



**iCORE**

ALBERTA INFORMATICS  
CIRCLE OF RESEARCH EXCELLENCE

# newsletter

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## First iCORE Industrial Chair is model for collaboration

iCORE's first award in its new Industrial Chair Establishment program is also a first for joint sponsor Natural Sciences and Engineering Research Council of Canada (NSERC). The two funding organizations will work with *TR Labs* to create this chair.



*Dr Jim Haslett, iCORE Industrial Chair*

"This kind of collaborative program is a model for initiatives that will establish the highest standards of achievement in Canadian research," NSERC President Dr Tom Brzustowski said.

The recipient of this inaugural award is Dr Jim Haslett, currently full professor of electrical and computer engineering at the University of Calgary. He will lead a research program called the Wireless Science and Technology Initiative, which will concentrate on the development of advanced radio frequency integrated circuits for next generation wireless products. Basic research will

be carried out to design leading edge components such as low noise amplifiers, voltage controlled oscillators, frequency synthesizers, filters and mixers, intended for operation in the five to 20 GHz frequency range and beyond. New wireless system architectures will be developed in integrated circuit form, for a variety of applications.

This kind of research has potential industry application in a wide array of devices – anything using cell phone technology.

"The main thrust of the research is to improve on today's low bandwidth, glitch-prone technologies for cellular phones, personal digital assistants, and the like. Eventually worldwide, truly mobile, rather than merely portable computing with full multimedia capability will be achieved by this industry. Short range wireless communication will permeate all aspects of our lives, from grocery shopping to vehicle operation, position and repair," Dr Haslett explains. The research will be carried out in direct collaboration with *TR Labs* and its industrial sponsors, intended to allow a direct transfer of the appropriate technology and trained personnel to industry.

To develop the research team, Dr Haslett has received an iCORE Industrial Chair Establishment (ICE) grant of \$200,000 per year for five years for a total of \$1 million. This represents roughly 29 percent of the total budget of \$3.42 million. Another \$120,000 per year has been awarded in Industrial Research Chair (IRC) funds from NSERC, with a matching cash contribution from *TR Labs*. In-kind contributions from *TR Labs* will add another \$80,000 per year, while the University of Calgary will contribute \$164,000 per year in cash and in kind.

Dr Haslett was head of the department of

electrical and computer engineering at the University of Calgary from 1986 to 1997. His major accomplishments in research, industry collaboration and teaching are all factors that led to this award.

On the research front, Dr Haslett was elected as a Fellow of the Engineering Institute of Canada in 2001, "in recognition of excellence in engineering and for service to the profession and to society," and a Fellow of the IEEE in 2001 "for contributions to high temperature instrumentation and noise in solid-state electronics." His recent research projects have focused on next-generation wireless products.

Over the last 27 years, Dr Haslett has had a productive history of collaborative research and development projects with industry. He was a

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member of several national science teams designing satellite instruments in the 1980s, and carried out contract research for Canadian Aerospace prime contractors relating to solid state camera performance. Other projects carried out in collaboration with Dr F.N. Trofimenkoff and Dr Ron Johnston include award-winning electronic monitoring systems for oil and gas wells, wireless telemetry systems for drill stem testing, electrical

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preheating of tar sands, and the design of monolithic integrated circuits for some of these applications.

During the last 17 years, Dr Haslett has been instrumental in bringing very large-scale integrated circuit design (VLSI) to the University of Calgary, as the University of Calgary member representative to the Canadian Microelectronics Corporation (CMC), and through his board and committee duties for the CMC and the Alberta Microelectronic Center (now Micalyne).

In addition to research and industry work, he has established a stellar reputation as a professor. Fourteen teaching awards signal a rapport with students that has attracted outstanding researchers to his labs.

Other researchers on the project include Dr John McRory, Dr Grant McGibney, Dr Bob Davies, and Stan Zwierzchowski, at *TR Labs*. The initial research group includes Bogden Georgescu, Mike Lynch, Chris Holdenried, Josh Nakaska, James Quan and Cavell Li, all graduate students in electrical and computer engineering. Ken Townsend, Scott Jacobsen and others will join the group in September. Within this group, five students hold NSERC Postgraduate Scholarships, and one has applied for an NSERC Industrial Postgraduate Scholarship. The remaining two students work in industry while pursuing part-time degrees.

Additional graduate students, a postdoctoral fellow, a research assistant, and several visitors are expected to join the team over the next two years.

## What is TR Labs?

*TR Labs* (which originally stood for Telecommunications Research labs) is a research organization with labs in Edmonton, Calgary, Saskatoon, Regina and Winnipeg, creating innovative technologies and training students to enhance information and communications technology (ICT) expertise.

Its 57 member sponsors from industry, government, and universities invest in research activities in five strategic areas dedicated to the building of the "network of the future": data networking, network access, network systems, photonics, and wireless communications.

# International advisors to guide iCORE's course

Scientists and industry experts from around the globe are being assembled as a select group to advise iCORE on future directions. The international ICT Research Advisory Committee is being created to ensure Alberta achieves its goal of creating 24 teams of ICT research excellence within five years. The initial members of the group met for a preliminary meeting on May 22-24 in Banff. Advisors include:

## Dr James Gosling, Chief Scientist, Java, Vice President and Fellow, Sun Microsystems

James Gosling received a BSc in Computer Science from the University of Calgary in 1977 and a PhD in Computer Science from Carnegie-Mellon University in 1983. He is currently a Vice President and Fellow at Sun Microsystems. He has built satellite data acquisition systems, a multiprocessor version of Unix, several compilers, mail systems and window managers, a WYSIWYG text editor, a constraint-based drawing editor and a text editor called "Emacs" for Unix systems. He led the original design and implementation of the Java programming language.



## Dr David Jefferson, Senior Scientist, Hewlett Packard Research Labs



David Jefferson received his BSc in Mathematics from Yale University and his PhD in Computer Science from Carnegie-Mellon University in 1980. He then spent 14 years on the faculties of USC and UCLA, during which time he published research in the fields of program verification, parallel computation, synchronization, simulation, artificial life, and the theory of evolution. He is best known for his work on optimistic methods of parallel discrete event simulation. Recently he left academia and joined Hewlett Packard's Network Systems Laboratory in Palo Alto. There he leads projects directed toward extending the capabilities and applications of the Internet.

## Dr William R. Pulleyblank, Director of Exploratory Server Systems and Director of the Deep Computing Institute of IBM's Research Division

William R. Pulleyblank was a professor at the University of Calgary from 1974 to 1981 and at the University of Waterloo from 1982 to 1990. He then spent two years as a guest professor at the University of Bonn where he held the position of the John von Neumann Professor of Operations Research. He is currently Director of the IBM Exploratory Server Systems Division where he coordinates research activities both within IBM and with industry, academic, and government research partners around the world.



## Dr Richard E. Taylor, Professor, Stanford University, Nobel Laureate



Richard Edward Taylor studied physics at the University of Alberta in Edmonton, receiving a BSc degree in 1950 and MSc in 1952. His PhD was granted by Stanford in 1962. He worked at Stanford as a staff and faculty member and was appointed associate director of research for the Stanford Linear Accelerator Center (SLAC) in 1982. His experiments in electron scattering, and investigations of the internal structure of the proton and neutron, have resulted in several fellowships and prizes, including the Nobel Prize in Physics in 1990.

# Summer 2002 Conferences and Workshops

iCORE is sponsoring several research conferences this summer.

July 23-26 Edmonton, Alberta	Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-02) <a href="http://www.acm.org/sigkdd/kdd2002/">www.acm.org/sigkdd/kdd2002/</a>
July 28-August 1 Edmonton, Alberta	AAAI 2002/IAAI 2002 - The 18th National Conference on Artificial Intelligence and 14th Innovative Applications of AI Conference <a href="http://www.aaai.org/Conferences/National/2002/aaai02.html">www.aaai.org/Conferences/National/2002/aaai02.html</a>
August 3-7 Edmonton, Alberta	ISMB 2002 - 10th International Conference on Intelligent Systems for Molecular Biology <a href="http://www.ismb02.org/">www.ismb02.org/</a>
August 19-20 Calgary, Alberta	The First IEEE International Conference on Cognitive Informatics (ICCI 2002) <a href="http://www.ene1.ucalgary.ca/ICCI2002/">www.ene1.ucalgary.ca/ICCI2002/</a>

## About the Banff International Research Station (BIRS)

The Banff International Research Station for Mathematical Innovation and Discovery (BIRS), located at The Banff Centre, is the long-awaited North American counterpart of two other successful mathematical institutes located in the villages of Oberwolfach, Germany and Luminy, France. Similar to the Oberwolfach and Luminy institutes, BIRS is designed to attract the finest mathematical scientists in the world for workshops. BIRS is a joint venture spearheaded by the Pacific Institute for the Mathematical Sciences (PIMS), the Berkeley-based Mathematical Sciences Research Institute (MSRI) and the Mathematics of Information Technology and Complex Systems Network of Centres of Excellence (MITACS). It draws on several different workshop and collaboration models to support research and acts as a catalyst for academic and industry joint activities.

### Oberwolfach-Luminy Mode

The fundamental mode of BIRS is the five-day workshop (Oberwolfach-Luminy mode) that focuses on one specific area of interest. About 40 expert participants from around the world are invited to attend. The objective is to exchange information about the latest advances in the field and to provide an environment which fosters new collaborations and new ideas. The workshops provide a forum for lively and vigorous discussion of the latest theories and proposals.

### Aspen Mode

BIRS also supports workshops in what is known as Aspen Mode. This brings together focused research groups of 10 to 15 people, living together for stays of two to four weeks. It provides a venue for collaborative work for mathematical researchers.

### Research Team Program

BIRS hosts small teams of up to four researchers for periods of two to four weeks. The Research Team Program provides a location for individuals who are collaborating together to concentrate on their research or to finish major projects.

### Summer Schools

BIRS will run some longer events (10-12 days) in the form of thematic summer schools and graduate camps highlighting subjects from introductory to classical subjects of mathematics or emerging areas of the mathematical sciences and their applications.

The location of BIRS at The Banff Centre is also designed to provide an opportunity for merging mathematics and a variety of arts and cultural influences.

Workshops, schools and research programs begin in the spring of 2003. For more information or to register, visit [www.pims.math.ca/birs](http://www.pims.math.ca/birs)

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## President's Report

For two intense days in May, Alberta university administrators and first-year iCORE Chairs met in Banff with initial members of iCORE's ICT Research Advisory Committee. This committee, chaired by Dr William Pulleyblank, Director of IBM Exploratory Server Systems and the Deep Computing Institute, sought input from the universities and the first year iCORE Chairs and Professors, to explore ways that iCORE might improve its goals and operations.

Dr Pulleyblank, along with Dr David Jefferson, Senior Scientist at Hewlett Packard Research Labs, Dr Richard Taylor, Nobel Laureate in Physics at Stanford, and Dr Eric Manning, Professor of Computer Science at the University of Victoria, intently listened to Alberta researchers and research administrators, and discussed Alberta's challenges. They then discussed and explored possible refinements in iCORE's research priorities, measures of iCORE's performance, and iCORE's recruiting and refereeing processes. Following this summit, the iCORE Board of Directors met in Banff and considered the recommendations of the advisory committee.

The snowy May Banff summit strangely leads into a hot summer of international conferences in Alberta. Several major international conferences are being held here this year, including the American Association for Artificial Intelligence (AAAI) annual conference – which has never before been held outside the United States – and a number of associated conferences. Together, these conferences will bring over 3000 participants to Edmonton over the course of two weeks. Then, in August, an IEEE conference is being held in Calgary. Alberta's uniqueness is starting to show.

*Brian Unger, President and CEO, iCORE*



### May snowstorm greets international advisors on ICT research in Alberta

(Left to right) Richard Taylor, Stanford University; Eric Manning, University of Victoria; David Jefferson, Hewlett Packard; Brian Unger, iCORE staff; Gérard Lachapelle, iCORE Chair; Mark Freeman, iCORE Professor; Norman Beaulieu, iCORE Chair; Dan Bader, Deputy Minister, Alberta Innovation and Science; Ron Johnston, University of Calgary; William Pulleyblank, IBM; Jonathan Schaeffer, iCORE Chair; Graham Jullien, iCORE Chair; Randy Goebel, University of Alberta; Terry Caelli, iCORE staff; Gregory Taylor, University of Alberta.

## Correction

Dr Richard Cleve's prediction that a quantum computer will "likely" be developed in the next five to ten years should have read "unlikely." In fact, it is more likely to be decades away, he explained.