRRI Publication 98-2, Bethesda MD, pp. 21-26, 1998</p>
<p>C.L. Greenstock</p>	<p>Review of Potential Biomarkers of Radiation Exposure.</p>	<p>Proceedings of Workshop on Triage of Irradiated Personnel, AFRRRI Publication 98-2, Bethesda MD, pp. A13-19, 1998.</p>
<p>K.J. Lenton and C.L. Greenstock</p>	<p>Antioxidants and Biological Radiation Protection.</p>	<p>Proceedings of the 19th Annual Canadian Cancer Society Conference, Vol. 1, 5A, pp. 1-7, 1998</p>
<p>Rego, Luis G C; Brum, Jose A; Hawrylak, Pawel</p>	<p>Multi-charged acceptor centers in p-doped Si/Si_{1-x}Ge_x/Si quantum wells in the presence of a magnetic field</p>	<p>International Conference on Modulated Semiconductor Structures, Santa Barbara, CA, July 1997. Physica E, 2, 785 (1998)</p>
<p>Arkadiusz Wojs, Pawel Hawrylak, Simon Fafard, Lucjan Jacak</p>	<p>Theory of luminescence from highly excited self-assembled quantum dots</p>	<p>Invited paper at the International Conference on Modulated Semiconductor Structures, Santa Barbara, CA, July 1997. Physica E, 2, 603 (1998)</p>
<p>Potemski, M; Gravier, L; Truby, A; Maude, D K; Hawrylak, P; Wasilewski, Zb; Etienne, B</p>	<p>Emission from a two-dimensional electron gas in quantizing magnetic fields</p>	<p>International Conference on Electronic Properties of Two dimensional Systems, Tokyo, Japan, September 1997. Physica B, v.249, p.566, 1998</p>
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R.J. Leclair and P.C. Johns	Effects of Beam Polychromaticity on X-Ray Scatter Imaging	Proceedings of 44th Annual Meeting of the Canadian Organization of Medical Physicists, 108-110 (London Ontario, June 1998).
D. Karlen	LEP recent results on b-baryon decays	Proceedings of the International Europhysics Conference on High Energy Physics, Jerusalem, August 19-25, 1997, Springer Verlag (1998), p.559.
Longtin, A.	Firing dynamics of electroreceptors	International Conference on Neural Information Processing ICONIP'98, Kitakyushu City, Japan, Oct. 1998, pp.27-30
Longtin, A..	Tuning curves for noisy excitable cells.	Can. Med. and Biol. Engineer. Conf., Edmonton, June 1998, pp.70-71.
T.P. Murphy, A. Lawson, D.G. Rancourt , M. Kumagai, and M. Sakai	Akanoi Bay, Lake Biwa Seasonal Changes in Porewater Phosphorus.	Society for International Limnology, Dublin, August 10-14, 1998, Verh. Int. Verein. Limnol. 48 (1998)
Z.M. Stadnik, D. Purdie, M. Garnier, Y. Baer, A.-P. Tsai, A.Inoue, K. Edagawa, and S. Takeuchi		Proceedings of the 6 th International Conference on Quasicrystals, edited by S. Takeuchi and T. Fujiwara (World Scientific, Singapore, 1998), p. 563-570.
Z.M. Stadnik, B. Grushko, and A.-P. Tsai,		Proceedings of the 6 th International Conference on Quasicrystals, edited by S. Takeuchi and T. Fujiwara (World Scientific, Singapore, 1998), p. 708-711

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Author(s)	Title	Conference
Y.S. Huang, W.D. Sun, Fred H. Pollak, J.L. Freeouf, I.D. Calder , and R.E. Mallard	Influence of Ordering on the Properties of GaInP/GaAs Heterojunction Bipolar Transistor Structures, Electron.	Mater. Conf., Charlottesville (June 1998).
Y.S. Huang, W.D. Sun, Fred H. Pollak, J.L. Freeouf, I.D. Calder , and R.E. Mallard	Properties of GaInP/GaAs Heterojunction Bipolar Transistor Structures: the Influence of Ordering	Int. Conf. On Semicond., Jerusalem (August 1998).
S. Charbonneau	Visible InAlAs quantum dots in a vertical electric field	Canadian Association of Physicists, University of Waterloo, Waterloo, Ontario (June 1998)
S. Charbonneau	Photonic integrated circuits fabricated using ion implantation	SPIE's International symposium on lasers and materials in industry, Quebec city, Quebec (July 1998)
S. Charbonneau	Photonic integrated circuits fabricated using quantum well intermixing	Laser and materials in industry, SPIE meeting, Quebec city, Quebec (1998)
F. Yang, G.C. Aers, K. Hinzer, Y. Feng, S. Fafard , E.M. Grisword and S. Charbonneau	Visible quantum dots under reversed bias	International conference on application of photonic technology
J.J. Dubowski, S. Charbonneau , N. Rowell, H. Lafontaine and D.C. Houghton	Laser-induced quantum well intermixing in Si/Si _{1-x} Ge _x heterostructures	International conference on applications of photon technology
J.E. Haysom, A. Delage, P.J. Poole, Y. Feng, J.J. He, E.S. Koteles, S. Charbonneau , R.D. Goldberg and I.V. Mitchell	Optical confinement via quantum well intermixing on a buried InGaAs/InGaAsP heterostructure	International conference on application of photonic technology
S. Raymond, S. Fafard , Y. Feng, J. Reynolds, S. Charbonneau and J.L. Merz	Asymmetric stark shift in InAlAs/AlGaAs self-assembled dots	CAP meeting, University of Waterloo, Waterloo, Ontario (1998).
F. Yang, K. Hinzer, S. Fafard , Y. Feng, A.J. SpringThorpe and S. Charbonneau	Quantum dot detectors under vertical electric field	11th International conference on superlattices, microstructures and microdevices, Red Sea, Egypt (July 1998).

J.C. Wallace, W.K. Myint, R.L. Clarke , and G.E. Santyr	Mapping Temperature Gradients in Liver Using MRI and Thermocouple Temperature Measurements	Annual Congress, COMP, London 18 June 1998
GG. Zhang, D.W. O. Rogers , J.E. Cygler	Monte carlo investigation of electron beam relative output factors	44th Annual COMP Meeting, London, Ontario, June 18-20, 1998
J.E. Cygler, G.X. Ding, K. Ash, G.G. Zhang	Evaluation of the new electron beam algorithm in Theraplan Plus 3D Planning System	44th Annual COMP Meeting, London, Ontario, June 18-20, 1998
J.E. Cygler, G.X. Ding, K. Ash	Commissioning of the new electron beam algorithm in Theraplan Plus 3D Planning System	40th Annual AAPM Meeting, San Antonio, Texas, August 9-13, 1998
G.X. Ding, M.K. Yu and J.E. Cygler	Commissioning electron beams in the CADPLAN 3D planning system	40th Annual AAPM Meeting, San Antonio, Texas, August 9-13, 1998
G.X. Ding, M.K. Yu, J.E. Cygler , G.G. Zhang	An Evaluation of a Commercial 3D Electron Beam Treatment Planning System	44th Annual COMP Meeting, London, Ontario, June 18-20, 1998
N.V. Klassen, L. Van der Zwan, J. Cygler	GafChromic MD-55: Investigated as a precision dosimeter	12th International Conference on Solid State Dosimetry, Burgos, Spain, July 5-10, 1998
J. Cygler, M. Soubra, J. Szanto, G. Mackay	In vivo patient dosimetry using MOSFET radiation detectors	12th International Conference on Solid State Dosimetry, Burgos, Spain, July 5-10, 1998
D. E. Wilkins, J.E. Cygler , D. Smith, B. Esche, G.P. Raaphorst	Radiobiological effects of HDR/PDR brachytherapy using asymmetric field inversion gel electrophoresis	European Society for Therapeutic Radiation Oncology 17th Annual Meeting, Edinburgh, Scotland, Sept. 1998
J.E. Cygler, G.X. Ding, K.C. Ash and G.G. Zhang	Evaluation of the new electron beam algorithm in Theraplan Plus 3D planning system	17th Annual ESTRO Meeting, Edinburgh, Scotland, 20-24 September 1998
G.X. Ding, M.K. Yu and J.E. Cygler	Dose verification of electron beams in the CADPLAN 3D treatment planning system	17th Annual ESTRO Meeting, Edinburgh, Scotland
N. Mariados, L. Grimard, B. Esche, P. Genest, D. Salhani, J. Cygler , L. Cassie	Outcome in interstitial brachytherapy in the management of patients with breast cancer treated with breast conserving therapy	Annual Meeting of Canadian Society for Clinical Investigation, Royal College of Physicians and Surgeons of Canada, September 24-27, 1998, Toronto, Ontario

S. Desgreniers and L. Beaulieu	Structures and Compressive Properties of ZnO and ZnS"	Gordon Research Conference on "Research at High Pressures", New Hampshire, June 22-26, 1998.
S. Desgreniers and L. Beaulieu	New High Pressure Data on Dense ZnO and ZnS"	IUCr Workshop on High Pressure Crystallography, Argonne National Labs. November 14-16, 1998.
S. Desgreniers and K. Lagarec	SlmPA, a Program for Preprocessing Powder X-ray Diffraction Images	IUCr Workshop on High Pressure Crystallography, Argonne National Labs. November 14-16, 1998.
M. D'lorio, T. C. Gorjanc, J. Lam, M. Roussy and B. Williams	La-based cathodes for organic light emitting devices	Workshop on Organic Materials for Microelectronics, NRC, Ottawa, Dec. 4-5, 1998.
M. D'lorio, T.C. Gorjanc, J. Lam and M. Roussy	Organic Light Emitting Devices	CAP Annual Congress, Waterloo, June 14-17, 1998
M. D'lorio and B. Williams	Reliability and substrate selection for organic light emitting devices	International Conference on Applications of Photonic Technology, Ottawa, July 1998
E. Fortin	Coherent processes in exciton condensates	Excitonic Processes in Condensed Matter International Conference, Boston, Nov. 1998.
A. Mysyrowicz and E. Fortin	Transport of exciton condensates	Contributed talk: International Quantum Electronic Conference, San Francisco, May 1998
S. Godfrey, T. Han, and P. Kalyniak	Discovery limits for techni-omega production in $e\gamma$ collisions	International Conference on High Energy Physics, July 22-29, 1998, Vancouver, B.C.
S. Godfrey, T. Han, and P. Kalyniak	Discovery Limits for Techni-Omega Production in $e\gamma$ Collisions	Invited talk, Linear Collider Workshop, Keystone, Colorado, Sep 27, 1998.
M. A. Doncheski, S. Godfrey	Leptoquark Production and Identification at High-Energy Lepton Colliders	Invited talk at The 20th Annual MRST (Montreal-Rochester-Syracuse-Toronto) Meeting on High-Energy Physics: MRST 98: Toward the Theory of Everything, Montreal, Canada, May 13-15, 1998 [hep-ph/9807290].
S. Godfrey	Final State Interactions in $\gamma\gamma \rightarrow \pi\pi$	Invited talk at CMU/Jefferson Lab Workshop on Physics with 8+

		GeV Photon Beams, Carnegie Mellon University, Pittsburgh, February 13-14, 1998.
C.L. Greenstock	Health Effects and Radiation Protection: A Primer.	Annual Conference of the Canadian Radiation Protection Association, Ottawa ON, May 24-28, 1998.
K.J. Lenton and C.L. Greenstock	An Antioxidant Assay using Radiation Generated Free Radicals	Annual Conference of the Canadian Radiation Protection Association, Ottawa ON, May 24-28, 1998.
K.J. Lenton and C.L. Greenstock	Antioxidants and Biological Radiation Protection	19 th Annual Conference of the Canadian Nuclear Society, Toronto ON, October 18-21, 1998.
P. Hawrylak	Toward Quantum Single Electron Transistor	Invited lecture, 34 Winter School in Theoretical Physics, Karpacz, Poland, February 1998.
P. Hawrylak	Optical Properties of Quantum Dots	Invited lecture, International Workshop on Novel Physics in Semiconductor Nanostructures, INFM, Scuola Normale Superiore, Pisa, Italy, June 1998.
P. Hawrylak	Double quantum well physics in single p-SiGe quantum wells	Invited lecture, International Workshop on "Double quantum wells", Torino, Italy, July 1998.
P. Hawrylak	Optical properties of charged quantum dots	Invited lecture, PHASDOM Meeting, Neuchatel, Switzerland, September 1998.
P. Hawrylak	Quantum information processing with self-assembled quantum dots	CERION Meeting, Neuchatel, Switzerland, September 1998.
R.J.W. Hodgson	Depth Profile Extraction from Electron Probe Microanalysis using Global Optimization Techniques	CAP Congress, June 14-17, 1998
B.J. Jarosz	3-D temperature distribution in ultrasound hyperthermia with interstitial applicator arrays	Int. Symp. Heat Mass Transfer in Biolog. Med. Eng./Kusadasi, Turkey/June 8-12, 1998
Joós, B. and Zhou, Z.	Elasticity and Thermodynamic Equilibrium of a Crosslinked Polymer Melt	APS Meeting, Los Angeles, CA, March 1998, Bull. of APS, 43, 144.
Plischke, M. and Joós, B.	Entropic Elasticity of Diluted Central Force Networks	APS Meeting, Los Angeles, CA, March 1998, Bull. of APS, 43,

- Joós, B.** The onset of Entropic Rigidity in Diluted Central Force Networks: the Entropic Contribution, Workshop on Rigidity
Invited talk, Theory and Applications, Traverse City, Michigan, June 14-17, 1998). (organized by Michigan State University).
- Joós, B.** Entropic Rigidity
Invited talk, Materials Physics near the 45th Parallel Meeting, held at McGill University (October 23-24, 1998).
- D. Karlen** Experimental status of the Standard Model
International Conference on High Energy Physics, July 22-29, 1998, Vancouver, B.C
- D. Karlen** Summary of commodity computing and networking
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- D. Karlen** Summary of the tracking session
Keystone Workshop on Physics and Detectors for Future e+e- Linear Colliders (Keystone Colorado) , September 29, 1998
- L'Heureux, I.** Periodic Precipitation Pattern in Natural Sphalerite
Material Sciences at the 45 th Parallel, McGill University, Oct. 23-24, 1998.
- A. Longtin**
Invited talk, International workshop on Stochastic Resonance in Biological Systems, Arcidosso, Italy, May 1998.
- T.A. Hewitt, **B.T.A. McKee**, F. Noo, R. Clackdoyle, and M.J. Chamberlain
Characterization of a pinhole tomograph with 180° acquisition using a discrete vertex set reconstruction algorithm
IEEE Medical imaging Conference, Toronto, November, 1998.
- Tanya A. Hewitt, **Barry T.A. McKee**, and Michael J. Chamberlain
Pinhole SPECT: Towards clinical thyroid tomography
Proceedings of the 1998 Canadian Organization of Medical Physicists Conference, London, June, 1998.
- T.A. Hewitt, **B.T.A. McKee**, F. Noo, R. Clackdoyle, and M.J. Chamberlain
Characterization of a pinhole tomograph with 180° acquisition using a discrete vertex set reconstruction algorithm
Ottawa Life Sciences Conference, Ottawa, November, 1998.
- Ng, C.E., S.K. Banerjee, G. Wang, R.A. Aubin and Raaphorst, G.P.**
Factors affecting the X-radiation response of human pancreatic tumor cell lines.
46th Annual Radiation Research Society Meeting, pg. 134, Louisville, Kentucky, 1998

Niedbala, M., Alsbeih, G. , Ng , C.E. and Raaphorst, G.P.	Effect of pulsed simulated low dose rate on two ovarian carcinoma cell lines with different intrinsic radiosensitivities.	46th Annual Radiation Research Society Meeting, pg. 121, Louisville, Kentucky, 1998.
Alsbeih, G., Malone, S., Lochrin, C. , Ng , C.E. and Raaphorst, G.P.	Correlation between normal tissue radiotoxicity and in vitro radiosensitivity of normal skin fibroblasts studied immediately after irradiation. 1998.	46 th Annual Radiation Research Society Meeting, pg. 170, Louisville, Kentucky
Abbott, H.E., Alsbeih, G., Ng , C.E. and Raaphorst, G.P.	Comparison of induction and repair of double strand breaks in a radiosensitive human ovarian carcinoma cell line and its more radioresistant variant.	46 th Annual Radiation Research Society Meeting, pg. 184, Louisville, Kentucky, 1998.
Raaphorst, G.P. , Yang, D.P. and Ng, C.E.	Thermal radiosensitization and repair inhibition in human melanoma cells: A comparison of survival and DNA double strand breaks.	46th Annual Radiation Research Society Meeting, pg. 92, Louisville, Kentucky, 1998.
K. Lagarec and D.G. Rancourt	A New Model for Multidimensional Distributions of Hyperfine Parameters	Mössbauer Spectroscopy. ICC '97
M.-Z. Dang, D.G. Rancourt , G. Lamarche, and M.E. Evans	Mineralogical Analysis of a Loess/ Paleosol Couplet from the Chinese Loess Plateau	ICC'97
A.A.T. Shabani, D.G. Rancourt , and A.E. Lalonde	Determination of cis- and trans-Fe ²⁺ Populations in 2M1 Muscovite by Mössbauer Spectroscopy.	ICC'97
P.H.J. Mercier, D.G. Rancourt , R.G. Berman, and J.-L. Robert	Control of Site Populations, at Synthesis, by Inter-Sheet Differential Thermal Expansion in a T-O-T Layer Silicate	ICC'97
M.-Z. Dang, D.G. Rancourt , J.E. Dutrizac, G. Lamarche, and R. Provencher	Protohematite-Hydrohematite-Hematite Structuro-Chemical Phase Relationships in Hematite-Like Materials	ICC'97
D.G.Rancourt	Mössbauer Spectroscopy in Clay Science.	ICC'97
A.E. Lalonde, D.G. Rancourt , and J.Y. Ping	Accuracy of ferric/ferrous determinations in phyllosilicate: A comparison of Mössbauer and wet-chemical methods	ICC'97
R.B. Scorzelli, D.G.	Evidence by Mössbauer	60th Meteoritical Society

Rancourt, A.B. Dominguez, G. Poupeau, C.C. de Bon, M.E. Cisternas	spectroscopy of the intergrowth tetraetaemite/antitaemite in the Vaca Muerta mesosiderite	Meeting, Hawaii, July 21-25, 1997
D.G. Rancourt and M.-Z. Dang	Multi-Dimensional Solid Phase Analysis Applied to Aquatic Sediments and Ancient Sedimentary Deposits.	EnviroAnalysis-98, Ottawa, May 11-14, 1998.
J.I. Goldstein, R.J. Reisener, D.G. Rancourt , K. Lagarec, and R.B. Scorzelli	The Santa Catharina Meteorite: A Cloudy Zone Microstructure Consisting of a Fine Intergrowth of Tetraetaenite and Antitaetaenite	61 st Meteoritical Society Meeting, Dublin, July 27-31, 1998.
D.G. Rancourt and M.-Z. Dang	Multi-Dimensional Solid Phase Analysis (MDSPA) Applied to Complex Materials.	MMO Partnerships 1998, Toronto, June 10, 1998.
K. Lagarec and D.G. Rancourt	Antitaetaenite: A new Meteoritic Mineral That Is Non-Magnetic to the Core	Materials Science at the 45 th Parallel. McGill University, Oct. 23-24, 1998.
P.H.J. Mercier and D.G. Rancourt	Inter-Sheet Differential Thermal Expansion in Layered Silicate Materials.	Materials Science at the 45 th Parallel. McGill University, Oct. 23-24, 1998.
M.-Z. Dang, D.G. Rancourt , J.E. Dutrizac, G. Lamarche, and R. Provencher	Phase Relations in Hematite-Like Materials and the Morin Transition.	Materials Science at the 45 th Parallel. McGill University, Oct. 23-24, 1998.
Sevigny P., G. Santyr , J. Wallace, S. Breeze, S. Lang, J. Xu, I. Moudrakovski, B. Simard and J. Ripmeester	MRI of Hyperpolarized Xenon	International Isotope Society 6 th Canadian Chapter Meeting, Ottawa 1998.
Sevigny P., G. Santyr , J. Wallace, S. Breeze, S. Lang, J. Xu, I. Moudrakovski, B. Simard and J. Ripmeester	MRI of Hyperpolarized Xenon	Canadian Organization for Medical Physics, London, 1998.
Wallace J.C., W.K. Myint, R.L. Clarke, G.E. Santyr	Mapping of Temperature Gradients in Liver using MRI and Thermocouple Temperature Measurements,	Canadian Organization for Medical Physics, London, 1998.
Wallace J.C., W.K. Myint, R.L. Clarke, G.E. Santyr	Mapping of Temperature Gradients in Liver using MRI and Thermocouple Temperature Measurements	Canadian Organization for Medical Physics, London, 1998.

Lang S., I. Moudrakovski, C. Ratcliffe, J. Ripmeester, S. Breeze and G. Santyr	A Flow System for Large-Scale Production of Hyperpolarized Xenon	MOOT 98 NMR Minisymposium, Waterloo, 1998.
Breeze S., I. Moudrakovski, C. Ratcliffe, J. Ripmeester and G. Santyr	Effect of S/V Ratio on Surface Induced Relaxation of Hyperpolarized ^{129}Xe	MOOT 98 NMR Minisymposium, Waterloo, 1998.
C. Desruisseaux, G.W. Slater and T.B.L. Kist	Electrophoresis of DNA-Protein Complexes	Oral presentation at the Annual Congress of the Canadian Association of Physicists, Waterloo, June, 1998.
G.I. Nixon and G.W. Slater	Conformational Relaxation of Polymers in Quenched Disordered Media	Oral presentation at the Annual Congress of the Canadian Association of Physicists, Waterloo, June, 1998.
G.W. Slater	Polymer Dynamics in Disordered Media: Is Reptation Unstable?	Invited talk at the Annual congress of the Canadian Association of Physicists, Waterloo, June, 1998.
J.-F. Mercier et G.W. Slater	Coefficients de diffusion exactes pour des systèmes avec des conditions aux frontières périodiques	Oral presentation at the Annual Congress of the Canadian Association of Physicists, Waterloo, June, 1998.
G.W. Slater and G.I. Nixon	Diffusion and Relaxation of a Polymer Chain in a Disordered Medium	Poster presentation at the XXth IUPAP International conference on Statistical Physics (StatPhys20), Paris, July, 1998.
J.-F. Mercier et G.W. Slater	A New Method to Find Exact Diffusion Coefficients for Lattice Systems	Poster presentation at the "Materials Physics Near the 45th Parallel" meeting, McGill University, 24 October, 1998.
S. Hubert and G.W. Slater	A Molecular Dynamics Simulation of a Tethered Polymer Chain Under a Strong Flow	Poster presentation at the "Materials Physics Near the 45th Parallel" meeting, McGill University, 24 October, 1998.
S.J. Hubert and G.W. Slater	A Molecular Dynamics Study of a Tethered Polymer Chain Under Strong Flow	Poster presentation at the XXth IUPAP International Conference on Statistical Physics (StatPhys20), Paris, July, 1998.
G.W. Slater	Electrophoretic Separation of DNA Without Sieving Matrices: the Ultimate CE Method?	Invited talk at the 25th annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Society (FACSS), Austin, October 11-16, 1998.

A.E. Karger, F. Oaks, H. Ren, G. Drouin, G.W. Slater and S. Menchen	End-Labeled DNA Sequencing Fragments up to 120 Nucleotides Separated by Free-Solution Capillary Electrophoresis	Poster presentation at High Performance Capillary Electrophoresis (HPCE) '98, Orlando, February, 1998.
G.W. Slater	Diffusion, Reptation and Entropic Trapping during Gel Electrophoresis	Invited talk at the March Meeting of the American Physical Society, Los Angeles, 1998.
S.J. Hubert and G.W. Slater	A Molecular Dynamics Study of a Tethered Polymer Chain Under Strong Flow	Oral presentation at the Annual Congress of the Canadian Association of Physicists, Waterloo, June, 1998.
C. R. Fu and K. S. Song	The role of the excited electron in the diffusion of interstitial in AgCl and AgBr	Excitonic Processes in Condensed matter – EXCON – 98 (Boston)

Other Presentations in 1998

Speaker(s)	Title	Location
R. Carnegie	IPP Director presentation	IPP AGM, Waterloo, June 1998
S. Charbonneau	Ion modification of quantum well structures: Application in photonics integrated circuits	Dept. of Physics, Dalhousie University, Halifax, Nova Scotia, Jan. 1998
S. Charbonneau	Revue sur les méthodes de fabrication monolithique pour l'intégration de circuit photonique	École Polytechnique de Montréal, Montréal, Québec, Jan. 1998
S. Charbonneau	Photonic integrated circuits using ion-induced quantum well intermixing	Stacie institute for molecular sciences, NRC, Ottawa, Ontario, July 1998
R.L. Clarke	Old Physics for New Medicine	Laurentian University, Sudbury, February 1998
J.E. Cygler	High dose rate brachytherapy, Ionizing Radiation Standards	National Research Council of Canada, Ottawa, January 13, 1998
J. E. Cygler	Commissioning of the new electron beam algorithm in Theraplan Plus Planning System	Radiation Oncology Physics Rounds, Ottawa, October 7, 1998
J. E. Cygler	Clinical Application of tungsten mesh as electron beam modifier	Fraser Valley Cancer Centre, Surrey B.C., December 9, 1998
M. D'lorio	From atomic contorsions to fast electrons to bright light-emitting diodes	Career week, Univ. of Ottawa, January 1998.
M. D'lorio	Molecular materials- from the lab bench into your computer	Univ. of Ottawa, Nov. 1998.
M. D'lorio	Molecular materials and the Nanoelectronics proposal I	CIAR workshop, Toronto, June 1998.
Y. Tao and M. D'lorio	Molecular materials and the Nanoelectronics proposal II	CIAR workshop, Toronto, September 1998.
M. S. Dixit	Gas Avalanche Microdetectors	Linear Colliders Workshop, Keystone, Colorado, September, 1998
S. Godfrey	Physics at the Next Linear Collider	Physics Department, York University, March 10, 1998
S. Godfrey	Physics at the Next Linear Collider	University of Toronto, March 9, 1998
S. Godfrey	Final State Interactions in $\gamma\gamma \rightarrow \pi\pi$	University of Pittsburgh, Feb 26,

		1998
S. Godfrey	Physics at the Next Linear Collider	University of Pittsburgh, Feb 25, 1998
C.L. Greenstock	Living with Radiation	AECL Open House, Chalk River Laboratories, ON, June 20, 1998
C.L. Greenstock	Review of Potential Biodosimeters	Medical Physics Department, McGill University Montreal PQ, October 30, 1998.
P. Hawrylak	Quantum single electron transistor	Schottky seminar series, Walter Schottky Institute, Technical Universitat Munchen, Munchen, Germany, June 1998
P. Hawrylak	Spin textures in quantum dots	seminar series, MPI-CNRS High Magnetic Field Laboratory Grenoble, France, July 1998
P. Hawrylak	Anomalies in magneto-optics of 2DEG	Condensed Matter Seminar series, University of Rochester Rochester, USA, March 1998
P. Hawrylak	Quantum Information Processing	seminar series, Steacie Institute for Molecular Science NRC, Ottawa, May 1998
P. Hawrylak	Magneto-optics of 2DEG	seminar series, Wroclaw University of Technology, Wroclaw, Poland, November 1998
P. Hawrylak	Correlated electrons in quantum dots	seminar series, Wuerzburg University, Germany, December 1998
P. Hawrylak	Electronic properties of self-assembled quantum dots	Wuppertal University, Wuppertal, Germany, November 1998
B.J. Jarosz	Ultrasound applicators for interstitial cancer thermal therapy	Univ. Michigan, Biomed. Eng. Dept, April 30, 1998
P.C. Johns	X-Ray Imaging with Scattered Radiation	Seminar to the Carleton University Biology Dept., 16 January 1998
P.C. Johns	The Physical Limits on X-Ray Imaging with Scattered Radiation	Seminar to the Imaging Research group at Robarts Research Institute, University of Western Ontario, 3 June 1998
B. Joós	Entropic Rigidity	Seminar given at Department of Physics, University of Maryland at College Park (May 1998)
B. Joós	Entropic Rigidity	Queen's University, Kingston

		(October 28th, 1998)
B. Joós	Entropic Rigidity	Ohio University, Athens, Ohio (November 4th, 1998)
D. Karlen	e+e- linear colliders	IPP forward planning meeting (Waterloo), June 13, 1998
A. Longtin	Invited Tutor	Young Researcher Workshop, Fukuoka, Japan, October 24-26, 1998.
T. Hewitt, B. McKee and M. Chamberlain	A possible new way of viewing the thyroid: pinhole SPECT	University of Ottawa Department of Radiology Research Day, May, 1998.
B. McKee	Beyond Picture Archiving in Nuclear Medicine	invited presentation at the Ottawa Medical Physics Institute, Carleton University, Sept., 1998.
B. McKee	A department-wide program for practical gamma-camera quality control using HERMES	invited presentation at the Nuclear Diagnostics users meeting, Toronto, June, 1998
A.J. Noble	The Sudbury Neutrino Observatory, A Status Report	Cornell University, May 1st 1998
D.G. Rancourt	From Invar to meteorites via the low-moment phase	Centro Brasileiro de Pesquisas Fisicas, Rio de Janeiro, Brazil. January 21, 1998
D.G. Rancourt	The Invar problem and its relation to magnetic frustration and the low moment phase	Brock University, St.-Catherines, Ontario, November 12, 1998
D.G. Rancourt	Physics, chemistry, and mineralogy of colour, with application to mine tailings	Canadian Centre for Remote Sensing, GSC, Ottawa, November 24, 1998
G. Santyr	Hyperpolarized Xenon Research in Ottawa	(co-presenter), Dept. of Radiology, U. of Michigan, Ann Arbor, October 1998
G. Santyr	Current Research at the Carleton Magnetic Resonance Facility	Institute for Biodiagnostics (NRC), Winnipeg, November 1998
G. Santyr	Hyperpolarized Xenon: A Novel Contrast Agent for MR Imaging	Ottawa Life Sciences Conference, November 1998
G.W. Slater	How to Separate DNA Molecules in a Capillary: The Strategies and the Physical Mechanisms	Presented at the Lawrence Livermore National Laboratory, October 16, 1998

G.W. Slater	DNA Electrophoresis: From Gels and Polymer Solutions to Free-Flow Separations	Presented at the Department of Biochemistry, The University of Texas Health Science Centre, San Antonio, October 15, 1998.
G.W. Slater	ELFSE: How does it Work? What are the Limits and the Challenges?	Presented at the Applied Biosystems Division of Perkin-Elmer, October 13, 1998
G.W. Slater	Les buts et technologies du Projet du génome humain	Presented at the University of Ottawa for the 150th Anniversary Celebrations, September 24, 1998
G.W. Slater	Entropy: The Mysterious Factor that Makes Macromolecules and Particles Diffuse Differently in a Crowd	Presented at the Sero Pharmaceutical Research Institute, Geneva (Switzerland), August 6, 1998
G.W. Slater	DNA Electrophoresis: From Reptation to Free-Flow	Department of Physics, University of British Columbia, April 2, 1998.
G.W. Slater	Le merveilleux monde des macromolécules synthétiques et biologiques	Département de physique de l'Université Laval, Québec, 31 mars 1998.
G.W. Slater	Le merveilleux monde des macromolécules synthétiques et biologiques	Département de physique de l'Université du Québec à Trois-Rivières, 30 mars 1998.
G.W. Slater	The Wonderful World of Synthetic and Biological Macromolecules	Department of Physics, McGill University, March 27, 1998.
G.W. Slater	DNA Electrophoresis, the Human Genome Project and Polymer Physics	Career Week in the Sciences, University of Ottawa, January 14, 1998.

Technical Reports (unpublished) in 1998

Author(s)	Report
K. Davitt and I.D. Calder	Characterization of Optoelectronic Structures by Infrared Photoreflectance
C.L. Greenstock	Nuclear Energy Worker (Atomic Radiation Worker) Status. AECL Radiation Protection Manual RPM-5.6, 1998
C.L. Greenstock	Filter/Swipe Retention Following an Incident or Site Emergency. AECL Radiation Protection Operational Guideline OG-608, 1998
H.W. Lee, J.-X. Wang and A.J. Noble	Report on the Radium Assay of the Cavity Water SNO-STR-98-007
H.W. Lee, J. Farine and A.J. Noble	Report on the Radon Assay of the Cavity Water SNO-STR-98-008
H.W. Lee and A.J. Noble	Report on the Radon Assay of the PDG Water SNO-STR-98-018
L. MacArthur and A.J. Noble	Optimization of MgCl ₂ purification techniques for SNO
D.G. Rancourt	Geo-Chemical Analyses of three Sediment Samples from Lake Biwa, Japan. (Research agreement REC-24795).
D.G. Rancourt	Geo-Chemical Analysis of a Sample fromm Pakowki Lake, Alberta, Canada. (contract 783090). For NWRI, Environment Canada
M. K. Sundaresan and I. S. Batkin	Report on the performance of the Computerised system for Blood Grouping Analysis.

Members of the Institute in 1998

J.C. Armitage	High Energy Physics, Instrumentation	(C)
Ian Calder	Experimental Condensed Matter	(O- Adjunct)
Ian Cameron	Medical Physics	(C-Adjunct)
R.K. Carnegie	Experimental High Energy Physics	(C)
Sylvain Charbonneau	Semiconductor Physics	(O-Adjunct)
R.L. Clarke	Medical Physics	(C-Adjunct)
Joanna Cygler	Medical Physics	(C-Adjunct)
Serge Desgreniers	High Pressure Physics	(O)
Marie D'Iorio	Condensed Matter	(O-Adjunct)
Madhu Dixit	Experimental High Energy Physics	(C-Adjunct)
K.W. Edwards	Experimental High Energy Physics	(C)
P.G. Estabrooks	Experimental High Energy Physics	(C-Adjunct)
Simon Fafard	Semiconductor Physics	(O-Adjunct)
Emery Fortin	Semiconductor Physics	(O)
L.H. Gerig	Medical Physics	(C-Adjunct)
Stephen Godfrey	Theoretical Particle Physics	(C)
C.L. Greenstock	Medical Physics	(C-Adjunct)
C.K. Hargrove	Experimental High Energy Physics	(C-Adjunct)
Pawel Hawrylak	Theoretical Condensed Matter	(O-Adjunct)
R.J. Hemingway	Experimental High Energy Physics	(C-Adjunct)
Brian Hird	Ion Physics	(O-Adjunct)
R.J.W. Hodgson	Theoretical Nuclear Physics	(O)
B.J. Jarosz	Medical Physics	(C)
P.C. Johns	Medical Physics	(C)
Béla Joós	Theoretical Condensed Matter	(O)
Pat Kalyniak	Theoretical Particle Physics	(C)
Dean Karlen	Experimental High Energy Physics	(C)

Gilles Lamarche	Low Temperature Physics	(O-Adjunct)
M.A.R. LeBlanc	Superconductivity	(O)
Ivan L'Heureux	Nonequilibrium Processes in Nonlinear Systems	(O)
B.A. Logan	Nuclear Physics	(O)
André Longtin	Nonlinear Dynamics, Biophysics	(O)
M.J. Losty	Experimental High Energy Physics	(C-Adjunct)
Paul Marmet	Atomic and Molecular Physics	(O-Adjunct)
Barry McKee	Medical Physics	(C-Adjunct)
H.J.A.F. Mes	Experimental High Energy Physics	(C-Adjunct)
Cheng Ng	Medical Physics	(C-Adjunct)
Tony Noble	Experimental High Energy Physics	(C-Adjunct)
F.G. Oakham	Experimental High Energy Physics	(C-Adjunct)
Peter Piercy	Condensed Matter Physics	(O)
G.P. Raaphorst	Medical Physics	(C-Adjunct)
D.G. Rancourt	Solid State Magnetism	(O)
D.W.O. Rogers	Medical Physics	(C-Adjunct)
William Romo	Theoretical Nuclear and Particle Physics	(C)
C.K. Ross	Medical Physics	(C-Adjunct)
Alain Roth	Condensed Matter	(O-Adjunct)
Giles Santyr	Medical Physics	(C)
W.D. Sinclair	Solar Neutrino Physics	(C-Adjunct)
G.W. Slater	Polymer Physics	(O)
A.K.S. Song	Theoretical Studies in Solid State	(O)
Z.M. Stadnik	Electronic Structure and Magnetism	(O)
M.K. Sundaresan	Theoretical Particle Physics	(C)
John Tse	Theoretical Material Sciences	(O-Adjunct)
Y.P. Varshni	Theoretical Solid State, Astrophysics	(O)
P.J.S. Watson	Theoretical Particle Physics	(C)

Graduate Students at the Institute in 1998

Student	Registered	Supervisor(s)	Completed
Al-Qadi, Khalid	(O) MSc Jan-97	Stadnik	
Beaulne, Pierre	(C) MSc Sep-95	Hemingway	May-98
Benson, Eric	(O) PhD Sep-95	Fortin	
Boyden, Sheri	(C) MSc Sep-95	Raaphorst	May-98
Brousell, Isabelle	(O) MSc Sep-96	Fortin	May-98
Cai, Aiguo	(O) MSc May-98	Piercy	
Calder, Bruce	(O) MSc Sep-96	Fortin	Jul-98
Chacron, Maurice	(O) MSc Sep-98	Longtin	
Chouinard, Christian	(O) MSc Sep-97	Desgreniers	
Dalnoki-Veress, Ferenc	(C) PhD Sep-95	Hargrove	
Desruisseaux, C	(O) PhD Jan-95	Slater	
Donkers, Michael	(C) PhD Sep-97	Karlen	
Dou, Lixin	(O) PhD Jun-92	Hodgson	Dec 98
Evans, James	(O) MSc Sep-98	Rancourt	
Gauthier, Yvan	(C) MSc Jan-98	Cameron	
Gorjanc, Timothy	(O) MSc Sep-97	D'Iorio	
Grant, Darren	(C) MSc Sep-96	Noble	Sep-98
	(C) PhD Sep-98	Noble	
Guillouzic, Steve	(O) PhD Jan-96	L'Heureux, Longtin	
Hadjifaradji, Saeed	(O) PhD Jan-92	Marchand	
Hay, Genevieve	(C) MSc Jan-97	Kalyniak, Godfrey	May-98
Haysom, Joan	(O) PhD Sep-97	Charbonneau	
Hewitt, Tanya	(C) MSc Sep-96	McKee	
Hinzer, Karin	(O) MSc Sep-96	Charbonneau	Aug-98

	(O) PhD Sep-98	Charbonneau, Fafard	
Hubert, Sylvain	(O) PhD Sep-96	Slater	
Katsev, Serguei	(O) MSc Sep 98	L'Heureux	
Kizilian, Narine	(C) MSc Sep-97	Raaphorst	
Labrie, Josée	(O) MSc Sep-98	Slater	
Lagarec, Ken	(O) PhD Jan-96	Rancourt	
Lam, Jennifer	(O) PhD Sep-97	D'Iorio	
Leblanc, David	(O) PhD Jun-92	LeBlanc	May-98
Leclair, Robert	(C) PhD Sep-94	Johns	
Lenton, Kevin	(C) PhD Sep-92	Greenstock	May-98
Li, Mei	(C) MSc Sep-98	Johns, Dixit	
Li, Ming Yu	(O) MSc Sep-96	Stadnik	
MacPherson, Miller	(C) PhD Sep-93	Ross	Jul-98
McDonald, Mark	(C) MSc Sep-98	Santyr	
Mercier, Jean-Francois	(O) MSc Sep-97	Slater	
Mercier, Patrick	(O) PhD Sep-96	Rancourt	
Myint, Kenji	(C) MSc Sep-98	Raaphorst	
Nadeau, Charles	(O) PhD Sep-94	Marmet	
Niedbala, Malgorzata	(C) MSc Sep-96	Raaphorst	Dec-98
Nixon, Grant	(O) PhD Sep-94	Slater	
Owen, Daron	(C) MSc Sep-97	Ng	
Rezeq, Moh'd	(O) MSc Sep-98	LeBlanc	
Riel, Bruno	(O) PhD Sep-97	Piercy	
Sevigny, Pascale	(C) MSc Sep-97	Santyr	
Sheikh-Bagheri, Daryoush	(C) PhD Sep-93	Rogers	
Smith, Debbie	(C) MSc Sep-97	Raaphorst	

St-Hilaire, Martin	(O) MSc Jan-98	Longtin	
Towers, Sherry	(C) PhD Sep-93	Karlen	
Valdes, Marcelo	(C) MSc Sep-97	Sundaresan	
Waller, David	(C) PhD Sep-97	Karlen	
Wang, Wei	(C) PhD Sep-98	Armitage	
Zhang, Geoffrey	(C) PhD Sep-93	Rogers	Sep-98
Zhou, Jian	(O) PhD Sep-97	Joós	

Research Associates at the Institute in 1998

Name	Period	Supervisor(s) or Group
Steve Breeze		G. Santyr
Mei-Zhen Dang	September 1996 -	D.G. Rancourt
Anne Donat-Bouillud	October 1998 -	M. D'Iorio
Jacques Dubeau	1995 -	M.S. Dixit
Jacques Farine	January 1998 -	SNO
Chun-Rong Fu		K.S. Song
Pauline Gagnon	April 1996 -	OPAL/CRPP
Mikulas Gintner	September 1997 – August 1998	S. Godfrey, P. Kalyniak
Tom Junk	April 1998 –	OPAL/Carleton
Basim Kamal	October 1998 -	S. Godfrey, P. Kalyniak
Tarso Kist	1997 – 1998	G.W. Slater
Dale Koetke	April 1994 – June 1998	OPAL/Carleton
Peter Krieger	February 1994 – October 1998	OPAL/Carleton
Peter Krieger	Novemeber 1998 -	ATLAS
Steve Lang		G. Santyr
Ilan Levin	January 1998 -	SNO
Marc Pépin	1998 -	G.W. Slater
Hongji Ren	1997-1998	G.W. Slater
Ye Tao	September 1998 -	M. D'Iorio
Julia Wallace		G. Santyr
John White	May 1998 -	OPAL/Carleton
Hongyan Zhou	1997 -	G.W. Slater
Zicong Zhou	April 1998 – August 1998	B. Joós