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# CASSIOPEIA

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No. 86 - Vernal Equinox 1995

ISSN 0715-4747

Publications Mail Registration No: 0565318

<http://bear.ras.ucalgary.ca/CASCA/index.html>



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### ADDRESS CHANGES

Dr. Austin Gulliver  
 CASCA Secretary  
 Dept. of Physics & Astronomy  
 Brandon University  
 Brandon, Manitoba  
 R7A 6A9



**Physics & Phenomena of the Interstellar Medium**

**Annual Meeting of the  
Canadian Astronomical Society**

**26**

**Congrès de la  
Société Canadienne d'Astronomie**

**Physique et phénomènes du milieu interstellaire**

**May 27 - 31 Mai**

**Dominion Radio Astrophysical Observatory  
(NRC)  
Coast Lakeside Resort  
Penticton, B.C.**

**L'observatoire fédéral de radioastrophysique  
(CNRC)  
L'hôtel Coast Lakeside  
Penticton, C.-B.**

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ftp          ftp.drao.nrc.ca (or ftp 192.139.21.39)
username:    anonymous
password:    <<your email address / votre adresse électronique>>
ftp>>       cd pub/casca95
ftp>>       get announcement.ps / get annonce.ps
ftp>>       bye
```

Alternatively/Aussi:- World Wide Web (URL <http://www.drao.nrc.ca>)

**Important Dates**

- May 27, Saturday  
 CASCA Board Meeting  
 Meeting on Canadian Participation in future  
 radiotelescopes
- May 28, Sunday  
 Science Sessions start  
 Education Session  
 Helen Sawyer Hogg Public Lecture - David H. Levy
- May 29, Monday  
 J.S. Plaskett Medal Presentation & Lecture  
 Special Interest Meetings  
 DRAO Visit & Barbecue
- May 30, Tuesday  
 CITA AGM  
 Banquet - Matt Mountain: **Astronomy in the  
 Gemini Era**
- May 31, Wednesday  
 R.M. Petrie Prize Lecture - George Herbig  
 Annual General Meeting  
 Gemini Science Steering Committee

**Dates Importantes**

- 27 Mai, Samedi  
 Réunion du conseil de la CASCA  
 Réunion au sujet de la participation canadienne  
 dans de futurs projets de radiotélescopes
- 28 Mai, Dimanche  
 La séance scientifique  
 Séance sur l'éducation  
 La Conférence Publique Helen Sawyer Hogg -  
 David H. Levy
- 29 Mai, Lundi  
 Présentation de la médaille J.S. Plaskett  
 Réunion des groupes à intérêts particuliers  
 Visite de l'OFR et barbecue
- 30 Mai, Mardi  
 Réunion annuelle de l'ICAT  
 Banquet-Matt Mountain: **Astronomy in the Gemini  
 Era**
- 31 Mai, Mercredi  
 La Présentation R.M. Petrie - George Herbig  
 Assemblée Générale Annuelle  
 Réunion du comité scientifique du projet Gemini

R. S. Roger, Chair - LOC for CASCA-95 (rsr@drao.nrc.ca)

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**CFHT Users' Meeting - The Future of CFHT**

May 15 - 17, 1995, Lyons  
 This will be preceded by a workshop in  
 Paris  
*Georges Paturel/Francois Sibille*

**CASCA 1995 - The Phenomena and Physics of  
the Interstellar Medium**

May 27-31, 1995, Penticton  
*rsr@drao.nrc.ca (Rob Roger)*

**186th Meeting of the AAS**

11 - 16 June 1995, Pittsburgh, Pa  
*rms@vms.cis.pitt.edu (Regina Schulte-  
 Ladbeck)*

**The Origins, Evolution and Destinies of Binaries  
in Clusters**

19 - 23 June 1995, University of  
 Calgary  
*terrel@algol.iras.ucalgary.ca  
 (Dirk Terrell)*



**107th Meeting of the ASP**

22 - 28 June 1995, College Park, MD  
*lbaker@stars.sfsu.edu* (Lonny Baker,  
 Main Meeting)  
*percy@astro.utoronto.ca* (John Percy,  
 Astronomy Education Meeting)

**Radio Emission from the Stars and the Sun**

3 - 7 July 1995, University of  
 Barcelona, Spain  
*radio@mizar.am.ub.es*  
 (Dr. J. M. Paredes)  
 (Editor's note:- No fish will be served!!)

**ADASS-95**

22 - 25 October 1995, NOAO,  
 Tucson, AZ  
*softconf@noao.edu* (Jeannette Barnes)  
<http://iraf.noao.edu/ADASS/adass.html>  
 ftp iraf.noao.edu  
 cd iraf/conf/adass-95

**High Sensitivity Radio Astronomy**

22 - 26 January 1996, University of  
 Manchester  
*hsra@jb.man.ac.uk* (Janet Easton)

## THE FUTURE OF THE CFHT.

Dear CASCA members:

Many thanks to those who have responded in one format or another to the CFHT SAC requests for your opinions/thoughts concerning the future of the CFHT in the 8m telescope era. We still need more input if the "Canadian position" is going to be promoted effectively. So please, if you haven't yet responded and if you have the time after classes end, e-mail your thoughts to:

*cfht-future-ca@cfht.hawaii.edu*

Thanks.

Michael De Robertis, CFHT SAC

## Astronomical Society of the Pacific: Education Symposium

The Astronomical Society of the Pacific, as part of its 1995 annual meeting, is holding a major symposium on astronomy education.

Date: June 24-25, 1995; Place: University of Maryland.

The purposes of the symposium are: (i) to review current research programs, projects and other developments in astronomy education; (ii) to publicize such programs and projects through poster papers; (iii) to discuss how the theoretical and practical results of these programs and projects can be shared; (iv) to plan for the next decade of development in astronomy education; (v) to create a network of astronomy education resources - both people and material; (vi) to bring together the most active participants in astronomy education today; and (vii) to disseminate the results of the symposium through a high-quality conference proceedings.

To register for this meeting, contact the ASP at  
*"asp@stars.sfsu.edu"*

390 Ashton Ave., San Francisco CA, 94112.

For information about the program, or to submit a poster paper, contact

John Percy at *percy@astro.utoronto.ca*

Erindale College, University of Toronto, Mississauga, Ont. L5L 1C6.



**Details of the meeting on *The Origins, Evolution, and Destinies of Binary Stars in Clusters*, with attendant Open Clusters Workshop  
Calgary, Alberta, June 19-23, 1995.**

For those of you who are attending this meeting, please send us an abstract as soon as you can so that we can put it on the World Wide Web page.

Abstracts should be emailed to:- [bic@algot.iras.ucalgary.ca](mailto:bic@algot.iras.ucalgary.ca)  
(This doesn't need to be your final abstract, just something describing what you will be presenting).

The WWW page can be reached, for the latest updates, using your favorite browser with URL  
<http://algot.iras.ucalgary.ca/announce.html>

(If you don't know about the WWW, send email to Dirk at [terrell@algot.iras.ucalgary.ca](mailto:terrell@algot.iras.ucalgary.ca)).

You can also view and print out the registration and housing forms on the WWW page.

### **1. Relevance to Binary Star Studies and Radial Velocity Techniques:**

Binary star studies have contributed fundamental stellar data for close to a century now, and their power remains unabated as modeling methods continue to improve. Eclipsing, double-lined spectroscopic binaries have provided fundamental astronomical data: masses, radii, and luminosities. Given the apparent brightness and colours of the stars, their interstellar extinction and distances can be found. Thus, the powerful techniques of modern binary star analyses permit the distances of star clusters in which they are sometimes found to be determined with precision. However, the components' evolution may proceed differently in clusters, especially in crowded clusters, where dynamical interaction is most likely; the effects on the fundamental properties of stars in such

clusters is a largely unexplored area. One would expect, for example, that important differences would be found if the binary components are themselves merger products, or if the dynamical hardening of binary orbits through collisions should result in greater mass exchange and mass loss than would be the case for non-cluster binaries. It is also important to evaluate the much-touted role of eclipsing and double-lined eclipsing binaries to probe stellar evolution by providing observational tests of evolutionary tracks and isochrones (and thus of age and chemical composition), in this light.

### **2. Relevance to Star Cluster and Stellar Evolution Studies:**

Stellar aggregates are a basic source of knowledge about the age and evolution of the galaxy. The evolution of stars is known to depend

primarily on their masses and secondarily on their chemical composition so that the distributions of stars in a colour-magnitude diagram (CMD) provides graphical evidence of the evolutionary status of stars of different mass. If predicted isochrones on the CMD can be rigorously tested against the known masses of binary star components, age and chemical composition studies of the clusters, in turn, can reveal the evolutionary status of the variable stars. If the binary system is detached, with the stellar radii well within Roche lobes, and there is no reason to question the evolution of a component star as if it were a single star, the evolution of both stars is then revealed and the correct isochrone is identified unambiguously. If the system is semi-detached, or contact, mass exchange and mass loss complicates the evolution, but in ways which current evolution theory can



explore more easily than in the past. Thus the presence of binaries in clusters allows for a bootstrap operation, raising our knowledge of both subject areas.

### 3. Relevance to New Photometric Techniques, Non-Optical and Space Astronomy:

Large scale imagery is now being carried out in optical and infrared wavelengths, and attempts have begun to carry the search to extragalactic ensembles, such as the Magellanic clouds. With the development of new infrared arrays, new infrared surveys are now underway, and these are revealing details about conditions in newly

formed associations and clusters which are still embedded in the gas and dust clouds of their origin. The conference is appropriately timed to consider the results of these surveys. The searches are not confined to ground-based telescopes, either. The Hubble Space Telescope is revealing details about the cores of star clusters, and other galaxies, in the ultraviolet.

### 4. Relevance to Studies of Stellar Dynamics:

It has become clear over the past few years that the role played by binary stars in the dynamical evolution of star clusters is critical (see, for example the major

summary by Hut 104, 981, 1992). Both open and globular star clusters have been the objects of recent studies of the relationship between binary stars and the 'blue stragglers' (stars that are too blue for their luminosities, if normal evolution of single stars had produced them). The merged products of binary star evolution may be possible paths to these and related anomalous objects. In any case, the dynamical evolution of systems influences their environments and vice versa; the results of these enquiries are important for understanding the existence and role of the objects as standard candles. Thus the meeting has ramifications beyond the subject areas.

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## ABSTRACTS and PAPERS:

Send in titles, authorship, and abstracts as soon as possible. All contributed abstracts will be refereed for relevance. Approved oral papers will appear on the final programme after April 1. Abstracts received and approved after the programme is fixed, will be for poster papers. All abstracts initially received may be sent in ascii format.

Send abstracts to: [binsconf@acs.ucalgary.ca](mailto:binsconf@acs.ucalgary.ca)  
with copies to: [terrell@algol.iras.ucalgary.ca](mailto:terrell@algol.iras.ucalgary.ca) and [milone@acs.ucalgary.ca](mailto:milone@acs.ucalgary.ca)

There will be an opportunity to amend abstracts before publication, and all papers will be refereed for improvements after they are received. The papers will appear in the ASP conference series, and should, if possible, be placed in the TeX format appropriate to that series. Further instructions will be provided to authors at a later date.

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Dirk Terrell (Communications Coordinator)

E.F. Milone (Chairman of the LOC)

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## SCIENTIFIC PROGRAMME

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**1995 June 18 (Sunday):** Registration and Informal Reception (1900-22:30)

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### June 19:

The search for duplicity in clusters and associations:

- \* Keynote address: Helmut Abt, KPNO

Current status of observational techniques and surveys

- \* Photometry techniques (J. Kaluzny, Warsaw)
  - \* Radial velocity and spectroscopic techniques (D. Latham, Harvard-CfA; M. Mayor, Geneva)
  - \* High precision fiber-feed spectrographs (M. Mayor, Geneva)
  - \* Techniques to explore pre-MS binaries (R. Mathieu, Wisconsin)
  - \* Photographic, CCD, RV, light distribution surveys (M. Mateo, Michigan; M. Mayor, Geneva)
  - \* IR surveys (R. Mathieu, Wisconsin)
  - \* HST, ROSAT, Hipparchos, surveys (H. Richer, UBC; D. Leahy, Calgary, et al.)
- 

### June 20:

Open Clusters & Associations environments:

- \* Statistical properties of detected binary systems (J.-C. Mermilliod, U. Lausanne)

Detached binaries as probes of cluster evolution (A. Gimenez, LAEFF-INTA)

- \* Non-interacting components (E.F. Milone, Calgary & S.J. Schiller, SDSU)

Globular cluster environments (E.S. Phinney, Caltech)

Binaries in other galaxies (G. Hill, DAO & R. Hilditch, St. Andrews; E.F. Guinan)

Poster reviews

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### June 21:

Direction and timescales of evolution of binary systems in clusters:

- \* Primordial binaries:
    - + The Original Binary Population in Associations and Young Clusters (H. Zinnecker, Wuerzburg)
    - + Formation of binaries in small n clusters (J.E. Pringle/C. Clarke, Cambridge)
    - + Evolution of contact systems (P.P. Eggleton, Cambridge)
  - \* Contact systems as standard candles (S. Rucinski, DDO)
  - \* Common envelope evolution (M. Livio, STScI)
  - \* Late stages of Evolution (Frank Verbunt, Utrecht)
  - \* Cataclysmic variables and novae (M. Livio, STScI)
  - \* X-ray binaries (C. Bailyn, Yale)
  - \* Binary pulsars (E.S. Phinney, Caltech)
  - \* Possible merger products:
    - + Blue Stragglers in Star Clusters (Peter Leonard, Maryland)
    - + Nature and origin of anomalous cepheids and SX Phoenicis stars. (Jim Nemec, Washington)
-



**June 22:**

The role of binaries in intracluster dynamical interactions:

- \* The Role of Binaries in the Dynamical Evolution of Globular Clusters (Piet Hut, Princeton)
- \* N-body Simulations of Tidal Two-body Capture (S.J. Aarseth, Cambridge)
- \* STARLAB, for Gravitational Scattering, and KIRA, a tree-based N-Body Code (S.L.W. McMillan, Drexel)
- \* Non-coeval effects:
  - + Multiple starbursts (I. Iben, Illinois)
  - + Chaos and Dynamical Modeling of Tidal Capture Binaries in Clusters (Rosemary Mardling, Monash University, Australia)
  - + Binary Interactions and Stellar Collisions in Globular Clusters (Frederic A. Rasio, Princeton)

Summary: R. Webbink, Illinois

**June 23:**

Open Clusters Workshop, D. Turner, St. Marys

5th Annual Conference on  
**ASTRONOMICAL DATA ANALYSIS SOFTWARE AND SYSTEMS**  
 October 22-25, 1995  
 Tucson, AZ USA

The National Optical Astronomy Observatories will host the 5th Annual Conference on Astronomical Data Analysis Software and Systems (ADASS V) on October 22-25, 1995. The Conference will be held at the Tucson Convention Center in Tucson, AZ USA.

The sponsors for ADASS V include the Infrared Processing and Analysis Center, the International Gemini 8-m Telescopes Project, the National Aeronautics and Space Administration, the National Optical Astronomy Observatories, the National Radio Astronomy Observatory, the National Research Council of Canada, the National Science Foundation (tentative), the Space

Telescope Science Institute, the Smithsonian Astrophysical Observatory, the University of Arizona Steward Observatory, and the Vatican Observatory. Corporate sponsors include, at this time, Research Systems, Inc.

The Program Organizing Committee for ADASS V has the following members: Rudi Albrecht (ST-ECF/ESO), Roger Brissenden (SAO), Tim Cornwell (NRAO), Dennis Crabtree (DAO/CADC), Bob Hanisch - Chair (ST ScI), Rick Harnden (SAO), Gareth Hunt (NRAO), George Jacoby (NOAO), Barry Madore (IPAC), Dick Shaw (ST ScI), Karen Strom (U. Mass.), and Doug Tody (NOAO). The

Local Organizing Committee is chaired by Jeannette Barnes ([softconf@noao.edu](mailto:softconf@noao.edu)).

The ADASS Conference series provides a forum for scientists and programmers concerned with algorithms, software, and software systems employed in the reduction and analysis of astronomical data. The program will consist of a series of invited talks on special topics, contributed talks, poster papers, and software demonstrations. Several BOFs (Birds-of-a-Feather sessions) are planned - these are special sessions that last 1 1/2 - 2 hours in a format decided by the organizer; some BOFs may run concurrently.



The Special Topics for ADASS V are:

- o real-time and nearly real-time systems and data acquisition,
  - o archives of ground-based data,
  - o astronomy science software applications,
- o software architectures and development methodologies.

At this time we have five confirmed Invited Speakers (others will be announced at a later date):

- o Bob Garwood, NRAO (On-the-Fly Mapping)
- o Dennis Crabtree, DAO/CADC (Archives for Ground-Based Observatories)
- o George Jacoby, NOAO (Software Demands Imposed By H<sub>0</sub> Studies)
  - o Dick Crutcher, U.III. (AIPSVIEW)
- o Brian Glendenning, NRAO (AIPS++ S/W Development Methodologies)

Four BOFs, on the following topics, are currently under consideration. Please contact [hanisch@stsci.edu](mailto:hanisch@stsci.edu) or [softconf@noao.edu](mailto:softconf@noao.edu) if you have suggestions for a BOF topic, or would like to organize a particular BOF yourself.

- o future of astronomical software development projects and methodologies
  - o IRAF User's Group meeting
    - o FITS
    - o IDL

Two tag-along workshops are being considered: an Object Oriented workshop is tentatively set for Sunday, October 22, and an IRAF developers workshop is scheduled for Thursday, October 26.

*Meeting information:*

- o *Registration:* \$125 before midnight August 15  
\$175 after August 15 but before midnight October 12
- o *Abstract/demo deadline:* midnight August 15  
*Abstract fee:* \$40 *Demo fee:* \$400 both due by midnight August 15
- o *Hotel accommodations:* deadline for guaranteed rates - September 21  
*Holiday Inn:* \$65(s), \$69(d) plus 9.5% sales tax + \$1/night city surcharge  
*Park Inn:* \$52, plus 9.5% sales tax + \$1/night city surcharge

The Proceedings of the Conference will be published as part of the Astronomical Society of the Pacific Conference Series, as were those of previous Conferences.

We hope to have some monies available to provide limited travel support and per diem expenses to those scientists, programmers, or students who will need some financial assistance in order to attend the Conference. The deadline for Financial Assistance applications is July 12, 1995. Applications for financial assistance are available by anonymous FTP to [iraf.noao.edu](http://iraf.noao.edu) in the file

[iraf/conf/adass-95/finaid.txt](http://iraf/conf/adass-95/finaid.txt), or by sending a request for these instructions to [softconf@noao.edu](mailto:softconf@noao.edu).

A Preliminary Program will be mailed (by posted mail) to our Conference mailing list in mid-May. This announcement will include a call for papers and instructions for submitting abstracts, detailed registration and lodging information, and other general information about the Conference program. Our Conference Mailing List consists of past Conference attendees and anyone that has asked to be on the list - if you would like to have your name added to this list please send your name,

email address, and postal mailing address to [softconf@noao.edu](mailto:softconf@noao.edu).

Information about the Conference is available over the World Wide Web - see the Conference homepage at URL: <http://iraf.noao.edu/ADASS/adass.html>. Materials are also provided by anonymous FTP to [iraf.noao.edu](http://iraf.noao.edu) in the directory [iraf/conf/adass-95](http://iraf/conf/adass-95). Questions about the Conference and the Conference program can be directed to [softconf@noao.edu](mailto:softconf@noao.edu), or by calling Jeannette Barnes at 520-318-8381. (FAX 520-318-8360)

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**WILLIAM H. WEHLAU  
(1926 - 1995)**

The Department of Astronomy of the University of Western Ontario announces with great sadness the sudden death of Professor Emeritus William H Wehlau on February 24.

Bill was in Cape Town, South Africa, with his wife Amelia, attending the meeting on Astronomical Applications of Stellar Pulsations, when he suffered a stroke. He went into a coma from which he never recovered.

Bill started the Department of Astronomy at Western, and obtained the funding for our 1.2-m telescope at Elginfield. He was Department Head for almost a quarter of a century, until his retirement in 1991. He was a well-liked professor who taught both introductory and advanced classes well.

He was always active in research, both as an observer and as an organizer of collaborative projects. He was a regular visitor at the Canada-France-Hawaii Telescope, and was in fact scheduled to observe in March 1995.

He gave a great deal of his time and energy to service of the larger astronomical community. He was at various times a member of the NRC Associate Committee on Astronomy, and of both the Scientific Advisory Council and Board of Directors of the Canada-France-Hawaii Telescope Corporation. Most recently, he was Chair of the CASCA Awards Committee.

He is survived by his wife Amelia and by his four children, Ruth, Jeanne, Alice, and David, and by two grandchildren.

He will be greatly missed by all of his family and by his many friends.

As an expression of sympathy, donations to the  
William H. Wehlau Scholarship Fund may be  
sent to:-

Department of Astronomy,  
213 Physics and Astronomy Building,  
The University of Western Ontario,  
London,  
Ontario, N6A 3K7.

Tax receipts will be issued.

John Landstreet ([jmlandstr@phobos.astro.uwo.ca](mailto:mlandstr@phobos.astro.uwo.ca))



**WILLIAM L.H. SHUTER  
(1936 - 1995)**

The Department of Physics at the University of British Columbia announces with great sadness the death of Professor William L. H. Shuter in Vancouver on March 19, 1995.

Bill obtained his B.Sc. and M.Sc. degrees from Rhodes University in South Africa, and his Ph.D. degree from the University of Manchester in 1963. He was among the first students to use the large (250 foot diameter) Mark I radio telescope at Jodrell Bank. He came to UBC in 1965 to start a research program in radio astronomy and astrophysics.

His first research programs at UBC were carried out at the Dominion Radio Astrophysical Observatory (DRAO) in Penticton, and thus Bill established a connection between the DRAO and the UBC Physics Department. Some of our students continue to do research there.

He was instrumental in bringing to UBC the 15 foot diameter millimeter wavelength radio telescope which operated for several years on the south campus. This began Canadian involvement in short wavelength (2.6 mm) radio astronomy which continues now at sub-millimeter wavelengths with the Canadian partnership in the James Clerk Maxwell Telescope in Hawaii.

Bill was a source of numerous interesting scientific ideas and most recently was working with a group on a design for liquid mirror telescopes which could be used away from the Zenith.

He gave service to the astronomical community with memberships on the initial Council of the Canadian Astronomical Society, the NRC Associate Committee for Astronomy, the Canadian National Committee for the International Astronomical Union, and as chairman of Canadian Commission V of URSI.

He was a well prepared teacher who found greatest enjoyment in the undergraduate engineering project labs. Several of the newer labs in our Physics department were developed wholly, or in part by him. He worked with Engineering Physics students to develop refracting telescopes for reception of transmissions from satellites, and was a consultant to the BC Provincial Government on Satellite TV systems.

Bill is survived by his wife Beverly, and by two sons, William and Edward. He will be missed by all of his family, and his many friends and colleagues.

Lore Hoffmann  
secretary to Brian G. Turrell, Head, Physics, UBC

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## Killam Fellowship Awarded to Don Vandenberg

It is with great pleasure that we announce the awarding of a Killam Research Fellowship to Don A. Vandenberg.

Don, who is a Professor in the Department of Physics and Astronomy, University of Victoria, is internationally renowned for his work on the structure and evolution of stars. The Killam Fellowship in 1995-96 will be spent in Victoria, and will give Don an opportunity to devote himself to his research, unfettered by teaching and administrative duties. We wish him the best in the coming year.

Chris Pritchett ([pritchett@otter.phys.uvic.ca](mailto:pritchett@otter.phys.uvic.ca))



### Faculty Position in Space Physics

The University of Calgary has an immediate opening for a tenure track assistant professor position in the Department of Physics and Astronomy. The Department is involved in a number of upcoming international space science satellites, and has strong research programs in astrophysics, condensed matter physics, stable isotopes, and space physics. We seek an individual with an excellent research record in the general area of space physics, either theoretical or experimental, to strengthen or complement our existing research areas in auroral and magnetospheric processes, plasma physics, and instrument development. Persons with experience in space instrumentation are particularly encouraged to apply. Candidates for this position must also show the ability to teach a wide range of undergraduate and graduate physics courses. This position is available starting July 1, 1995, with the hope that it is filled as soon as possible.

In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada. The University of Calgary is committed to Employment Equity. Applicants should send a curriculum vitae, a statement of teaching interests and philosophy, a concise outline of research directions and goals, and names, addresses, telephone and email addresses of three referees before July 1, 1995 to:

Dr. John Bland, Head,  
Department of Physics and Astronomy  
The University of Calgary  
2500 University Drive N.W.  
Calgary, Alberta, Canada T2N 1N4

Fax: 403-289-3331  
email: [12582@ucdasvm1.admin.ucalgary.ca](mailto:12582@ucdasvm1.admin.ucalgary.ca)



## Report on the Odin Project

Odin is a submm satellite designed to observe the lines of water and oxygen molecules both in the Earth's atmosphere and in the interstellar medium. The satellite consists of a 1.1m telescope, 4 tunable submm (486-580 GHz) receivers and one mm (119 GHz) receiver, and two spectrometers. There is also a visible-infrared imaging spectrometer to be used for aeronomy only. Odin is a mission led by Sweden, with participation from Canada, France, and Finland. Odin has the capability to observe a large number of molecular species, and is expected to have major impact in our study of interstellar chemistry and physics.

As the result of a proposal initiated by the astronomical community and endorsed by JSSA in 1992, the CSA approved the mission in 1994, after inviting the aeronomy community to participate in mission. Canada will contribute the optical-infrared imaging spectrometer (OSIRIS), altitude control system, cryo-cooler, as well as a share of the common costs such as the launch costs.

A committee consisting of Drs. J. Hesser, D.A. Leahy, and R. Bond was set up to select the 6 Odin scientists (Astronomy) slots allocated to Canada by the International Science Team. Proposals were solicited from the Canadian community, and the following individuals were selected by the committee: L. Avery (H.I.A.), P. Dwedney (H.I.A.), M. Fich (U. of Waterloo), S. Kwok (U. of Calgary), G. Mitchell (St. Mary's U.), and C. Wilson (McMaster U.). Sun Kwok was named by the Canadian Space Agency as PI for Odin astronomy in Canada, and as Canadian astronomy representative in the international science team.

Dr. David Kendall is the CSA project scientist for Odin. Dr. Steve Torchinsky was appointed as Odin project engineer. He has taken up his post in Onsala and will be participating in the development and testing of the submm receivers on Odin. Dr. Kevin Volk and Dr. Tatsuhiko Hasegawa were named astronomy project scientists for software and modelling efforts.

The Canadian Odin Astronomy Working Group met for the first time on Feb 24, in Hamilton on the McMaster University campus. All six members (Avery, Dwedney, Fich, Kwok, Mitchell, and Wilson) attended the meeting. David Kendall and Victor Wehrle from the CSA also attended as observers. Kwok reported on the status of the mission, and Kwok and Mitchell reported on the work in progress in Canada. A summary of the Canadian contribution to Odin was given by Wehrle, and a presentation of the new space science initiatives of the CSA was given by Kendall.

Dr. Shuji Deguchi of Nobeyama Observatory is visiting the University of Calgary for one month. He has done extensive radiation transfer calculations for the water molecule, and he will be able to give us valuable assistance in estimating expected line strengths observed by Odin.

Sun Kwok attended the 16th meeting of the international science team in Stockholm on March 20-21. A document on program procedure, operations, and data handling was discussed in detail. For astronomy, a number of topical teams will be set up, which will be responsible for developing detailed proposals. Each team will present a prioritized target list and total requested observing time, taking into account pointing direction and instrument selection for maximum efficiency. A preliminary astronomy schedule is expected to be in place in the fall of 1995.

Lead scientists for four topical teams were chosen at the meeting. They are:

Solar system: Lecacheux (France)

Stars: Kwok (Canada)

Extragalactic: Booth (Sweden)

Spectral scans: Hjalmarsen (Sweden)

Due to the much higher level of interest in the ISM topical teams, it was suggested that a one-day science workshop be held on June 10 (Saturday) in Helsinki to discuss possible ISM proposals. Canadian astronomers



interested in the Odin mission are invited to contact members of the working group. A preliminary observing schedule is expected to be drawn up in the next 12 months.

For more up-to-date news about Odin, please refer to our WWW homepage at <http://iras2.iras.ualgary.ca/~kwok/odin.html>.

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PUBLISHING, PREPRINTS,  
AND ELECTRONIC JOURNALS.

Last year I attended two interesting conferences and thought I would share some of the highlights with you. Although the topics of the two were quite different, they dovetailed rather nicely. They were similar in that both had a good mix of types of participants - publishers, editors, computer types, astronomers, as well as librarians. NRC's "Accuracy and accountability in scholarly information - a symposium", held at McGill University, Montreal, August 12-13 1994. Workshop on electronic preprint distribution (held in conjunction with the Fourth Astronomical Data Analysis Software and Systems [ADASS] conference), Baltimore, September 29 1994.

One point that came out strong and clear at both meetings is that preprints are not a universally prevalent phenomenon. Physicists and astronomers use them to the extent of creating formal databases and organized distribution systems, but other sciences do not. They are even less well known in the humanities and social sciences. In some fields, e.g. medicine, where results must be well proven/reviewed before used and where an economic interest is involved, preprint distribution is explicitly forbidden. At the preprint meeting, there was an informal consensus that once electronic journals are well established, preprint distribution will fade in importance. Unfortunately, that day seems to be several years away.

Much discussion at both meetings centered around the added value that journals give to articles. The selection and reviewing process is familiar to you. In astronomy the latter is most important, but in other disciplines where the acceptance rate is not so high, selection plays a more important role. This is critical to the issue of preprints because the review and editing process often results in an article radically different from the one submitted. Copy-editing is very important, of course, especially for non-native English speakers/writers. Marketing and distribution are also valuable functions carried out by publishers. Ask anyone who has published his/her own book about that one! Electronic journals add even more by their provision of non-linear browsing (i.e. hypertext), instant and complete access to annotations and errata, speed of communication, and flexibility of presentation. Current drawbacks of electronic journals are their lack of certainty/stability, lack of a pricing model, ease of copyright violations, lack of peer review in some cases, lack of readers' access to hardware and networking (especially in developing countries but also in some small, underfunded, first world institutions), issues of archiving and integrity of the original article/data. In addition, the acceptance by deans, directors, and even authors, of electronic media is far from complete. Expectations of cost savings by going electronic are too high- "first copy" costs are higher relative to distribution costs, than many people think. This is especially true for serials with a large circulation. (Astronomy journals do have a smaller market base and therefore higher savings are possible.) Unfortunately, some of those first copy functions, such as copy-editing, will be sacrificed in order to realize significant cost savings. Others, such as marketing, will remain because just being on the 'net, doesn't give a journal a wide readership.

Ethics of publishing was a primary focus at one of the conferences. It was pointed out that ethical standards vary among disciplines and cultures. For example, although the interdict against publishing the same article in more than one journal is generally accepted, attitudes about special cases such as different languages etc. vary. Some of the main problems are fragmentation of research in order to generate more publications, multiplication of reporting results (i.e. various versions of essentially the same paper) for the same purpose, duplicate publication. Integrity of authorship is an increasing problem and some



criteria for claiming authorship were outlined. I notice that one example of such a problem recently made it into *Statistical Lore...* in the *Globe and Mail's Report on Business*. There is cited the case of a 10 page study published in the *New England Journal of Medicine* that had 976 co-authors! In the 1950's the average number of authors per article was 1.8. By the 1980's that number had grown to 3. Apparently it is not uncommon for an article to list hundreds of authors. Other, more dramatic but less common, problems that editors have relate to ownership of data, data falsification, conflict of interest of authors, and theft of ideas prior to publication. Note that some of these ethical questions directly affect serials pricing.

Citation of articles was another topic of discussion- there are many drawbacks to relying on citations as a measure of quality of research. Bad papers are cited often- as an example of how not to do it! Leading edge research of high quality is often not readily accepted and citations may not appear until long after publication. Citation rates vary among disciplines. As much as 50% of research is never cited, and of that which is, much is not read by the citers. The implication, as with some of the ethical problems, is that too much is being published. Among other things, this contributes to soaring serials prices.

Technical problems associated with electronic publishing appear to be quickly diminishing. There was resignation to the fact that authors, for several reasons, will continue to use a variety of word processing packages to submit articles. Therefore the goal seemed to be to be able to convert all of these to SGML (standard generalized markup language). SGML is a metalanguage that labels parts of an article, such as title or abstract, and allows manipulation of those

parts according to the publishers' needs. AASTEX was panned/praised. HTML (hypertext markup language) was mentioned as NOT being a suitable standard for typesetting. Search and retrieval expectations and standards were also discussed as being critical to acceptance and widespread use of electronic media.

Both at the preprint meeting and in a lively email discussion beforehand, there was debate about what a preprint is (a submitted article, an accepted one?), what publication is, how much control should be exercised over preprint distribution by the publisher, by the authors' institutions and by the database, who should maintain the databases, and how long preprints should remain accessible. There was general agreement that preprints should not live very long, reinforcing the concept that the journal article is the "real" version. A proposal emerged that each institution should be responsible for the mounting of their own preprints using whatever criteria they chose, that there should be a central site pointing to all these databases, and that authors from small institutions without their own databases should nevertheless have an opportunity to make their preprints available, perhaps via some central agency.

Finally, there was an optimistic notion that electronic publishers (not preprint databases) can recapture the function of communicating science and that their role as selectors and validators will continue to be critical in the age of information overload.

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Marlene Cummins, Librarian,  
Astronomy Department,  
University of Toronto

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No Thesis Abstracts This Issue.

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## CANADIAN ASTRONOMY PUBLICATIONS

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#### A. PREPRINTS OF RESEARCH PAPERS

The following is a list of preprints written by Canadian astronomers and received at the Astronomy library within the dates given above. The preprints are arranged in alphabetical order according to the surname of the first listed author. Originating institution and date of receipt at the library are given.

- Annual report of the James Clerk Maxwell Telescope Group National Research Council of Canada.* JCMT/HIA. 21-Dec-1994
- Baraffe, I., Allard, F., et al *New evolutionary tracks for very-low-mass stars.* UBC. 2-Mar-1995
- Beauchamp, A., et al *New He I line profiles for synthetic spectra of DB white dwarfs.* Obs. Mont Megantic. 1-Feb-1995
- Beauchamp, A., et al *Spectroscopic studies of DB white dwarfs: confirmation and modeling of new forbidden components of He I.* Obs. Mont Megantic. 1-Feb-1995
- Bergeron, P., et al *Optical and ultraviolet analyses of ZZ Ceti stars and study of the atmospheric convective efficiency in DA white dwarfs.* Obs. Mont Megantic. 9-Mar-1995
- Brewer, J.P., Richer, H.B., Crabtree, D.R. *Late-type stars in M31: I. Photometric study of AGB stars and metallicity gradients.* UBC. 16-Mar-1995
- Burke, I.E., Tapping, K.F. *Imaging the sun at 21 cm budgeting the S-component.* DRAO 2-Feb-1995
- Chaboyer, B., et al *Rotation, diffusion, and overshoot in the sun : effects on the oscillation frequencies and the neutrino flux.* CITA. 5-Jan-1995
- Chaboyer, B. *Absolute ages of globular clusters and the age of the universe.* CITA. 5-Jan-1995
- Chayer, P., Fontaine, G., Wesemael, F. *Radiative levitation in hot white dwarfs: equilibrium theory.* Obs. Mont Megantic. 9-Mar-1995
- Couture, J., et al *Stellar populations in M31: resolved V,I photometry of five halo globular clusters and surrounding fields.* Obs. Mont Megantic 1-Feb-1995
- Davidge, T.J., Grindler, M. *Stellar population gradients in bright cluster galaxies at z=0.2.* DAO. 2-Mar-1995
- Davidge, T.J., Harris, W.E. *Deep IR imaging of globular clusters. III. M13.* DAO. 2-Mar-1995
- Dyer, C.C., Kronberg, P.P., et al *Gravitational lensing with polarization to determine galaxy masses.* DDO/U of T. 8-Feb-1995
- Evans, N.R., et al *The temperature of the supergiant alpha Per.* York U. 16-Mar-1995
- Garrison, R.G. *William Wilson Morgan: 1906-1994.* DDO/U of T. 13-Feb-1995
- Hutchings, J.B., Morris, S.C. *Imaging of low redshift QSOs with WFPC2.* DAO. 2-Mar-1995
- Hutchings, J.B. *Galaxy companions to QSOs at z=2.3.* DAO. 12-Jan-1995
- IAU commissions 27 and 42, Rucinski, S., Garrison, R.F., Duffee, B. *U filter photometry of AB Doradus.* DDO/U of T. 23-Feb-1995
- Kamper, K.K. *Polaris today.* DDO/U of T. 6-Jan-1995



- Knapen, J.H., et al *The striking near-infrared morphology of the inner region in M100.* Obs. Mont Megantic. 9-Mar-1995
- Kronberg, P.P. *Extragalactic magnetic fields and some connections with cosmic rays.* DDO/U of T. 8-Feb-1995
- Papadopoulos, P.P., et al *The nature of radio emission in QSO 1821+643, a radio quiet quasar with radio loud properties.* DDO/U of T. 5-Jan-1995
- Pogosyan, D., Starobinsky, A. *Mixed cold-hot dark matter model with several massive neutrino types.* CITA. 16-Feb-1995
- Pritchett, C., van den Bergh, S. *Faint surface photometry of the halo of M31.* DAO. 12-Jan-1995
- Redman, R.O., et al *Radio flux density estimates of asteroids near opposition from 1996 to 2005.* JCMT/HIA. 21-Dec-1994
- Reid, A.H.N., Bolton, C.T., et al *Two modes of pulsation in the O 9.5 dwarf, HD 93521.* U College London/DDO/U of T. 26-Jan-1995
- Rucinski, S. *Radio survey of W UMa-type systems.* DDO/U of T. 23-Feb-1995
- Rucinski, S. *Absolute-magnitude calibration for W UMa-type systems. II. Influence of metallicity.* DDO/U of T. 6-Mar-1995
- Rucinski, S.M. *W UMa-type systems in the central Baade window discovered in the OGLE experiment.* DDO/U of T. 6-Mar-1995
- Rucinski, S.M., et al *Spectroscopic EUVE observations of the active star AB Doradus.* ISTS York U. 6-Mar-1995
- Smith, G.H., Woodsworth, A.W., Hesser, J.E. *A search for CO(2-1) emission from the globular cluster M15.* DAO. 2-Mar-1995
- Sridhar, S. *Alfven waves and interstellar turbulence.* CITA. 5-Jan-1995
- Tremaine, S. *An eccentric disk model for the nucleus of M31.* CITA. 16-Feb-1995
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- Vader, J.P., Chaboyer, B. *A supergiant supernova-blown bubble in the spiral galaxy NGC 1620.* CITA. 5-Jan-1995
- van den Bergh, S. *On the discrepancy between the cepheid and RR lyrae distance scales.* DAO. 2-Mar-1995
- van den Bergh, S. *The age and size of the universe.* DAO. 12-Jan-1995
- Villeneuve, B., et al *Studies of hot B subdwarfs. X. The distribution and space density of hot, hydrogen-rich subdwarfs determined from the Palomar-Green survey.* Obs. Mont Megantic. 1-Feb-1995
- Woodsworth, A.W. *Evolution of H alpha emission profiles in S-type Mira stars.* DAO. 12-Jan-1995
- Yee, H.K.C., Ellingson, E. *Statistics of close galaxy pairs from a faint-galaxy redshift survey.* DDO/U of T. 2-Jan-1995

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