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Survey**

An ALMA Update

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At the end of 2003 I would like to wish you all a blessed Christmas, enjoyable holiday with family and friends and the very best in the coming year! Special thanks to all of you who so faithfully send in contributions for E-Cass and a "challenge" to others to consider submitting.

Brian Martin (brian.martin@kingsu.ca)

SNLS - the CFHTLS Supernova Survey

Ray Carlberg (U. Toronto)
Chris Pritchett (U. Victoria, CFHTLS SN Coordinator)

<http://legacy.astro.utoronto.ca/>

1. Overview of SNLS

SNLS (the CFHT Legacy Survey Supernova program) is a large observational program to study supernovae out to redshifts of 0.8 and beyond. It is a major constituent of the CFHTLS Deep Survey, which has been allocated 202 nights of CFHT observing time over the next 5 years with the MegaCam 1 deg x 1 deg CCD mosaic.



The primary goal of the SNLS program is to detect and followup 1000 Type Ia supernovae out to $z=0.8$. From these data the equation-of-state parameter w of the Universe will be derived to an accuracy of ± 0.1 , with constraints on the nature of the "dark energy" that causes the acceleration of the expansion of the Universe. Many other science goals (e.g. cosmology from Type II SNe, the cosmic star formation rate from SNeII, GRB's, variable AGN's, ...) will be pursued with the same data.

The survey produces approximately 5 epochs per 18 day dark run, with $u^*g'r'i'z'$ at almost every epoch. Primary SN detection is in i' (limiting $AB \sim 25$); approximately 20-40 new supernovae can be detected in each dark run. Spectroscopic followup time has been allocated on 8-10m class telescopes to provide redshifts and SN types. The combination of the large commitment of CFHT observing time, areal coverage (4 deg^2), sampling rate, multicolour photometry (to determine interstellar absorption), and allocated spectroscopic followup time is unprecedented.

More information on the survey and the science goals can be found at the links below:

- [SNLS Ca](#) - Canadian SNLS web site
- [Gemini](#) - Gemini spectroscopy proposal (good overview of science case)
- [SNLS Fr](#) - French SNLS web site
- [Deep Survey](#) - CFHTLS Deep Survey (coordinator Genevieve Soucaill)
- [MegaCam](#) - CFHT's MegaCam/MegaPrime environment
- [CFHTLS](#) - CFHTLS web site
- [CFHTLS users](#) - CFHTLS user registration
- [CFHTLS email](#) - CFHTLS email exploders
- [CFHTLS v2.3](#) - CFHTLS Project description v2.3
- [CFHTLS SNe](#) - Appendix on Supernovae - CFHTLS project description v2.3

2. The SNLS Collaboration and Team Canada

The SNLS collaboration between Canada and France is now formalized by an MOU which describes the operation and goals of the SNLS. The collaboration is managed and overseen by a Collaboration Board, the chair of which is Reynald Pain (2 year term). Although the SNLS collaboration is led by the Canadian and French communities, smaller UK, US, and Portugese groups also are a part of it, since they are contributing Keck, Gemini, and VLT time for spectroscopy.

Many Canadian scientists are participating in SNLS, and especially in the spectroscopic followup on Gemini. The *Canadian* SNLS core survey team consists of:

<i>U. Toronto</i>	Ray Carlberg	Professor
	Andy Howell	PDF
	Tom Merrall	PDF
	Kathy Perrett	PDF
	Mark Sullivan	PDF
<i>U. Victoria</i>	Chris Pritchett	Professor, CFHTLS SN Coordinator
	David Balam	RA
	PDF - hiring in progress

Some of the PDF's are or will be involved with LS Wide Survey as well. The Canadian SNLS team is supported by an NSERC CRO grant, and by individual Discovery Grants to RC and CP.

3. CFHT Data

CFHT MegaCam is routinely producing images once every ~4 nights on the Deep fields (u*g'r'i'z', roughly 2h 30m total each epoch). The four 1 deg x 1 deg fields being observed (0226-0430, 1000+0212, 1418+5231, and 2216-1744) are described at [this link](#). Both French and Canadian teams have real-time access to the data (after it reaches Waimea), and each team scans the data for new SN (and other variable) candidates using independent pipelines. (The French team has people in Hawaii to do this; the Canadians rely on a typical bandwidth of ~1 MB/s from Victoria to Hawaii to run remote X sessions on dedicated Waimea computers.) Information on the 2 independent lists of SN candidates can be found at

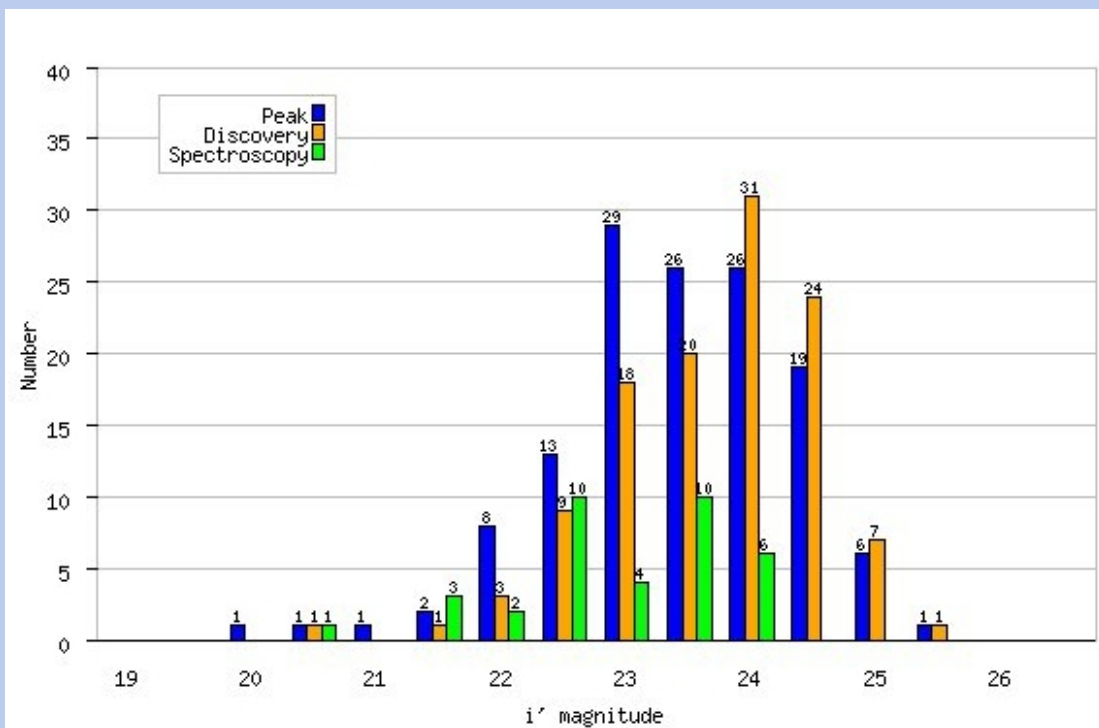
<http://legacy.astro.utoronto.ca> (Canada)

<http://makiki.cfht.hawaii.edu:872/sne/> (France)

Generally the two lists of candidates agree quite well down to $i'=24$, and a preliminary analysis shows that our detections are reliable to at least $i'=24.5$ (because more than 80% of all variables discovered at $i'=24.5$ turn out to be real). We may consider merging the Canadian and French detection pipelines in the future.

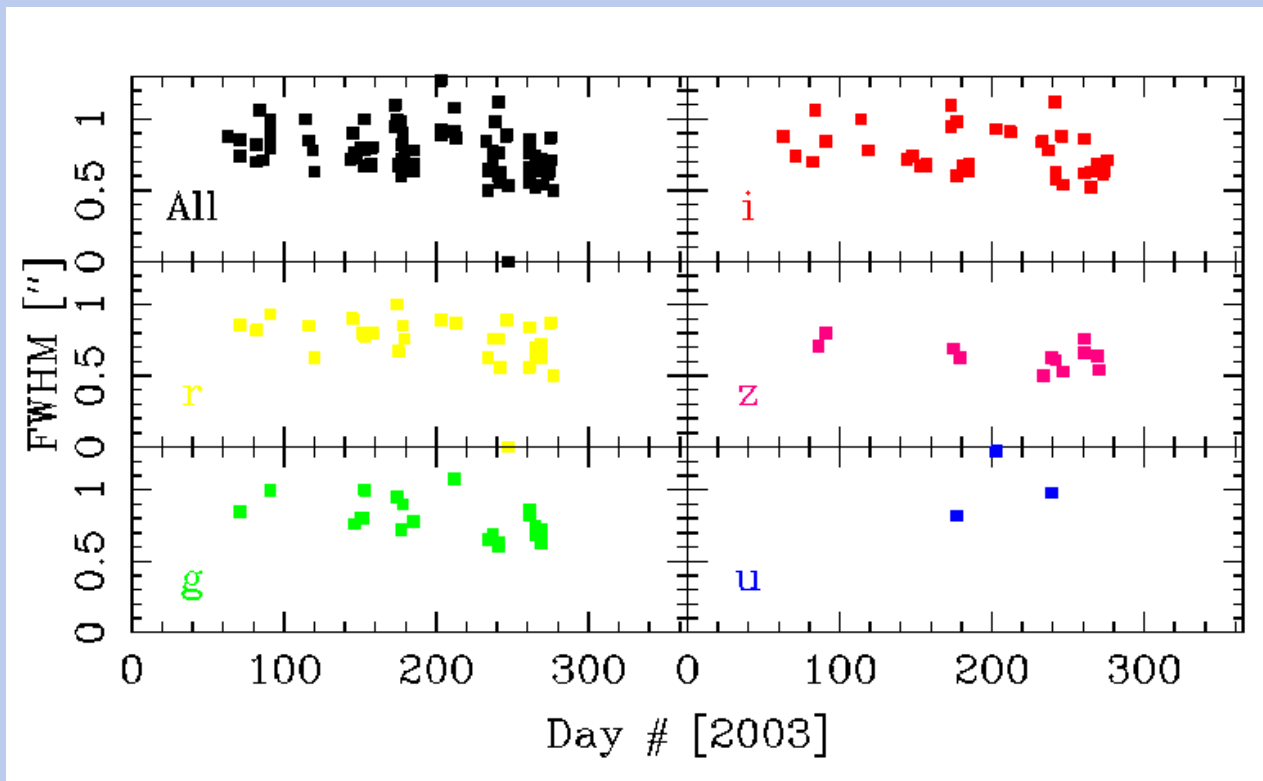
The following table and figure show the discovery statistics of supernova up to the end of October 2003.

Queue	Total SN/SN? (spec)	SNIa/SNIa? (spec)	SNII/SNII? (spec)
03AQ02	7 (4)	1 (1)	3 (2)
03AQ03	12 (5)	5 (5)	
03AQ04	16 (3)	3 (3)	
03AQ05	30 (10)	5 (5)	
03AQ06	11 (2)	1 (1)	
03BQ02	18 (7)	4 (4)	2 (2)
03BQ03	33 (13)	9 (9)	1 (1)
03BQ04	21 (6)	2 (2)	
All Runs	148 (50)	30 (30)	6 (5)



It's important to note that the 03A data was at a time when a great deal of engineering was taking place; this was not formally part of the Legacy Survey, and only a small fraction of the expected data rate was achieved. Since the start of semester of 03B (August 2003B), the LS Deep survey (on which SNLS is based) has obtained about 60 hr of validated exposures - about 2/3 of the expected allocation.

An important issue for the LS, and MegaCam users in general, is image quality. The MegaPrime corrector produces a centre-to-edge variation in IQ that is greater than expected; much of the engineering in 03A was used in attempting (unsuccessfully) to solve this problem. However, there is a definite trend towards better image quality now, and this is seen in all filters except u^* (for which there is only fragmentary data that the SN team has analyzed).



There is an immensely informative [web site](#) giving details on the properties of the PSF on each chip in each image.

A detailed breakdown of observing time for the Deep survey by filter, field, and queue run, along with summary statistics for all LS surveys, can be found at

www.astro.uvic.ca/~pritchet/SN/CassiopeiaDec2003/summary.ps

(with an [alternate, prettier, link](#) for those with access to the password protected site).

4. Spectroscopic Followup

The SNLS has been allocated spectroscopic followup time at the VLT, Gemini N and S, Keck, and Magellan. Initially we have tended to followup moderately bright ($i'_{AB} < 23.5$) candidates, but we are gradually trying fainter candidates. Gemini "nod-and-shuffle" is proving to be a real boon for the faintest objects, though Gemini overheads are still the highest of any telescope (around 30 min typically).

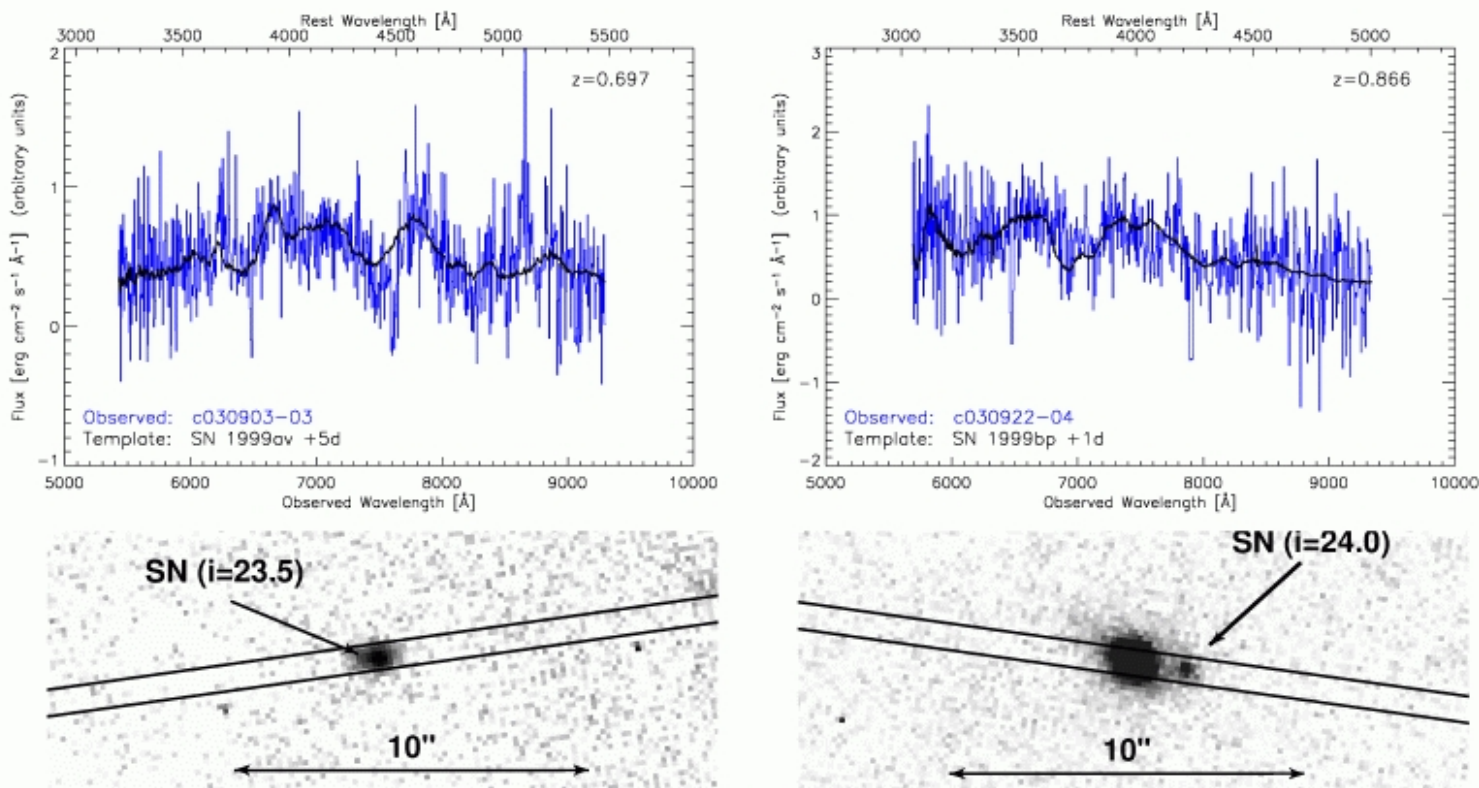


Figure 1: Preliminary spectra from our 2003B September GMOS-N time overplotted with best-fitting local SNe templates. LEFT: A SN Ia at $z = 0.697$ ($i' \simeq 23.5$), RIGHT: A SN Ia at $z = 0.866$ ($i' \simeq 24.0$). Exposure times were 3600s and 4800s, and seeing was $\simeq 0.5''$, allowing the SNe to be clearly resolved. The right hand panel demonstrates the power of nod-and-shuffle observations when observing faint events (note the improved sky subtraction when compared to the left-hand spectrum).

There is enough spectroscopic time to follow up most good SNe Ia out to $z=0.9$, and a handful of SNe II and fainter, more distant Ia's.

5. Science

With only 4 months of LS Deep data in hand, 2/3 of the expected data flow, and NONE of the final Elixir-processed data available (on which we depend for photometry), it is obviously still early days for getting science out of the SNLS data!

Nevertheless, there is much work underway. A meeting of members of the SNLS team was held in Lisbon in early July to discuss progress to date, and to set up the transition from engineering presurvey time to the real SNLS survey. Members of the SNLS team also met in Toronto Nov 17-18, both to discuss technical aspects of the observing and data reduction, and especially plan for the first science papers. The goal is to have SN Ia rate and equation of state analysis for the first data set (2003B, with some 2003A objects added). (The total number of SNLS SNela observed by Feb 2004 should already exceed the numbers of SNe ever observed by other teams!) In addition, a collaboration led by R. Ellis (CalTech) is following up some of the brighter objects with Keck, and plans to have a first science paper ready in early 2004 on the UV spectra and metallicities of high z SNela.

6. Summary

The discovery of the acceleration of the expansion of the Universe in 1998 was perhaps one of the most remarkable discoveries in cosmology over the past few decades. The large commitment of resources (both observing time and funding) to SNLS represents an outstanding opportunity for Canadian and French scientists to solve many of the mysteries surrounding the "dark energy" that drives this acceleration.

There are many ways in which the SNLS/Deep data can be used for science goals other than those described here. If you are interested in participating in SNLS, or wish further information, please contact the authors at the email addresses below. You may register as a CFHTLS user at [the user registration page](#). Information on email exploders may be found [here](#).

Chris Pritchett pritchet@uvic.ca

Ray Carlberg carlberg@astro.utoronto.ca

Events at NRC's HIA (2003 Oct.-Dec.)

edited by:

[Jacques P. Vallée](#)

In November, HIA finished putting together a massive project book to highlight Canadian strengths and design studies, an interim phase early in the not-yet-approved Very Large Optical Telescope's Thirty Meter Telescope [VLOT TMT] project. This "VLOT project book" has already been in use by the Expert Panel of the Canada Foundation for Innovation. HIA also hosted a TMT Wind Workshop (wind effects on telescope structure) in Victoria. The TMT is an equal partnership between AURA, CalTech, U.California, and Canada's ACURA. NRC HIA and [ACURA](#) have established a working relationship to allow the project to be carried out jointly.

This fall, NRC and HIA issued one Press Release, on the [official naming of the new DRAO building after Arthur Covington](#), coinciding with the DRAO annual open house. This was the 8th PR by HIA and NRC during 2003. In addition, there were also several "media advisories" related to international PR involving HIA staff.

Built by HIA's CADC, the prototype of the Gemini Science Archive [GSA] was presented to the Gemini Board and subsequently made public and available to the community in November. The GSA prototype, and the forthcoming full GSA, is a team effort led by **Séverin Gaudet**.

In October, **Lewis Knee** became Group Leader for the Millimeter Astronomy Group, to replace **Lorne Avery** who remains in an acting capacity for a transition period. This appointment recognises Lewis' strong background in millimeter wave astronomy.

In October, **David Schade** was appointed as a member of the IAU Commission 5's [Working Group on Astronomical Data](#). In that respect, Dave will convey canadian concerns on archiving of observed data, processing data, and making the archived data available for later use.

Henry E. Matthews (HIA Penticton) accepted the position of Chair of the [Canadian Time Allocation Group](#) for the JCMT, for a year starting in December. In that capacity, Henry will represent Canada on the International Time Allocation Group for the JCMT. He replaced **René Plume** (U. Calgary), Chair since Sept. 2003.

In October, **Laurent Jolissaint** became an employee of HIA in Victoria, working in the Adaptive Optics Group lead by **Jean-Pierre Véran**, after spending 2 years at HIA as a Guest Worker. In addition, **Paul Feldman** took an early retirement in November.

Du neuf à l'IHA du CNRC (oct.-déc. 2003)

édité par:

En novembre, l'IHA a fini d'assembler un grand livre de projet pour démontrer les forces canadiennes et des études de concept, une phase intérimaire et préliminaire pour le projet (pas encore approuvé) d'un Télescope de Trente Mètres [TMT], un Très Grand Télescope Optique (VLOT). Ce "livre du projet VLOT" vient d'être utilisé par un Panel d'Experts de la Fondation Canadienne pour l'Innovation. L'IHA a aussi été l'hôte d'un Atelier de travail sur l'effet du vent sur la structure d'un tel télescope TMT. Le TMT est un partenariat égal entre AURA, CalTech, U.California, et [ACURA](#) du Canada. L'IHA du CNRC et ACURA ont mis sur pied une relation de travail pour permettre de travailler conjointement à ce projet.

Cet automne, le CNRC et l'IHA ont émis un communiqué de presse, sur [le baptême officiel d'un nouvel édifice à Penticton d'après Arthur Covington](#), qui coïncidait avec la porte ouverte annuelle de l'OFRA au public. C'était le 8e communiqué du CNRC avec l'IHA en 2003. De plus, il y a eu aussi plusieurs "alertes médiatiques" reliées à des Communiqués internationaux impliquant du personnel de l'IHA.

Construit par le CCDA de l'IHA, le prototype d'archivage scientifique Gemini [GSA] fut présenté au Bureau de direction de Gemini et par après fut mis à la disposition du public et de la communauté en novembre. Le prototype GSA, et le GSA complet qui s'en vient, sont le résultat d'un effort d'une équipe dirigée par **Séverin Gaudet**.

En octobre, **Lewis Knee** devint Chef de Groupe pour le Groupe d'astronomie millimétrique, en remplacement de **Lorne Avery** qui restera comme chef intérimaire pour une période de transition. Cette nomination souligne la grande implication de Lewis en astronomie millimétrique.

En octobre, **David Schade** fut nommé membre du [Groupe de travail sur les données astronomiques](#) de la Commission 5 de l'UAI. À ce titre, Dave va représenter les intérêts canadiens touchant l'archivage des données d'observations, leur suivi, et leur disponibilité pour usage futur.

Henry E. Matthews (IHA Penticton) est devenu Président du [Groupe d'Allocation de Temps Canadien](#) pour le TJCM, pour l'année commençant en décembre. En conséquence, Henry représentera le Canada sur le Groupe International d'Allocation de Temps au TJCM. Il remplace **René Plume** (U. Calgary), qui présidait depuis sept. 2003.

En octobre, **Laurent Jolissaint** devint employé de l'IHA à Victoria, dans le Groupe d'Optique Adaptative dirigé par **Jean-Pierre Véran**, après deux années comme travailleur en visite. De plus, **Paul Feldman** a pris une retraite prématurée en novembre.

CTAC report for Gemini & CFHT for semester 2004a

Rapport du CATC de Gémini & TCFH pour le semestre 2004a

CTAC Voting Members

Current members of CFHT/Gemini CTAC are:

George Mitchell (St.Mary's Univ., Halifax), Chair /Président

Roberto Abraham (Univ. Toronto)

Stéphanie Côté (CNRC-IHA Victoria)

John Lester (Univ. Toronto)

David Patton (Trent Univ., Peterborough)

Chris Pritchett (Univ. Victoria)

Peter Stetson (NRC-HIA, Victoria)

Nicole St-Louis (Univ. de Montréal)

Membres votants du CATC

Les membres du CATC pour les télescopes Gémini & TCFH sont:

The CTAC Technical Secretary is Dr. **Jacques P. Vallée** (NRC-HIA, Victoria), supervising the computer processing and the corporate memory.

Le Secrétaire Technique du CATC est le Dr. **Jacques P. Vallée** (IHA, Victoria), supervisant le processus informatique et la mémoire corporative.

Proposal Statistics

CFHT: For semester 2004a, 24 Canadian proposals were received, requesting 60 nights. In addition, the Cdn commitment for the Legacy Survey was 23 dark nights. The allocated time for Canada was 23 dark nights for the Legacy Survey, and 37.5 nights for the proposals (13 dark and 24.5 bright nights). The Canadian over-subscription factor (the ratio of requested time to available time) was 1.6 for CTAC proposals alone, and 1.4 overall (including the Legacy Survey).

Statistiques des demandes de temps

TCFH: Pour le semestre 2004a, 24 demandes de temps canadiennes ont été reçues. Un total de 60 nuits furent demandées. De plus, l'imposition canadienne pour le Relevé du Legs fut de 23 nuits noires. Le temps alloué pour le Canada fut de 23 nuits noires pour le Relevé du Legs, et de 37.5 nuits brillantes pour les demandes de temps (dont 13 noires et 24.5 brillantes). Le facteur de pression canadien (temps demandé/temps disponible) fut de 1.6 pour les demandes de temps seulement, et de 1.4 au total (incluant le Relevé du Legs).

Gemini: For Gemini North, CTAC received 24 proposals requesting 344 hours, and for Gemini South CTAC received 14 proposals requesting 177 hours. Given Canada's share of 184 hours on GN and 150 hours on GS, the Canadian over-subscription was 1.9 for GN and 1.2 for GS.

Peer Review: Two external referee reports were requested by email for each CFHT and Gemini proposal, with both national and international reviews sought and received. Only 1 reminder was sent to late referees. The referee's email response rate was very good with 78% for CFHT, and 84% for Gemini.

The CTAC Meeting for Gemini & CFHT

The CTAC meeting was held on 7 & 8 Nov. 2003 simultaneously by videoconf at HIA Victoria and at the University of Toronto. As always, CTAC ranked proposals according to their scientific merit and technical feasibility.

CFHT & Gemini TAC summaries and copies of referee reports (names withheld) are sent from HIA in Victoria by email to the PIs of the proposals.

1. The Gemini Board has instituted a new policy of "rolling over" unfinished band 1 proposals. Each partner time allocation committee is asked to identify proposals which will be rolled over. The selected proposals, if unfinished, will remain in the queue for up to two additional semesters. CTAC was asked to flag proposals which it deemed appropriate for rollover. In view of the fact that programs which are continued into subsequent semesters will reduce the time available for new programs, CTAC decided to be cautious in implementing this new policy. CTAC flagged only two programs for rollover. It is worth noting that

Gémini: Pour le télescopes Gémini Nord, le CATC a reçu 24 demandes pour 344 heures, et pour Gémini Sud le CATC a reçu 14 demandes pour 177 heures. Comme la part du Canada est de 184 heures sur GN et de 150 heures sur GS, ceci donne un facteur de pression de 1.9 sur GN et de 1.2 sur GS.

Arbitrage: Pour chaque demande TCFH ou Gémini, on a fait participer par courriel deux arbitres externes, choisis parmi les communautés nationale et internationale. Un seul rappel a été envoyé aux arbitres en retard. Le taux de réponse des arbitres a été très bon: 78% pour le TCFH, et 84% pour Gémini.

La réunion du CATC pour Gémini & TCFH

La réunion du CATC a eu lieu les 7 et 8 nov. 2003 simultanément par vidéoconf à l'IHA à Victoria et à l'Université de Toronto. Comme d'habitude, le CATC a classé les demandes selon le mérite scientifique et leur faisabilité technique.

L'IHA envoie aux chercheurs principaux par courriel depuis Victoria les rapports des arbitres (anonymes) et le sommaire du CATC.

1. Le Conseil de direction de Gémini a mis en place une nouvelle politique de "transfer automatique" de demandes non complétées mais hautement gradées. Chaque CAT national va identifier ces demandes. Celles sélectionnées et non finies restent dans la queue pour au plus 2 semestres additionnels. Le CATC a décidé d'être prudent dans cette nouvelle politique, car ces demandes vont réduire le temps disponible pour de nouvelles demandes dans le futur. Cette fois-ci, seulement 2 demandes ont été choisies pour ce statut. Différents partenaires ont pris différentes approches. Par exemple, le US CAT a sélectionné toutes ses demandes hautement

the partner TACs are taking different approaches. For example, at the ITAC meeting, the U.S. TAC recommended all its band 1 proposals for rollover.

2. CTAC took note of a continuing problem with proposal figures for Gemini. Figures are submitted as attachments and the final Gemini proposal is assembled in Victoria. With the present submission system, PIT, it is not possible for the proposer to view the assembled proposal before submitting it. As a result, there have been quite a number of cases in which the figures are truncated or partially illegible. CTAC recommends to HIA that PIT be modified so that a final version of a proposal can be previewed by the PI before it is submitted. For next semester, as an interim solution, CTAC recommends a change in the submission process, adding a step in which each assembled Gemini proposal is e-mailed to the PI to be checked, before the proposal is sent to CTAC and referees.

The International TACs

The CFHT International TAC met at the SAC meeting held in Hawaii, on 2003 Nov. 14/16, in order to finalize time assignments and scheduling. CTAC was represented at this meeting by its Chair. The final observing schedule can be seen on the CFHT web page.

The Gemini International TAC met by videoconference on 2003 Dec.1, and CTAC was again represented by its Chair. Joint proposals and potential duplicate sources were discussed. For the first time, a policy of rollover for selected band 1 projects was implemented (see above). Some concern was expressed about the long term effect of rollover. It was stated by P. Puxley that the individual TACs had the power to remove a continuing program from the queue.

gradées (Bande 1) pour ce statut.

2. Le CATC note le problème continuuel avec les figures des demandes pour Gémini. Les figures sont soumises comme attaches et la demande finale Gémini est assemblée à Victoria. Avec le système actuel de soumission, PIT, il n'est pas possible au demandeur de voir la demande toute assemblée avant de la soumettre. Comme résultat, il y a un nombre de cas avec des figures tronquées ou partiellement lisibles. CTAC recommande à l'IHA que PIT soit modifié pour qu'une version finale assemblée puisse être vue par le chercheur avant d'être soumise. Pour le prochain semestre, comme solution intérimaire, le CATC recommande un changement au processus de soumission pour ajouter une étape où une demande Gémini assemblée est envoyée par courriel au demandeur pour être vérifiée, avant que la demande soit envoyée au CATC et aux arbitres.

Les CAT Internationaux

Le CAT International pour le TCFH s'est réuni pendant la rencontre du Comité Scientifique à Hawaii, les 14/16 Nov. 2003, pour finaliser les allocations de temps et l'horaire. Le CATC était représenté par son Président. L'horaire officiel peut être consulté sur la toile du TCFH.

Le CAT international pour Gémini s'est réuni par vidéoconférence le 1 déc. 2003, et le CATC était aussi représenté par son Président. On a discuté les demandes conjointes et les cas de duplication de sources. Pour la première fois, une politique de "transfer automatique" de demandes sélectionnées hautement gradées fut mise en place (voir ci-haut). Des bémols furent exprimés à propos de l'effet à long terme d'un transfer automatique. P. Puxley a affirmé que les CAT nationaux avaient le pouvoir d'enlever de la queue une demande ayant déjà reçu ce statut.



George Mitchell
Chair, Canadian Time Allocation Committee
(CTAC) for Gemini and CFHT
Président, Comité d'Allocation de Temps
Canadien (CATC) pour Gémini et le TCFH.

George Mitchell is Professor at St.Mary's University in Halifax, NS. He is also Chair of the Dept. of Astronomy & Physics and of the Burke-Gaffney Observatory. Much of his research involves the interstellar medium and star formation.

George Mitchell est professeur à l'Université St.Mary's de Halifax. Il est aussi directeur du département d'astronomie & physique, ainsi que de l'Observatoire Burke-Gaffney à Halifax. Sa recherche touche surtout le milieu interstellaire et la formation des étoiles.

JCMT CTAG Semester Report 2004a

Rapport Semestriel du GATC du TJCM 2004a

Submission and refereeing

Thirty proposals were submitted to the Canadian Time Allocation Group (CTAG) for James Clerk Maxwell Telescope (JCMT) time in semester 2004a, via e-mail to **JCMTweb@nrc.gc.ca** at HIA in Victoria. Two referees were requested for each proposal. As usual, there was a high percentage (84 %) of responses from referees (only 1 reminder was issued).

CTAG Statistics

The amount of Canadian time requested (968h for regular proposals, 8h for previous student payback, 48h for previous longterm status) greatly exceeded the 520h available, resulting in a Canadian oversubscription of 2.0 .

CTAG meeting

The voting members of CTAG are:

Beaulieu, Sylvie (Univ. Laval, Ste Foy)
Johnstone, Doug (NRC HIA, Victoria)
Matthews, Henry (NRC HIA, Penticton)
Plume, René (Univ. Calgary), Chair/Président
Welch, Gary (St.Mary's Univ., Halifax)

Soumission et arbitrage

Le Groupe d'Allocation de Temps Canadien (GATC) a reçu 30 demandes de temps au Télescope James Clerk Maxwell (TJCM) pour le semestre 2004a, par courriel à **JCMTweb@nrc.gc.ca** à l'IHA de Victoria. Pour chaque demande, deux arbitres furent sollicités. Comme d'habitude, environ 84 % des arbitres ont répondu (1 rappel seulement).

Statistiques du GATC

Le temps canadien demandé (968h pour les demandes normales, 8h pour repaiement étudiant, 48h pour anciennes demandes à long terme) a surpassé les 520h disponibles, donnant un taux de sursouscription de 2.0 .

Réunion du GATC

Les membres votants du GATC sont:

The CTAG is ably assisted by Dr. **Jacques Vallée** for the technical secretarial duties, computer processing, and the corporate memory.

The CTAG met in Calgary to discuss proposals to use the JCMT on Nov. 14/16. Taking into account comments from referees, technical assessors, and the CTAG's own assessments, the proposals were ranked in order of overall merit and a provisional allocation of time was made.

The JCMT Director, **Gary Davis**, was present at this meeting.

CTAG issues

1. CTAG agreed to implement a "roll-over" status by which selected, highly-ranked proposals may be put in the queue for up to 3 semesters (or until completed, whichever comes first).
2. Users can still apply for a small observing time via Canserv for urgent or pilot projects, or to finish a project. Please see [Canserv](#) for details about Canserv applications.

International TAC

Several ITAC members were joined by telecon on Nov. 26. The ITAC includes representatives from Canada (CTAG Chair), the UK, and the Netherlands. It also assesses all purely international proposals.

The allocations for successful proposals will be posted on the [JCMT Web pages in Hawaii](#). If a proposal does not appear in this list, then it was not awarded time in that semester. In all

Le GATC reçoit l'aide compétente du Dr. **Jacques Vallée** pour le secrétariat technique, l'analyse computationnelle et la mémoire corporative.

Le GATC s'est réuni les 14/16 Nov. à Calgary pour évaluer les demandes de temps canadiennes. Le GATC a ordonné les demandes de temps selon le mérite scientifique, tenant compte des commentaires des arbitres, des évaluateurs techniques, et de l'évaluation du GATC, et une distribution provisoire du temps a été faite.

Le Directeur du TJCM, **Gary Davis**, est venu pour cette rencontre.

Points d'intérêt du GATC

1. Le GATC a décidé de créer un système de "transfer automatique" pour que des demandes hautement gradées et sélectionnées soient mises dans la queue pour jusqu'à 3 semestres (ou jusqu'à complétées, au plus court).
2. Les gens peuvent encore demander un peu de temps d'observation via Canserv pour des projets urgents ou pilotes, ou pour finir un projet. Veuillez voir [Canserv](#) pour les détails de demandes Canserv.

CAT International

Des membres du CATI se sont rejoint via télécon le 26 Nov. Le CIAT est composé de représentants du Canada (Président du GATC), du RU, et des Pays-Bas. De plus, le CIAT évalue les demandes 100% internationales.

On pourra voir sur la [toile du TJCM à Hawaii](#) la liste des demandes de temps fructueuses. Si une demande n'y est pas, alors elle n'a pas eu de temps à ce semestre. Des informations plus détaillées sont

cases, further information is sent to the PI's in the form of feedback from the CTAG.

envoyées par le GATC aux chercheurs principaux.

Dr. René Plume
Chair, Canadian Time
Allocation Group
(CTAG) for JCMT

Dr. Plume is a professor
at University of Calgary,
where his research
concentrates on the
physics of the ISM.



Dr. René Plume
Président, Groupe
d'Allocation de Temps
Canadien (GATC)
pour le TJCM

Dr. Plume est professeur à
l'Université de Calgary.
Ses recherches portent sur
la physique du milieu
interstellaire.

ALMA Update

1 Recent news

ALMA held an official ground-breaking ceremony in early November in conjunction with the Board meeting in Chile. The project also finally has an official logo! Chile is now officially part of the ALMA project and the agreement for the land in Chile was signed in late November.

There has been a lot of work done over the last few months testing the first prototype ALMA antenna on the VLA site. The second prototype antenna is also now on the site and is undergoing finishing touches by the contractors. The Request for Proposals to build the 64 ALMA antennas is expected to go out later this month. This is a very important milestone for the ALMA project, as the antennas are the single most expensive item in the ALMA budget.

The ALMA Board and the Joint ALMA Office are continuing their search to fill the positions of Project Scientist, Project Manager, and Project Engineer. Within Europe, Tom Wilson has been appointed as the new European Project Scientist and Robert Laing as the Instrument Project Scientist. The U.S. Congress recently approved the next NSF budget, including funding for the next fiscal year for ALMA. This budget still needs to be signed by the President.

There are various outreach/community activities planned on the North American side of ALMA over the next six months. There will be an ALMA Town Hall meeting held on Thursday, January 8th, 2004 at the AAS meeting. Plans are also underway for a two-day ALMA Science Workshop, which is tentatively scheduled for May 24-25, 2004 at the University of Maryland. This workshop will be an excellent way for people who are interested in using ALMA to find out about ALMA and ALMA science and I encourage you to consider attending if you can. Finally, there will be an invited talk on ALMA by Suzanne Aalto-Bergman from the Onsala Space Observatory at the CASCA meeting in Winnipeg June 12-16, 2004.

In Canada, Lorne Avery has retired as head of the Millimetre Astronomy Group at HIA. I'd like to take this opportunity to thank Lorne for all his hard work on ALMA over the last several years. Lorne played a very important role in facilitating Canada's participation in ALMA from the technical and managerial side and we will miss his wisdom and expertise. Lewis Knee will be moving from DRAO to be the new head of the Millimetre Astronomy Group at HIA and I look forward to working with Lewis on ALMA in the future.

2 ALMA Science Advisory Committee

The ALMA Science Advisory Committee (ASAC) met September 5-6, 2003 at McMaster University. After the meeting, Lee Mundy from the University of Maryland became the new chair of the ASAC.

A major focus of the meeting was the discussion of the first draft of the Design Reference Science Plan. The goal of this plan is to collect a suite of "typical" proposals for things that ALMA might do in its first three years of full operation. The information from these pseudo-proposals will be used as a guide in operations planning and software development, as well as providing an exciting snapshot of the potential science that ALMA will do. After the ASAC meeting the "proposals" were reviewed and revised and the full Plan has now been approved for public distribution by the board. I encourage you to take a look at the ALMA Design Reference Science Plan at

<http://www.strw.leidenuniv.nl/~joergens/alma/index.shtml>

The other major focus of the meeting was the discussion of the calibration plans for ALMA. The ASAC recommended that the goal for amplitude calibration for ALMA remain at 1% below 300 GHz and 3% above 300 GHz, but noted that the most important aspect of this goal was the repeatability of the amplitude calibration. Since the calibration plan for ALMA is still in progress, the ASAC will likely consider calibration issues at its next meeting as well.

One area of concern was the stability of the receiver gains, which affect the ability of ALMA to make high-fidelity, wide-field continuum images and also have an impact on accurate polarization observations. Simulations suggest that a stability of 1 part in 10^4 is required for accurate imaging. Although tests presented to the ASAC on a prototype ALMA system initially suggested the stability could be 10 times worse than this specification, new tests with a redesigned testing setup gave much better results.

The ASAC also heard a report from ALMA Computing on developments that are relevant to user software. Brian Glendenning outlined the new organization of the aips++ group at NRAO and their new focus on delivering software that is critical for ALMA. The plan is to demonstrate important aips++ functionality in the ALMA data reduction pipeline by the second software Critical Design Review in May 2003. The plans for detailed user testing of ALMA software were also described as well as progress in benchmarking aips++ in comparison to other interferometric packages.

The September 2003 ASAC report is available via Al Wootten's web site at

http://www.cv.nrao.edu/~awootten/mmaimcal/asac_report_open_2003_sep.pdf

3 ALMA Developments in Canada

3.1 Software

With the CFI funding for ALMA now in place, we are in the process of hiring into two software positions at the University of Calgary. The people hired to these two positions will complement the one position filled at NRC by Raymond Rusk to execute the Canadian contribution to the development of ALMA software.

Raymond Rusk continued his work on the ALMA prototype pipeline system. He has also been playing an important role in benchmarking the speed of aips++ against comparable interferometry packages. Chris Wilson attend the recent meeting of the ALMA Science Software Requirements Committee in Socorro, New Mexico. A major focus of the meeting was the status of the various software subsystems and the plans to begin user tests of some of the key components. She will participate as a tester in the first user test of the Offline Data Reduction Package (based on aips++), which will start mid-January. She also helped use the Design Reference Science Plan to estimate the data rates that ALMA will produce.

3.2 IRMA

The IRMA project has now received permission from the SMA telescope in Hawaii to test three IRMA devices there early in 2004. This will enable the project to perform extensive testing and attempt to provide the SMA with phase correction information. The first prototype had its initial cooldown in the first week of December and final assembly and testing is progressing well. The attached picture shows the complete IRMA optics plate with cooler, vacuum vessel (containing the detector and filter assembly) and the primary mirror. More details can be obtained in December's monthly report at

<http://research.uleth.ca/irma>

Chris Wilson wilson@physics.mcmaster.ca

Canadian ALMA Project Scientist

(with contributions from Robin Phillips)

File translated from T_EX by [I_TH](#), version 3.40.

On 19 Dec 2003, 00:14.

Future Gemini Instrumentation

The “Aspen process” for determining the next generation of instrumentation for the Gemini telescopes continues to move ahead. A very successful meeting of approximately 100 participants from the Gemini partnership was held in June 2004 in Aspen (see Harvey Richer’s article in the September Equinox edition). Following Aspen, order of magnitude costs were developed for a short list of eight instrument capabilities, and a strong science case document (“Scientific Horizons at the Gemini Observatory: Exploring A Universe of Matter, Energy and Life”) was prepared. This information was discussed by the Gemini Science Committee (GSC) at their October meeting in La Serena, Chile.

The GSC developed a prioritized list of scientific capabilities that was forwarded to the Gemini Board for consideration at their November meeting in Hilo, Hawaii. Unlike the previous generation of Gemini instruments, there is no fixed instrumentation budget in place. The Gemini partnership will need to generate the funds for these new instruments. The Board feels that the more exciting the science the more money they can raise. The Gemini Board approved a proposal at the meeting to take the first steps in developing a new set of “Aspen instruments”. Overall their recommendation is consistent with the GSC recommendation. Though it is impossible to build all of the potential new instruments identified at the Aspen meeting, the following instruments, with an approximate- total cost of ~\$70M, will enable the most broadly supported science missions discussed in Aspen. The core instrumentation identified includes:

Extreme AO Coronagraph

Wavelength Range: 0.9 - 2.5 μm

Field of View: ~3 arcsec

Spatial Sampling: 0.02" IFU sampling or 0.01" imaging

Spectral Resolution: 30-300

1-shot wavelength coverage: J, H, or K

Comments: For use as either an IFU or direct multi-band imaging (e.g., dual channel). Both approaches should be among the design options considered. A contrast ratio of $\sim 10^7$ within a 0.1-1.5" radius of the central target is needed to meet this instrument's science objectives. The instrument should also include a polarimetry mode, noting the availability of the facility polarization unit GPOL for design study purposes.

High Resolution Near-infrared Spectrograph

Wavelength Range: 1.1 - 5.0 μm

Field of View: 2 arcmin

Spectral Resolution: 70,000 (single slit) and 30,000 (MOS)

Spatial Sampling: 0.2" pixels (seeing limited mode) or 0.05" pixels (MCAO-MOS mode)

Primary Modes:

- Single slit cross-dispersed seeing limited spectrometer with $R \sim 70,000$ spectral resolution and providing 1-shot wavelength coverage of as much of the J+H+K or L+M windows as possible.
- Multi-object MCAO fed cross dispersed spectrometer sampling targets across a 2 arcmin field with ~ 3 arcsec long slits and $R \sim 30,000$ spectral resolution. The 1-shot wavelength coverage should balance against detector format, science applications, number of targets in the field, etc. Capable of recording simultaneous spectra of at least 15 targets at a time

(30 goal).

Comments: Spectrometer includes a polarimetry mode, noting the availability of the facility polarization unit GPOL for design study purposes. Also includes an absorption cell to be used as a precision wavelength fiducial in the $R \sim 70,000$ mode.

Wide Field Fiber Fed Optical Multi-object Spectrometer

Wavelength Range: 0.39 -1.0 μm

Field of View: ~ 1.5 deg

Spectral Resolution: $R \sim 1000 - 30,000$

Spatial Sampling: ~ 1 arcsec fiber entrance

1-shot wavelength coverage: 0.4 μm (lowest resolution mode)

Simultaneous stellar targets: 4000-5000

Comments: Fiber fed prime focus instrument capable of enormous multiplex gains by independently positioning fibers across a large prime focus field on Gemini. This instrument is similar to the KAOS concept (<http://www.noao.edu/kaos/>).

In addition Gemini will be funding feasibility studies in Ground Layer Adaptive Optic (GLAO) systems that might be used on Gemini. Though not identified by the GSC as part of the core Aspen instrument set (above), in the event the cost or complexity of the core instrument set becomes too great to pursue, a GLAO system (including an imager and/or dIFU spectrometer) may be pursued instead

Consistent with the above summary of new instruments, Announcements of Opportunities will soon be available for the following development work:

- Design studies for the Extreme AO Coronagraph
- Design studies for the High Resolution NIR Spectrometer
- Feasibility studies for the Wide Field Fiber Fed Optical MOS
- Feasibility studies for a Ground Layer AO system

More information on the Aspen process including a link to the Aspen science report can be found at: <http://www.gemini.edu/>

Dennis Crabtree
Canadian Gemini Office

Instrumentation future du projet Gemini

Le « procédé Aspen » servant à déterminer la prochaine génération d'instruments pour les télescopes Gemini est toujours en cours. Une réunion très réussie comptant approximativement 100 participants de l'association Gemini a eu lieu en juin 2004 à Aspen (consultez l'article de Harvey Richer dans le numéro de septembre de la revue Equinox). Suite à la réunion d'Aspen, on a évalué l'ordre de grandeur des coûts pour une liste de huit capacités candidates retenues pour les instruments, et on a préparé un document de justification scientifique (Scientific Horizons at the Gemini Observatory: Exploring A Universe of Matter, Energy and Life). Cette information a fait l'objet des discussions du comité scientifique du projet Gemini (GSC) lors de leur réunion à La Serena (Chili), en octobre.

Le GSC a élaboré une liste de capacités scientifiques classées par priorité qui avait été transmise au comité Gemini pour étude à sa réunion à Hilo (Hawaii), en novembre. Non comme la génération précédente d'instruments pour les télescopes Gemini, aucun budget fixe pour l'instrumentation n'avait été déterminé. L'association Gemini devra produire les fonds pour ces nouveaux instruments. Le comité est de l'avis que plus la science est excitante, plus ils seront en mesure de lever des fonds. Lors de la réunion, le comité Gemini avait approuvé une proposition de prendre les premiers pas pour développer de nouveaux « instruments d'Aspen ». De façon générale, sa recommandation est compatible avec la recommandation du GSC. Même s'il est impossible de construire tous les nouveaux instruments potentiels identifiés lors de la réunion d'Aspen, les instruments suivants, d'un coût total approximatif de 70 millions \$, permettra d'entreprendre les missions scientifiques les mieux appuyées discutées à Aspen. L'instrumentation de base suivante avait été identifiée :

Coronographe à optique adaptatif extrême

Plage de longueurs d'ondes : 0,9 – 2,5 μm

Champ de vision : ~ 3 arcsec

Échantillonnage spatial : Échantillonnage par unité de champ intégral de 0,02 po ou formation d'images de 0,01 po

Résolution spectrale : 30-300

Couverture en longueur d'onde à un coup : J, H ou K

Commentaires : Peut être utilisé comme unité de champ intégral (IFU) ou pour la formation d'images multi-bandes directe (p. ex., canal double). Les deux méthodes devraient être considérées. Le rapport des contrastes doit être d'approximativement 10^7 dans un rayon de 0,1-1,5 po de l'objectif central pour que cet instrument atteigne les objectifs scientifiques. L'instrument doit également comprendre un mode de polarimétrie, notant la disponibilité de l'unité de polarisation des télescopes (GPOL) à des fins d'étude de conception seulement.

Spectrographe infrarouge proche à haute résolution

Plage de longueurs d'onde : 1,1 – 5,0 μm

Champ de vision : 2 arcmin

Résolution spectrale : 70 000 (fente simple) et 30 000 (spectrographe multi-objet[MOS])

Échantillonnage spatial : pixels de 0,2 po (mode de visibilité limitée) ou de 0,05 po (mode d'optique adaptative multi-conjugué-spectrographe multi-objet[MCAO-MOS])

Modes primaires :

- Spectromètre à visibilité limitée interdispersé à fente simple à résolution spectrale $R \sim 70,000$ permettant une couverture en longueur d'onde à un coup maximale des fenêtres J+H+K ou L+M.
- Spectromètre interdispersé alimenté par MCAO multi-objet échantillonnant des objectifs dans un champ de 2 arcmin avec des fentes d'approximativement 3 arcsec et ayant une résolution spectrale d'approximativement 30 000. La couverture en longueur d'onde à un coup devrait contrebalancer le format du détecteur, les applications scientifiques, le nombre d'objectifs dans le champ, etc. Capacité d'enregistrer simultanément les spectres d'au moins 15 objectifs (but de 30).

Commentaires : Le spectromètre comprend un mode de polarimétrie, notant la disponibilité de l'unité de polarisation des télescopes (GPOL) à des fins d'étude de conception. Il comprend également une cellule d'absorption qui sera utilisée comme repère de cliché dans le mode de $R \sim 70,000$.

Spectromètre multi-objet à champ large alimenté par fibre

Page de longueurs d'onde : 0,39 – 1,0 μm

Champ de vision : $\sim 1,5$ degré

Résolution spectrale : $R \sim 1\ 000 - 30\ 000$

Échantillonnage spatial : entrée du fibre d'approximativement 1 arcsec

Couverture de longueurs d'onde à un coup : 0,4 μm (mode de résolution minimale)

Objectifs stellaires simultanés : 4000 - 5000

Commentaires : Instrument à point focal principal alimenté par fibre pouvant produire une énorme amplification multiplex en positionnant des fibres indépendamment sur un grand champ de foyer primaire direct sur les télescopes Gemini. Cet instrument est semblable au concept KAOS (<http://www.noao.edu/kaos/>).

De plus, Gemini financera des études de faisabilité des systèmes d'optique adaptative à couche de surface (GLAO) qui seront peut-être utilisés sur les télescopes Gemini. Malgré le fait que cela n'a pas été mentionné par le GSC comme faisant partie des instruments de base d'Aspen (ci-dessous), il est possible que l'on développe un système GLAO (incluant un appareil de formation d'images et/ou un imageur et/ou un spectromètre à IFU) si le coût ou la complexité de l'ensemble des instruments deviennent trop importants.

Les possibilités suivantes de travaux de développement des instruments mentionnés dans le résumé ci-dessous seront bientôt annoncées :

- Études de conception du coronographe à optique adaptative extrême
- Études de conception du spectromètre infrarouge proche à haute résolution
- Études de faisabilité du spectromètre multi-objet à champ large alimenté par fibre
- Études de faisabilité des systèmes d'optique adaptative à couche de surface

Vous trouverez de plus amples renseignements sur la procédure d'Aspen, incluant un lien au rapport scientifique d'Aspen, à l'adresse suivante : <http://www.gemini.edu/>

Dennis Crabtree
Bureau canadien du projet Gemini

LOT Update

The Canadian effort to build a very large optical telescope is rapidly ramping up in activity and moving toward a critical decision point for funding.

On June 11, 2003 ACURA signed an agreement with Caltech, the University of California, and AURA to join our efforts together under the name of TMT and set up an interim Board, Scientific Advisory Committee and Steering Group. The latter acts as a project manager. Within Canada ACURA and NRC-HIA have an interim collaborative agreement to co-ordinate the Canadian partnership within TMT. Expenditures since June 11 are recorded as potential partnership contributions in the telescope.

Activity within TMT grew rapidly over the summer. Caltech has received US\$17.5M from the Moore Foundation and it is expected that UC will soon receive an equal amount. About 50-60 people are working nearly full time on the project, with about 20 in Canada, mostly on a part-time basis. The SAC has met nearly monthly to develop a draft science requirements document which quantifies in detail our expectations for telescope performance. This important SAC document will be the guiding requirements for the entire project. The ranked priority list was established in an important meeting in Vancouver in early September. As the project undertakes the detailed design it will be necessary for the SAC to make trade-off decisions based on cost and other information supplied by the project office. TMT advertized for a project manager in August. The search committee is lead by Ed Stone of JPL, with Art MacDonald and David Crampton as Canadian representatives. The process is expected to lead to an offer in the early new year.

TMT is conceived as a relatively general purpose telescope, with an emphasis on diffraction limited image quality. The SAC agreed that the three highest priorities for first light were a wide-field multi-object spectrograph in the optical, a multi-conjugate AO fed imaging spectrograph in the infrared, and a diffraction limited mid-infrared spectrograph and imager. Within the first decade an extreme AO imaging system and a suite of high resolution spectrographs will also be built. The factors driving these choices include a range of science that cannot be attained on any existing or planned telescope and complementarity with the in progress JWST and ALMA projects as well as the science drivers for the SKA.

The current Canadian funding for TMT comes from about \$4M in LRP funds to NRC-HIA and \$0.4M in an NSERC-IOF grant to a consortium of University scientists. This money will soon expire. ACURA has put forward a proposal to CFI for \$125M to allow us to undertake our share of the detailed design and to initiate construction. Our group met with the CFI Expert Panel in October. The Presidents of UBC and Toronto, Martha Piper and Bob Birgeneau lead to an exceptionally powerful presentation. The CFI ranking committee meets Jan 13-15, after which the recommendations go to the CFI Board. Announcement of results is planned for February or

March.

Ray Carlberg

A PROGRESS REPORT FROM 820 KM ALTITUDE

The MOST satellite - successfully launched on 30 June 2003 into its 820-km polar orbit - is nearing the end of its commissioning phase and begins normal science operations on 20 December. Its first official Primary Science Target will be Procyon. All the MOST systems are functioning well, and have proved robust to the radiation environment, even during some of the most intense flares on record. In particular, the Attitude Control System is working beautifully, achieving fine pointing with rms errors of about 3 arcsec. This is well below the requirement, and is unprecedented for a space platform of such small inertia.

During the last three months of commissioning, MOST collected trial photometry on three targets - a known beta Cephei pulsator, an active solar-type star, and Aldebaran. These test runs have yielded the most complete and precise photometric coverages of any stars in history; the second run covered 29 days with a duty cycle of 97%, reaching a noise level of 6 micromag at frequencies above 1 mHz, on a star of $V \sim 5$. (For comparison, coordinated ground-based campaigns like the Whole Earth Telescope obtain a duty cycle of about 30-40% in a month, with noise levels of about 100 micromag at high



frequencies.)

The first detailed public announcement of MOST results is expected in January or February, and there should be plenty of exciting MOST science to present at the CASCA 2004 meeting in Winnipeg.

Stay tuned.

Jaymie Matthews MOST (excited) Mission Scientist

15 December 2003

Canadian Responsible for the New Name of the Space Infrared Telescope Facility (SIRTF)

Last Tuesday December 18, NASA announced the new name for the agency's latest space telescope launched last August. The *Space Infrared Telescope Facility* (SIRTF) is now known as the *Spitzer Space Telescope*, in honour of the late Dr. Lyman Spitzer, professor at Princeton University.

What is noteworthy for the Canadian astronomical community is that the person responsible for the new name is canadian:

"The new name was chosen after an international contest sponsored by NASA. More than 7 000 names and supporting essays were submitted, with more than a third coming from outside the United States. Jay Stidolph, 28, a Canadian resident of Fort Nelson, British Columbia, submitted the winning entry."

Quote taken from NASA press release 03-414.

Un canadien est responsable pour le nouveau nom donné au plus récent télescope spatial américain (SIRTF)

Le 18 décembre dernier, la NASA annonçait le nouveau nom donné au dernier télescope spatial, SIRTF, de l'agence mis en orbite en août 2003. Le SIRTF est maintenant connu comme le SPITZER SPACE TELESCOPE, en l'honneur de feu Dr. Lyman Spitzer, professeur à Princeton University.

Ce qui est d'autant plus intéressant pour la communauté astronomique canadienne, c'est que la personne responsable pour le nouveau nom de ce télescope spatial est un canadien :

« Le nouveau nom fut choisi lors d'un concours international commandité par la NASA. Plus de 7 000 noms et courts textes justifiant ce nom furent soumis; plus d'un tiers sont venus de l'extérieur des États-Unis. Jay Stidolph, 28 ans, un canadien résidant à Fort Nelson, Colombie-Britannique, a soumis le nom gagnant. »

Citation traduite du communiqué de presse 03-414 de la NASA.

The CASCA Annual Meeting 2004

Join us in Winnipeg for this unusual CASCA meeting that will be held jointly with the annual meetings of the Canadian Association of Physics (CAP), the Canadian Organization of Medical Physics (COMP), and the Biophysical Society of Canada (BSC). This concerted congress is in honour of the 100 years of science at the University of Manitoba.

Dates and Venue:

Saturday June 12, 2004 - the Graduate Student Workshop held at the University of Manitoba.

Sunday June 13 through Wednesday June 16, 2004 - the CAP/CASCA/COMP/BSC Congress 2004 held at the Delta Hotel and Convention Centre in downtown Winnipeg.

Programming:

In addition to the sessions on the CASCA theme of "Visualizing the Invisible" there will be special events in which all organizations participate. This includes sessions called: - "Scientific Imaging in the Public Sphere" which has invited speakers and a panel - "Scientific Imaging and Visualization" which consists of contributed talks. Please consider submitting an abstract. - "Enriching Our Teaching Through Integration" which is a day long education session. CASCA members are invited to contribute a presentation on education, on other topics as well as this one, in addition to a scientific presentation

CASCA will also joint with CAP for 3 parallel sessions with CAP's division of Optics and Photonics (on adaptive.active optics), Nuclear Physics (on Novae and Supernovae), and Instrumentation and Measurement (on Doppler imaging).

See the end of this article for confirmed invited speakers.

Website addresses:

For more information see the Congress 2004 website at <http://www3.physics.umanitoba.ca/Congress2004/> and follow the CASCA links.

A preliminary schedule is available at <http://www.cap.ca/congress/2004/Congprog-2004.html>

Deadlines in 2004:

Abstract Submission until March 1.

This deadline is earlier than usual and therefore a reminder will not appear in the next issue of E-Cass

Submission is available now at <http://www.cap.ca/congress/2004/ccongress.html> Please review the CASCA Program Topics available under the "subject index" link before filling out the form at the "Contributed Talks" link.

Early Registration is before May 1.

We expect the form to be available mid-January 2004. It will be at the local CASCA website which you can reach via <http://www3.physics.umanitoba.ca/Congress2004/>

Delta Hotel Accommodation is before May 1.

Note that sharing in the conference hotel is cheaper than the campus accommodations and much more convenient.

Committee and Group Meetings:

We have reserved meeting rooms on Saturday June 12 and Sunday June 13. Please contact Samar Safi-Harb, safiharb@cc.UManitoba.CA, with your needs as soon as possible.

Confirmed Invited Speakers:

- P. James E. Peebles (Princeton) will give the keynote plenary public talk, entitled A Cosmic Picture Show: Images from Astronomy. The talk will be followed by a reception open to all in attendance.
- Carol Christian (STScI) is the CASCA invited speaker and panelist for the "Scientific Images in the Public Sphere" session in which all organizations will be participating.
- Una Hwang (Goddard) and Chris Matzner (UofT) are the CASCA invited speakers for the session on Novae and Supernovae held jointly between CASCA and the CAP Division of Nuclear Physics. The speakers for the sessions held jointly with the Division of Optics and Photonics and the Division of Instrumentation and Measurement Physics will be announced later.

As part of the CASCA programming:

- Suzanne Aalto-Bergman (Onsala Space Observatory) will report on the Atacama Large Millimeter Array (ALMA).
- Jo-Anne Brown (U. Calgary) will talk on visualizing the invisible using polarization observations.
- John Dubinski (U of Toronto) will describe visualizing galaxy interactions, the formation of galactic structure, and galaxy evolution.
- Jaymie Matthews (UBC) will report on the Microvariability and Oscillations of STars (MOST) satellite which has been launched and is now collecting data.
- David Schade (NRC/CADC) will describe data-mining and the Virtual Observatory.

La Reunion Annuelle de la CASCA 2004

Joignez-vous a nous a Winnipeg pour cette reunion speciale de la CASCA qui sera tenue conjointement avec les reunions annuelles de l'Association Canadienne de Physique (ACP), l'Organisation Canadienne de Physique Medicale (OCPM), et la Societe de Biophysique du Canada (SBC). Ce congres conjoint est en honneur des 100 ans de science a l'Universite du Manitoba.

Dates et Lieu:

Samedi 12 Juin 2004 - l'Atelier des etudiant(e)s gradue(e)s tenu a l'Universite du Manitoba.

Dimanche 13 Juin jusqu'au Mercredi 16 Juin 2004 - le Congres ACP/CASCA/OCPM/SBC 2004 tenu a l'Hotel Delta et au Convention Centre du centre-ville de Winnipeg.

Programme:

En plus des sessions de la CASCA sur le theme de "Visualizing the Invisible" il y aura des evenements speciaux auxquels toutes les organisations participeront. Ceci inclus des sessions sur: - "Scientific Imaging in the Public Sphere" avec des conferencier(e)s invite(e)s et une table de discussions - "Scientific Imaging and Visualization" avec des conferences contribuees. S'il-vous-plait veuillez considerer la soumission d'un resume. - "Enriching Our Teaching Through Integration" qui sera une session d'une journee sur l'education. Les membres de la CASCA sont invite(e)s a contribuer une presentation sur l'education, et autres sujets, en addition a une presentation scientifique.

CASCA sera aussi jointe avec l'ACP pour 3 sessions paralleles, avec la division d'Optique et de Photonique (sur l'optique adaptive/active), la Physique Nucleaire (sur les Novae et Supernovae), et l'Instrumentation et Mesures (sur l'imagerie Doppler).

Voir la fin de cet article pour la liste des conferencier(e)s invite(e)s confirme(e)s.

Adresses sur la Toile:

Pour plus d'informations voir le site du Congres 2004 au:

<http://www3.physics.umanitoba.ca/Congress2004/> et suivre les liens pour la CASCA.

Un programme preliminaire est disponible a <http://www.cap.ca/congress/2004/Congprog->

[2004.html](#)

Dates limites en 2004:

Soumission des resumes jusqu'au 1er Mars.

*** Cette date limite est plus tot que d'habitude et c'est pourquoi il n'y aura pas de rappels dans la prochaine parution de E-Cass***

Les soumissions devront etre faites a: <http://www.cap.ca/congress/2004/ccongress.html> S'il-vous-plait consultez les sujets du programme de la CASCA disponibles sous le lien 'index des sujets' avant de remplir le formulaire au lien 'Conference contribuee'. - L'inscription avancee est avant le 1er Mai.

Nous esperons que le formulaire sera disponible vers la mi-janvier 2004. Il sera lie au site de la CASCA disponible via: <http://www3.physics.umanitoba.ca/Congress2004/>

_ les reservations a l'Hotel Delta devront se faire avant le 1er Mai.

Veillez noter que partager une chambre a l'Hotel de la conference revient moins cher que les chambres sur le campus, et sera plus pratique.

Reunions de Comite et de Groupes:

Nous avons reserve des salles de reunions pour le Samedi 12 Juin et Dimanche 13 Juin. S'il-vous-plait contactez Samar Safi-Harb, safiharb@cc.UManitoba.CA, pour vos reservations le plus tot possible.

Conferencier(e)s Invite(e)s Confirme(e)s:

- P. James E. Peebles (Princeton) donnera la conference publique principale de la session pleniere, intitulee: A Cosmic Picture Show: Images from Astronomy. La conference sera suivie d'une reception ouverte a tous.
- Carol Christian (STScI) sera la conferenciere invitee de la CASCA et paneliste pour la session sur "Scientific Images in the Public Sphere" a laquelle toutes les organisations participeront.
- Una Hwang (Goddard) et Chris Matzner (UofT) seront les conferenciers invites de la CASCA pour la session sur les Novae et Supernovae tenue conjointement avec la division de Physique Nucleaire de l'ACP. Les conferenciers des sessions conjointes

avec la Division d'Optique et de Photonique et la Division d'Instrumentation et Mesures seront annonces plus tard.

Parmi le programme de la CASCA:

- Suzanne Aalto-Bergman (Onsala Space Observatory) donnera un compte-rendu sur le Atacama Large Millimeter Array (ALMA).
- Jo-Anne Brown (U. Calgary) parlera de visualiser l'invisible grace a des observations de polarisation.
- John Dubinski (U of Toronto) decrira la visualisation d'interactions de galaxies, de formation de structure galactique, et d'evolution de galaxies.
- Jaymie Matthews (UBC) donnera un compte-rendu sur le satellite de Microvariability and Oscillations of STars (MOST) qui a ete lance et recolte maintenant des donnees.
- David Schade (CNRC/CADC) decrira l'extraction de donnees et l'Observatoire Virtuel.

Canadian Astro-Ski 2004 February 17-22

A highly informal high intensity science meeting. Primary audience is Canadian astronomers, from senior undergrads up. Expected attendance is 50-60.

[Location: Mount Washington](#) located on Vancouver Island near Comox. A ~3-4 hour drive from Victoria, easy trip from Vancouver. Comox has good air connections to Vancouver.

Approximate Meeting plan: February 17-22

- Tuesday evening: welcome
- Wednesday: CFHT Legacy Survey, program, data, access, science
- Thursday am: CFHT Legacy Survey science
- Thursday pm: Gemini update, CFHT future, WIRCAM
- Friday: Possible future surveys: SCUBA2/WIRCAM/Gemini/CFHT
- Saturday: New telescopes (ALMA, LOT, CLAR/SKA)

Sessions will run 8am-11am, 4pm-7pm, with a group dinner after. Informal interaction opportunities abound!

- We provide all food for registered attendees. This represents a subsidy of about \$500 each. You book and pay for your own room.
- [accommodation options](#) Rooms run from \$90 per night, 3 bedroom condos from \$165. These are fabulous group rates. These rooms and prices are held only to Jan 10. When phoning ask for Susan, Beth or Rhys, who are the ones that understand our discounts.
- [U of Toronto expense claim form](#) which will be relevant to some.

Attendees listed later. Register with carlberg@astro.utoronto.ca and bridge@astro.utoronto.ca

Gemini 2004 - A First Conference on Gemini Science Results

This conference, which will bring together scientists from the Gemini Observatory and partnership, will be held in Vancouver, May 23-25, 2004. More details will soon be available on the Gemini website (<http://www.gemini.edu>) but mark these dates in your calendar now! The conference will be followed by a 1/2 day Gemini Users meeting on the 26th.

Education Notes

John R. Percy and Heather R. Scott

CASCA-Westar Lectureship (CWL) in New Brunswick 2003

On November 7-8, 2003, I had the pleasure of visiting Moncton and Fredericton NB on a CWL. This is a program of CASCA, supported by funds from Westar, which sends experienced astronomers/educators on two-day visits to smaller centres without extensive astronomy resources. On Friday November 7, I gave an early-afternoon talk on Cosmic Evolution to several science classes at Leo Hayes High School. I was then interviewed by the local CBC radio station. In the early evening, I gave a slightly different version of the Cosmic Evolution presentation at the University of New Brunswick, to a mixed audience of students, local amateur astronomers, and the public. I also had the opportunity to visit the Planetary and Space Science Centre at UNB, with an impressive program of research on impact craters, planetary geology, and related topics. Then I headed to Moncton for my Saturday program.

On Saturday morning, I gave the Cosmic Evolution presentation to several dozen students -- and the whole science department -- at Riverview High School. This school has an active astronomy program, which is described at <http://www.rhsastro.tk> For the rest of the day, I participated in the annual meeting and science symposium of the RASC Moncton Centre, and gave a talk on Pulsating Red Giant Stars. And in the evening, I observed the total lunar eclipse, under perfectly clear (but cold) skies!

The next CWL will be January 22-23, 2004 in St. Catharines, Ontario.

Royal Astronomical Society of Canada Wins 2003 Michael Smith Award!

The Michael Smith Awards, awarded by NSERC Canada, recognize outstanding achievements in science education, outreach, and promotion. They are named after the late Michael Smith -- Canadian Nobel Laureate who gave so much of his time, effort, and resources to encourage and support public awareness of science. On 19 November 2003, I had the pleasure of attending a banquet at the Museum of Nature in Ottawa, at which the award was presented. Also present were James Edgar (he and I were the co-nominators), RASC President Professor Rajiv Gupta (UBC) and Past President Bob Garrison (U. of T.) This year, the RASC is celebrating the 100th anniversary of its "royal" designation; it traces its roots to 1868. The outreach activities of the RASC and its Centres across Canada are impressive in their quantity, quality, and variety. And they are done by volunteers! Congratulations to the RASC on this award, on their special anniversary, and their many contributions to our science!

Another winner of a 2003 Michael Smith Award was Scott Mair, former director of the "Centre of the Universe" visitor centre at DAO in Victoria.

For more information, see:

http://www.nserc.ca/msmith/recipients/2003_e.htm#royal_astronomical

Astronomy Education and the International Astronomical Union.

The education work of the IAU is carried out primarily through its Commission 46 (Astronomy Education and Development). The current president of the Commission is Professor Jay Pasachoff, Williams College, USA. Among other things, Jay has reserved a new web address for the Commission:

<http://astronomyeducation.org>

The Commission publishes a regular electronic Newsletter; you can find the current issue at: <http://physics.open.ac.uk/IAU46/newsletter59.html>

One of this year's exciting projects was a special session at the 2003 IAU General

Assembly in Sydney, on the topic "Effective Teaching and Learning of Astronomy". You can read a summary in the Newsletter issue mentioned above.

Introducing STAN

On 20 November 2003, STAN -- the Science and Technology Awareness Network -- was launched in Ottawa. STAN exists to enhance the profile and influence of the science and technology (S&T) education and public awareness sector in Canada. It's vision is "science and technology literacy for all Canadians".

STAN was developed during 2003 as a result of a consensus feeling of major S&T awareness organizations that we needed to raise the profile of the sector, provide a common voice, promote public awareness of the importance of S&T literacy, and provide a forum for networking. Those are our goals. After considerable discussion at two large meetings, we formed a Steering Committee co-chaired by Mars Bloch (Toronto District School Board, also Past President of the Science Teachers Association of Ontario) and Bonnie Schmidt (President: Let's Talk Science); I was a member of that Steering Committee.

We now aim to collect members from among S&T awareness organizations, professional societies, school boards, post-secondary institutions, science centres and museums, business and industry, media, government related groups, and interested individuals. There is no membership fee at present; with external funding, we hope to keep any such fee low or zero. The benefits will be: to raise the profile of members; to provide a voice before government and industry; to promote public awareness of our sector; and to provide a forum for networking. The members will also maintain a searchable database on the STAN website, which will also be useful for a variety of purposes.

We now have a list-serv (presently OSTON.1-subscribe@topica.com, though that may change in the near future) and a web site which we hope will be permanent:

<http://www.scienceandtechnologynetwork.ca>

If you are doing any form of science outreach, either individually or in your institution, and if you wish to join us, please log on to that web site and do so!

John Percy

CASCA Education Website Continues to Grow

With now over 1400 hits, the CASCA Canadian Astronomy Education Website continues to grow! Recently added features include a subscription service to the CASCA Astronomy Education Newsletter (to make its debut hopefully early in the new year) and a message board for users on the site to initiate discussions, make comments on specific features on the site (or on teaching astronomy in general) and swap ideas back and forth. With additional help from Pierre Chastenay, the French part of the site is nearing completion, with the goal of having all pages translated by mid-January.

We have also started an advertising blitz throughout Ontario by distributing flyers at educators' conventions (the flyer is located here). If you will be attending a function where a plug for the site is appropriate, please pass the word along! I (Heather) can be contacted if you would like a copy of the flyer file.

If you have not yet checked out the site, please do so! You will be quite pleased with just how much we have put together in a little under a year's time.

<http://www.cascaeducation.ca>

Heather Scott

The Quest For Origins — La quête des origines

A New Planetarium Show Highlighting Canadian Astronomy

Four Canadian planetaria are producing a show about a key theme in Canadian astronomy — origins. The Planétarium de Montréal, The Manitoba Museum Planetarium (Winnipeg), the Calgary Science Centre Discovery Dome and the H.R. MacMillan Space Centre (Vancouver) — have received a grant from the Heritage Canada Museum Assistance Program to produce a full-length planetarium show entitled “The Quest for Origins — La quête des origines”. This multi-media program will premiere in May 2004 in all four planetaria. It will highlight discoveries and contributions made by Canadian astronomers, generate excitement in and support for new observatory projects, and provide a thought-provoking exploration of the most fascinating question: how did it all begin?

This 35-minute-long show will document our quest for the origin of stars, planets and galaxies and describe our current understanding of the large-scale structure of the Universe, all of this in the rich immersive setting of a planetarium theater. This fast-paced show will include full-dome imagery, state-of-the-art computer graphics and a rich and textured soundtrack with narration available in both French and English.

The primary audience target is the general public, namely families with children ages 9 to 14. The secondary audience target are school groups from grades 6 to 9, for which there are strong Sky Science and Space Exploration units in all provincial curricula.

Given that the host facilities will run the show typically for 4 to 6 months in a prime slot, we expect an audience of approximately 150,000 to 200,000 people in the first year. Since the show will likely run in repertory rotation with other programs at most facilities for 2 to 3 years afterward, this will give an overall audience of approximately 350,000 people throughout Canada.

No one facility could tackle creating the show entirely. This is why we will distribute the work load across Canada, with one main facility (Montréal) acting as production coordinator. Common planetarium shows have been staged across Canada before, but in the past these have been centralized productions that were then distributed. This will be the first shared production across Canada. The show will be directed by Alan Dyer in Calgary.

The host facilities have excellent in-house talent for creating computer animations, graphic art pieces, and edited video clips, as well as conducting on-location still photography for 360° panoramic scenes unique to the planetarium medium. For this show we will conduct location shoots in the observatories in Chile, Hawaii and at DRAO in Penticton.

We have hired Ken Hewitt-White as a script writer. Ken is well known for his excellent work as a science magazine and television writer, and he has a long relationship with the planetarium world. Some other production work will be contracted out (music, recording studios, narrators, etc.) but most show work will be handled by existing planetarium staff.

A coordinating committee representing each participating institution, will supervise the overall creation and production.

The members of the committee are:

- Pierre Chastenay, astronomer, Planétarium de Montréal
chastenay@astro.umontreal.ca
- Scott D. Young, Planetarium of the Manitoba Museum
scyoung@manitobamuseum.ca
- Alan Dyer, astronomer, Calgary Science Centre
alan.dyer@calgaryscience.ca
- Erik Koelemeyer, H.R. MacMillan Space Centre
ekoeleme@hrmacmillanspacecentre.com

Feel free to contact these individuals if you need more information on this project or if you have access to imagery (still images or video) that could be useful in the production of this show. The input of the Canadian professional community is essential to the success of this project!

Pierre Chastenay, astronomer, Planétarium de Montréal

Check us out...

<http://www.cascaeducation.ca>



Recent changes to include astronomy in the elementary and secondary science curricula have left many elementary and science teachers feeling displaced. Enter the Canadian Astronomical Society's new Education website! This definitive, bilingual website aims to fulfill the needs of all Canadians teaching and learning astronomy.



For Teachers:

- ★ Provincial curriculum expectations
- ★ Current events
- ★ Teaching resources (elementary, secondary and post-secondary)
- ★ Complete unit plans
- ★ A "how-to" on teaching astronomy
- ★ Astronomy education newsletters



For Students:

- ★ Frequently asked questions (and answers!)
- ★ Science fair ideas
- ★ Canadian Junior Astronomer Program
- ★ Observing the stars

- ★ Careers in astronomy
- ★ Astronomy websites
- ★ Canadian astronomer of the month
- ★ Guide and scout requirements
- ★ Astronomy glossary



For History of astronomy in Canada

- ★ Camping astronomy
- ★ Observing the night sky
- ★ Solar observing
- ★ Current events
- ★ Interactive event calendar

- ★ Interactive search
- ★ Science centres and planetaria
- ★ Guide to buying telescopes
- ★ Tour of the Universe
- ★ Family astronomy
- ★ Astronomy clubs.....and more!

Everyone interested in Astronomy:

