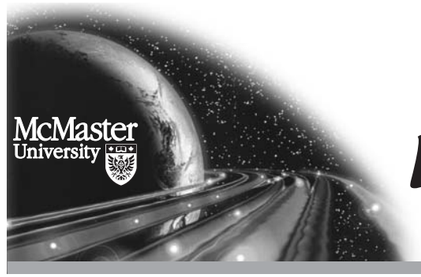


Department of Physics and Astronomy

FALL 2002

Message from the Chair

John Berlinsky

A lot has been happening in Physics & Astronomy at McMaster - so much, in fact, that you might not recognize the place. This is why we have decided to begin publishing a newsletter to inform people about these developments. This first issue focuses on new faculty, staff, and students, large grants, recent awards, and new scientific discoveries.

The biggest news has been about hiring new faculty in the past 3 years - twelve of them! After years of contraction through unfilled retirements, we are finally able to hire, both in anticipation of the long-awaited 'double cohort' of graduating high school students in Ontario and because of a major federal initiative, the Canada Research Chairs (CRC) program, along with other external funding opportunities.

The CRC program will create 2000 high profile research faculty positions in Canadian universities. Our Department decided to use two of these chairs to create a new area, Biophysics, and we did this in partnership with the Biochemistry Department in order to benefit from their expertise. We are extremely fortunate to have recruited **Cecile Fradin**, an experimental biophysicist from the Weizmann Institute, and **Paul Higgs**, a leader in the field of Bioinformatics, from the University of Manchester. One of Cecile's and Paul's first tasks will be creating an undergraduate 'stream' in Biophysics.

The other major initiative, which is having a major impact on universities, is the Canadian Foundation for Innovation, which funds equipment, renovations and new construction. Physics & Astronomy has benefited particularly from CFI's New Opportunities Program, which provides generous start-up funding for new faculty. So far, five of our new faculty, **Kari Dalnoki-Veress, Cecile Fradin, Paul Higgs, Alison Sills,** and **Brian King** have all received major support from this program, ranging from a few hundred thousand up to nearly one million dollars.

Through the initiative of **Hugh Couchman**, another recent arrival from the University of Western Ontario, the Department has become a major node of SHARC-Net, an organization that supports high-performance computing in Ontario. SHARC-Net also provides funding for a SHARC-Net Chair in high performance computing, which allowed us to recruit **Erik Sorensen**, a condensed matter theorist from the University of Toulouse. Together, Hugh and Erik are working to develop a new undergraduate stream in Computational Physics.

This issue features four of our twelve new faculty, **Hugh Couchman** and **Cecile Fradin**, along with **An-Chang Shi**, a theoretical polymer physicist who came from Xerox in Mississauga and **Karen Hughe**s, from the University of Toronto's Erindale College, who is responsible for undergraduate labs and who also teaches first year Physics to Science students.

Also in 2002, **Wendy Malarek** passed the baton as Departmental Administrator to **Mara Esposto**. Wendy moved to a new position as Administrator for the Health and Medical Physics Unit, which has become separate from Physics & Astronomy.

We are sending you this newsletter because you are a graduate of one of our undergraduate or graduate programs or because you have been a post-doctoral fellow or a visitor in Physics & Astronomy at McMaster or perhaps just because we think of you as a friend of the Department. Whatever the reason, we hope that you enjoy reading about the things which have been happening. If you have any news of your own or if there is anything that you would like to read about in the future, please get in touch and let us know. We are particularly interested in learning where our graduates are and what they are doing. Any news of this type will be extremely welcome.

With best wishes,
John Berlinsky
Professor and Chair
chair@physics.mcmaster.ca

In this issue.....

Message from the Associate Chair

Christine Wilson

We have ten new graduate students joining us this year: **Laura Filion**, an NSERC scholarship winner from St. Francis Xavier, working with Catherine Kallin; **Greg MacDougall** from Simon Fraser has won an Ashbaugh Scholarship, working with Graeme Luke; **Junhua Zhang** from Peking working with Catherine Kallin; **Sung Jae Kim** from Soong Sil in Korea, working with Tom Timusk and Graeme Luke; **Daniel Banks** from Bob Jones, working with Cecile Fradin; **Gopi Veeravalli** from India Institute of Technology, working with Hugh Couchman; **Rob Wiersma** from Waterloo, working with Alison Sills; **Adam Raegan** from South Oregon, working with Kari Dalnoki-Veress; **Yang Zhao** from Peking will be working with Bruce Gaulin; and **Jia Jia Zhou** from Peking will be working in the area of condensed matter experiment.

There are currently 39 students in the Physics and Astronomy graduate program, including eight visa students from countries such as China, Egypt, Japan, Slovakia, and the U.S.A. Sixteen of our students hold external scholarships from NSERC, OGS or major internal McMaster scholarships, which gives us by far the highest rate of scholarship winners in the Faculty of Science.

The arrival of so many new faculty in our Department presents both opportunities and challenges for recruiting graduate students. New faculty working in forefront research areas make our graduate program more attractive to prospective students. However, recruiting ENOUGH new graduate students to satisfy the needs of our new faculty is a constant challenge. Our goal is to double the size of our graduate program and recruiting new graduate students is one of the highest priorities of the Department. This year we held a very successful visiting day for prospective graduate students called "Mac in March", and we plan to hold this again on March 21, 2003. We also continue to host individual visits from prospective students for whom "Mac in March" does not fit into their schedule. I encourage you to take a look at our revised web pages, which now include letters from all the faculty addressed to prospective graduate students, which give summaries of current research projects of the students working with each faculty member.

Alumni - Where are they now?

Carl Svensson (PhD 1998) won the 2001 John Charles Polanyi Prize in Physics. After spending two years as a post-doctoral fellow at the Lawrence Berkeley National Laboratory, he joined the faculty of the Physics Department at the University of Guelph in January 2001.

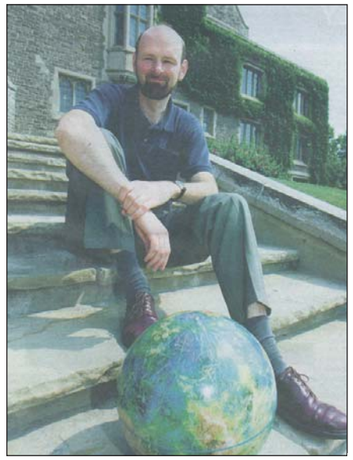
Graduate Profile

Daniel Knapp, an NSERC postgraduate scholar and PhD student in the Department of Physics and Astronomy, is working with Catherine Kallin on the properties of high-temperature superconductors in a magnetic field. In the past year, Daniel has presented his research at a Gordon Research Conference in Maine and at the APS March Meeting in Indiana, garnered a poster prize at the Sharcnet Annual General Meeting, and participated in the Canadian Institute for Advanced Research Twentieth Anniversary Conference in Victoria. For Daniel one of the highlights of doing research at McMaster is that "the people here are very active within the global research community. To be able to do research in such an exciting environment and to have the opportunity to present the results of that research to people from around the world is tremendous."

ANNUAL DEPARTMENT PICNIC

On the evening of July 9th, members of the Department and their friends and families converged on the Dundas Driving park for games, food and chat. Thanks to the entertainment committee (**Mike Lewis, Lorna Ryan, Josie Lee, Graeme Luke and Roby Austin**) and everyone who came, thereby contributing to the success of the day. An extra-special thanks to Josie Lee for bringing home-made pies, cupcakes and squares.

New Faculty Profiles



Hugh Couchman

I grew up in England near Canterbury - the bit which used to be called the Garden of England but which is now mostly concrete on the way from London to the Continent. I guess that I was always interested in Physics and this persisted despite the rolling eyes of my sisters when I cheerfully anticipated double physics at breakfast on Monday mornings. I was incredibly privileged to have been able to attend the schools that I did, Maidstone Grammar School at the high school level in particular, one of the last Grammar schools. Being able to specialise at age 16 on Maths and Physics suited me perfectly (although it likely didn't help much in writing this article) and I benefited from wonderful teachers who all had bachelors or advanced degrees in the subjects they taught. They also let me do pretty much what I wanted which included rebuilding the electronic stage lighting and receiving a few 240V shocks which I'm sure would not have pleased the local education authority's insurers had they known.

I started my undergraduate degree at Cambridge reading Mathematics - largely to avoid doing anything other than Math and Physics - and then switched into Physics in PartIB. It was in my final year that I took a short course from Martin Rees on Cosmology and realised that this was the real physics with the rest being just details. After my degree in 1978, I took PartIII mathematics in the Department of Mathematics and Theoretical Physics (DAMTP - confusingly pronounced DAMPT) and then started a Ph.D. with Martin Rees at the Institute of Astronomy in Cambridge on various aspects of the post-recombination universe (the period during which structure grows from tiny density ripples about one hundred thousand years after the Big Bang to the present rich array of structure ten billion years later). The Institute of Astronomy was a fantastic place to work and learn even if I did, perhaps, do a bit too much rowing (only once acknowledged by Martin during a discussion on the skin friction of racing shells).

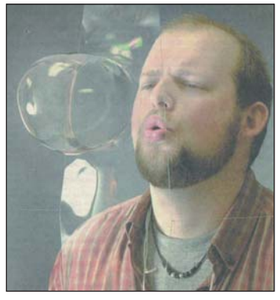
I came to Canada in 1986 on a one year postdoc just to see how things went and quickly realised that it would be hard to go back to all that rain in the UK - and in any case I met my Canadian wife and I like canoeing and the winters here, except that they aren't cold enough. I spent two postdoc years at the Canadian Institute for Theoretical Astrophysics with Dick Bond which was terrific and then moved to the Department of Astronomy, Toronto on a contract Assistant Professor position in 1988. This was followed by a move to Astronomy at Western in 1991 where I learned all about being a faculty member, writing grants, teaching undergraduates of various levels of eagerness, doing research and becoming an administrator before coming to McMaster in 1999.

My primary research interest has remained the formation of cosmic structure. After my PhD it had quickly become apparent that the gravitational and hydrodynamic interactions of matter are complex enough that they require numerical simulation to make significant progress: the physics is simple - Newtonian laws are sufficient in almost all cases except for the evolution of the cosmos as a whole - it is the number of degrees of freedom that leads to complexity. The subject has been referred to as the grandest of the environmental sciences - or, alternatively, mud-wrestling. The last decade has seen dramatic advances in our understanding of cosmic structure largely driven by the incredible wealth of data coming from large ground-based and space telescopes.

Given the heavy dependence of my research on computing, it is perhaps no surprise that a significant amount of my effort has been directed towards establishing adequate computing facilities. (This direction would have been a surprise to my graduate supervisor: he didn't even want to sign the chit for a computer account believing that computing was a great way to waste a lot of time - he's probably right.) After a truly dismal record, high-performance computing in Canada has finally picked up over the last three years with the injection of funds from both federal and provincial agencies. Given the rapid obsolescence of computing equipment, it is clear that this issue will require constant vigilance however.

That brings things pretty much up-to-date. We had a son in 1993 who so far has little interest in Physics but has a vocabulary to put me to shame - we'll see. I have managed to wangle myself into a Department full of smart and energetic people - a Department which really works - and so I look forward to the last few years before retirement.

"MAY @ MAC"



Kari Dalnoki-Veress reprised his popular bubble-making demonstration for this year's "May@Mac" - a university-wide open house and recruitment day held on May 25. The Department of Physics and Astronomy featured demonstrations on subjects from bubbles to holograms, from Bernoulli-effect levitation to high-Tc superconductors. Thanks to the enthusiastic efforts of undergraduate and graduate students, faculty and staff, the day was a great success - and a lot of fun for all involved!

Cecile Fradin

I was born in France into a scientific family. My mother is a math teacher, and she had a huge influence on my life orientation, although my earlier scientific interests came mostly from reading through the large number of journals that my parents subscribed to. I especially enjoyed Jeux et Stratégie (which was full of mathematical puzzles) and Science et Vie (a French equivalent of Scientific American). But my favorite publication (which I keep reading to this day) was uncontestably La Hulotte, a small periodical whose every issue is devoted to the comprehensive description of a small, unassuming animal.

After high school I briefly considered studying painting, but then wisely followed my art teacher's advice to go into science instead. Biology didn't appear to me as an exact science, so I went for a mathematics/physics/chemistry curriculum instead, and attended a classe preparatoire at the lycee Henri IV in Paris, a two year program preparing students to take the competitive exams required to enter any scientific or engineering school in France. At the end of this preparation, I decided to study physics at the Ecole Normal Superieure in Paris, a school training students for scientific research. It is always hard to pinpoint the reasons for such a choice, but it had to do with a very inspiring physics teacher, with reading a couple of Feynman's books, and with the location of the Ecole Normale: right in the middle of Paris.

One thing I knew from the start is that I liked to see what I was doing, so when faced with the choice of chosing labs to complete undergraduate projects, I always considered two aspects: doing experiments involving optics and staying in an interesting place. That's how I ended up going first to Pisa, in Italy, in the group of Pr. Ennio Arrimondo, to work on laser cooling experiments, and second to Bell labs, in the New York area, in the group of Pat Cladis, to study liquid crystal convection. This second time, I had considered a third aspect: I wanted to work with a woman, because it was starting to puzzle me that I knew so few of them who were well established scientists. After observing that it was indeed possible for a woman to be a very successful scientist while being part of a happy family, I became less worried.

Before starting my PhD, I took a one year course in theoretical physics. It was a very instructive and inspiring year, and I greatly enjoyed learning about field theory. But I never after that doubted again that I was meant to be an experimentalist. I took up a PhD project under the supervision of Jean Daillant, a young researcher at the Commissariat a l'Energie Atomique in Saclay. The goal was to study the height fluctuations of a lipid monlayer at the surface of water, using grazing incidence x-ray scattering to measure the amplitude of capillary waves. We started by measuring this amplitude for the bare water interface, and to our surprise found out that, at very short lengthscales, capillary waves were much higher than expected. Almost at the same time, a German theorist, Klaus Mecke, predicted this effect by taking into accout the non-locality of long-range van der Waals forces.

When the time came to decide where to go for a post-doc, I considered changing fields. I enjoyed soft condensed matter a lot, but I couldn't help having the feeling that interesting discoveries were relying on costly technical achievements: our capillary wave experiment, for example, had required no less than the use of a third generation synchrotron. On the contrary, I found that biophysicists were using somewhat simpler techniques to study something tremendously important and exciting: the cell machinery. And it seemed that biology, when studied with a physicist's approach, could be an exact science after all. So I decided to start a biophysics project, consisting in studying the transport of proteins inside cells with fluorescence microscopy, in the group of Michael Elbaum at the Weizmann Institute of Sciences in Israel. Taking up biochemistry as a post-doc was not always an easy task, and there were many frustrations along the way. But, finally, I felt I had found the right subject for me to investigate. And when I started looking for a permanent position, there was no question that I wanted to keep on using fluorescence to study cellular dynamics. So I set out to try and find a place where I could set up such a research program, and that's how I discovered Hamilton, Ontario, and McMaster University, where I now live and work.

Karen Hughes

I was born in Port Arthur, Ontario on the north shore of Lake Superior. It was a nice place to grow up, big enough and small enough, with beautiful clear night skies. I remember fondly evenings spent on the front steps of the house with my dad, looking up at the sky, picking out constellations, talking over algebra and whatever was in the latest issue of Popular Mechanics .

I think that I always meant to study physics, but I didn't know it until I visited the local university, Lakehead, just near the end of grade 13. I distinctly remember sitting in the office of one of the biology faculty when his graduate student came in, all excited about finding some insect living on another insect. Yuk, I thought, and moved on to the chemistry tour, where I had a similar experience. Fortunately (?) the physics faculty were all on holiday that day, and there was no one available. When I returned in the fall, I signed up there.

I finished my undergraduate degree at Lakehead in 1982 and came to McMaster to do my graduate work with Malcolm Collins. Using neutron scattering, I studied magnetic excitations in uranium chalcogenides. All of my experiments were done at the AECL facility in Chalk River, where I spent many enjoyable terms working with the very fine scientists and staff of the Neutron and Solid State Physics group. In addition to the group, there were many visitors, from local universities and from around the globe. It was an exciting place to be (even if they held their seminars at 8:30 AM!).

I graduated in 1988 and took a position as lecturer at Erindale College, University of Toronto. I was given a large first year class and made first-year lab coordinator. When I eventually found the lab (about a year later) I fell in love with it. There were so many interesting things to see and do. If only my students could see it that way! Because we were a small group, I had a fair amount of autonomy over the handling of the course. I experimented with Mazur's Peer Instruction lecture style and with using the lab as a more direct teaching tool.

In 2000, I left Erindale to come to McMaster. I am currently involved in teaching the introductory physics course. Here, the introductory course is delivered in small classes, of 30 or 40 students, resulting in livelier and more interactive sessions. I still dream that one day students will actually *enjoy* coming to physics lab, and have maintained my involvement there. When I arrived, the Department had just purchased a computer interface data collection system for the lab and we have since modified the lab format significantly to take advantage of the teaching/learning potential of the system.

An Chang Shi

I was born in a small village in Jiangxi, China. The first turning point in my life came in 1978. In that year, I passed the National Entrance Exam for universities and was accepted into the Physics Department of Fudan University in Shanghai. I enjoyed the four years of study in Fudan very much, learning physics as well as Mandarin and a bit of English. At Fudan, I was attracted to theoretical physics and decided to continue my study along that direction.

The second turning point of my life occurred in 1982, the year I graduated from Fudan. I was invited to participate in the China-U.S. Physics Examination and Application (CUSPEA) program initiated by Professor T. D. Lee at Columbia. I passed the CUSPEA exams and that enabled me to obtain a Scholarship from the University of Illinois at Urbana-Champaign (UIUC). I joined the graduate program at UIUC in 1983, and carried out research work under the guidance of Michael Wortis. The problems I worked on included a theory of grain boundaries, adsorption effects on equilibrium crystal shapes, and the shape transitions of NaCl crystals.

I learned a lot about condensed matter physics and developed a strong interest in statistical mechanics at UIUC. Another good thing that came to me at UIUC is that I met Xi Shan, a fellow graduate student in chemistry. We married in 1988.

After getting my Ph.D. from UIUC in 1988, I went to McMaster University as a postdoctoral fellow of John Berlinsky. Among other things, I worked mainly on the dynamics of flux pinning at that time. This is the period of time when I got to know the people at McMaster and the living environment in Hamilton.

In 1992, I joined Xerox Research Centre of Canada as a Member of Research Staff, working initially with Jaan Noolandi. At Xerox, my main responsibility was the modeling and simulation of materials problems related to xerographic technology. At the same time I turned my interests to polymer physics and discovered that polymers are wonderful materials. I maintained a fruitful research program in theoretical polymer physics at Xerox.

I joined McMaster University in 1999 as an associate professor. I was attracted to McMaster because of the interactive, interdisciplinary environment they provide in macromolecular science. In particular, the Brockhouse Institute for Materials Research brings together faculty members working on polymers from physics, chemistry and chemical engineering. Added to all this are my previous experiences at McMaster. I felt that I knew the place and people and it was like coming back home to me. In the past three years I have established a research group of three graduate students and one post-doctoral fellow. Our research focuses on the self-assembly of soft materials such as block copolymers. My research activities are supported by a range of agencies, including NSERC, CFI, OIT, Xerox, NIST and Research Corporation, as well as an Ontario's Premier's Research Excellence Award.

Alumni - Where are they now?

Marcel Franz (PDF 1996) won a 2002 A.P. Sloan Foundation Fellowship for his research in high temperature superconductivity. Marcel joined the faculty at the University of British Columbia in 2000.

Pat Cote (PhD1994) has a tenure-track position at Rutgers and just landed (as PI) one of the very few Hubble Space Telescope Large Surveys using the recently-installed Advanced Camera for Surveys.

McMaster University Department of Physics and Astronomy

"Canadian Participation at the Spallation Neutron Source" Funded!

The CFI International Access Fund application "Canadian Participation at the Spallation Neutron Source (SNS)" has been fully funded in the recent competition. This award, for $15 million, will allow for the design and construction of a new, state-of-the-art neutron diffractometer at the SNS.

The SNS is a ~ $3 billion spallation neutron source under construction at Oak Ridge National Laboratory in Tennessee, which, when complete in 2006, will produce the world's most intense source of neutrons for materials science applications. Spallation neutron sources differ from nuclear reactors as sources of neutron beams, in that a spallation source uses energetic protons colliding with heavy metal targets to produce periodic intense pulses of neutrons. If the periodic time structure of the neutron pulses can be taken advantage of, a spallation source offers significant advantages over nuclear reactors in this regard. The SNS will have performance figures-of-merit 10 to 50 times higher than the current world leading neutron source, ISIS at the Rutherford Appleton Lab in the UK.

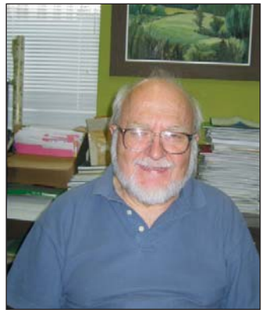
"Canadian Participation at the SNS" is lead by Professor **Bruce Gaulin**, and will provide access to the best facility in the world, allowing Canadian scientists to take part in the design and operation of a second instrument, a high resolution inelastic spectrometer optimized for the study of magnetic and superconducting materials. In addition it will provide enhanced access to all 24 of the instruments planned for the initial wave of construction at SNS.

The SNS itself is directed by Dr. **Thom Mason**, a McMaster alumnus (PhD 1990 with Malcolm Collins). Thom left a faculty position at the University of Toronto 4 years ago to take up the position of Science Director. Two years ago he was promoted to Associate Laboratory Director of Oak Ridge National Laboratory in charge of the SNS.

Alumni - Where are they now?

David Feder (PhD 1997) returned to Canada, after spending 5 years at NIST in Washington, DC, to join the Department of Physics and Astronomy at the University of Calgary as an assistant professor starting July 2002.

APS PRIZE IN OPTICS

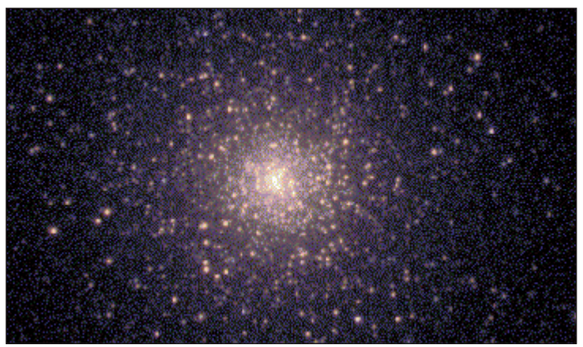


Tom Timusk won the American Physical Society's (APS) 2002 Frank Isakson Prize "for his outstanding contributions to the field of spectroscopy in strongly correlated electron systems leading to elucidation of many-body physics".

This prize was shared with James Allen from the University of Michigan. In 2000, Tom also received both the Medal of Achievement in Physics and the Brockhouse Medal for Condensed Matter and Materials Physics from the Canadian Association of Physics. The Frank Isakson Prize was awarded at the 2002 March Meeting of the APS in Indianapolis.

To celebrate Tom's success, the Department hosted a reception for "Friends of McMaster" at the APS meeting. About 60 physicists attended the reception, including Russell Donnelly (see page 8) and other alumni from our Department's early years.

Research News



From Darkness to Light - Forming the Oldest Stars in the Cosmos
(Globular Cluster M15, image courtesy The Electronic Universe)

Dr. Ralph Pudritz and his former postdoctoral student, Dr. Melinda Weil (now on the faculty at City College of San Francisco), have found that giant cold, gas clouds up to a thousand times more massive than any observed in our Milky Way, formed

within young galaxies when they were only a billion years old. These massive star factories are of special interest because they are the likely site for the formation of the oldest star clusters known in the universe - the globular star clusters.

Their computer simulations, carried out on computers at McMaster and in the U.K., begin with standard models for cosmology. These models posit that fluctuations in the background density of matter in the universe grow with time, eventually becoming massive enough to be the seeds for the formation of galaxies such as our own. The collapse of gas into these overdense and low-mass fore-runners of the present day galaxies and the subsequent formation of cool clouds that are bound by their own gravitational attraction, may produce these massive nurseries for the first stars and star clusters in the universe. The researchers tuned their simulations so that they could study the evolution of these clouds in greater detail than most existing computer simulations.

Their findings are startling: so-called supergiant molecular clouds (SGMCs) form as smaller gas clouds in young galaxies collide and stick. The mass-spectrum of these supergiant clouds is identical to the mass spectrum that we see for the cradles of star formation in our own galaxy, namely the Giant Molecular Clouds (GMCs). The main difference is their size - 1 kiloparsec for SGMCS and only tens of parsecs for GMCs, as well as their mass - only a million times the mass of the sun for GMCs, and up to a billion times the mass of the sun for the SGMCs.

Under the assumptions of standard Lambda-CDM cosmology, Pudritz and Weil find that the first globular cluster forming clouds would have appeared 13.2 billion years ago at a red-shift of 5 - in excellent agreement with what is known about the ages of the oldest globular clusters.

“Our results suggest that the formation of the first star clusters in the universe was not too different in character from the formation of star clusters what we see nearby to us in the Milky Way - such as the famous Trapezium star cluster in the Orion Nebula.” states Ralph Pudritz. The main difference he says, is that “.. the Orion star cluster is a dwarf by comparison - thousands of Orion clusters could neatly fit into a globular star cluster”.

CIAR News

Following reviews in 2001 and 2002, the Cosmology and Gravity and the Superconductivity programmes of the Canadian Institute for Advanced Research (CIAR) have both been renewed for unprecedented fourth, five year terms. The international review panels enthusiastically endorsed the quality of the programmes in recommending renewal. **Hugh Couchman**, a Fellow in the Cosmology and Gravity programme, attended the most recent programme meeting on Quadra Island, BC in June which brought together researchers representing topics from String Theory to the formation of cosmic structure.

The Superconductivity programme has been renamed Quantum Materials to reflect the broadened interests of its members. Our Department plays a large role in this programme, which originated with the vision of John Berlinsky and Jules Carbotte. Seven of our faculty are currently appointed as Associates: **John Berlinsky, Jules Carbotte, Bruce Gaulin, Catherine Kallin, Graeme Luke, John Preston and Tom Timusk.**

Also in June, the CIAR celebrated its 20th anniversary with a meeting in Victoria, BC, which brought the members of all the CIAR programmes together with representatives from academia, industry, government and the media. **Catherine Kallin** lectured at this meeting on the connections between the theory of electrons in materials and the theory of everything.

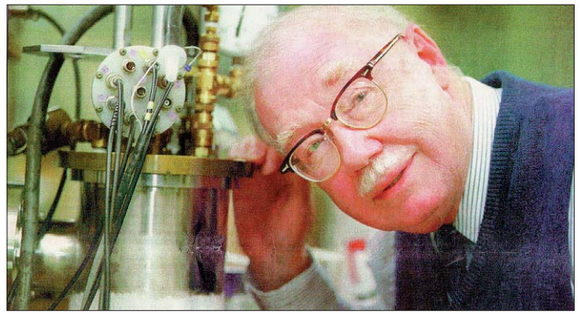
Undergraduates Take Over!

Almost 30 undergraduates from across the country, ranging from first to fourth year (and even one high school student), invaded the halls this summer. These students spent their summer learning what it is like to be a professional physicist or astronomer, and got paid to do it. Many of the students worked on research projects ranging from simulations of stellar collisions to polymer crystallization to designing equipment and atom traps for building a prototype quantum computer. Other students worked on curriculum development for first year courses, including building demonstrations for the first year engineering courses.

During the summer, the new undergraduate space in rooms 102 and 201 was filled with music, conversations about the intricacies of C programming, and laughter. This area, with its adjoining ‘lunch room’, has been set aside for undergraduate researchers during the summer, and for all physics students during the term. Students working on fourth-year projects will have access to computers and other tools they require for their work, and everyone will have a place to study, talk, sleep, or whatever else they require during their busy terms.

McMaster University Department of Physics and Astronomy

Alumnus Scoops Cool Prize



McMaster alumnus **Russell Donnelly** won the 2002 Fritz London Memorial Prize. The London Prize, awarded every three years, is considered the highest award in the field of low temperature physics. The 2002 Prize was presented at the 23rd International Conference on Low Temperature Physics in Hiroshima, Japan.

Russell Donnelly was born in Hamilton in 1930 and received his B.Sc. (1951) and M.Sc. (1952 with Martin Johns) in Physics from McMaster, before moving south to obtain his Ph.D. (1956) from Yale. He has been Professor of Physics at the University of Oregon for the past 36 years. In 1996, Donnelly received US$5 million from the NSF and established the Oregon Cryogenic Helium Turbulence Laboratory to develop a cryostat to explore previously immeasurable aspects of turbulence at low temperatures.

For the London Prize, Donnelly was cited for his recent research in superfluid turbulence and high Rayleigh number convection experiments at low temperatures. Walter Hardy and Allen Goldman are two other recipients of the 2002 London Prize. Walter Hardy, from UBC, is a long-time friend and collaborator of several members of our Department and was cited for his studies of electron pairing mechanisms in the high temperature superconductor YBCO.

Administrators on the Move!

Mara Esposto

I was born and raised in Toronto and moved to Hamilton in 1987 when I got married. My husband, Sam, refused to move to Toronto and after living in Hamilton, I quickly understood why he felt that way. We now live in Ancaster and have two wonderful children, Vanessa, 12, and Michael, 9, who keep us very busy. A month after my move to Hamilton in 1987, I started with McMaster University in the Faculty of Health Sciences. I started in a junior position and my passion for administration led me to other challenges and has now brought me into my new position as the Administrator for Physics and Astronomy. For the last six years I worked in the Department of Family Medicine which I could relate to. I’m fascinated by astronomy, but physics!?!?! Luckily my challenge is not to learn physics but to ensure an efficient operating department which already has wonderful faculty and staff. I’m really excited and looking forward to sharing and learning new experiences with you all!

Wendy Malarek

Wendy reacts at a sly comment at her farewell party.

After 13 years with the Department, Wendy has decided to take on a new challenge as the Administrator of the Medical Physics Unit. Wendy was the glue that held the Department together and she did a fabulous job! Her relationship and dedication with the graduate students and faculty will be greatly missed. The Department wishes Wendy all the best in her new position.

It is with great sadness that we announce the sudden death of Dr. **Brian Clarke** on Tuesday, September 3, 2002, while visiting his family in California. Dr. Clarke joined the Department in 1965 where he remained until he retired to emeritus status in 1996. Dr. Clarke’s research was in rare gas mass spectrometry applied to the fields of geophysics and medicine. He will be greatly missed by his colleagues.

Contact Information:
Department of Physics and Astronomy, McMaster University
1280 Main Street West, Hamilton, Ontario L8S 4M1
Phone: 905-525-9140, ext. 24559
Fax: 905-546-1252
email: physics@mcmaster.ca
http://www.physics.mcmaster.ca/