Hamilton Amateur Astronomers

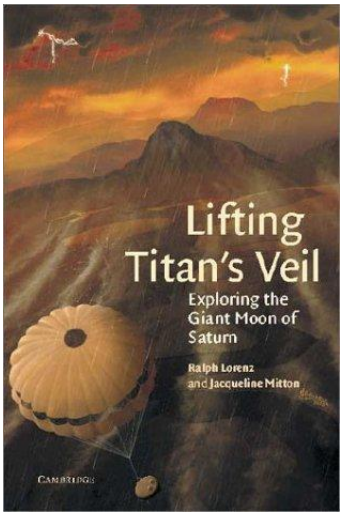
Event Horizon

October 2003 Volume 10 Issue 11

Coming Soon: Another Mars? *by Doug Black*

It's coming. The Cassini-Huygens mission gets to Saturn in 2004, passing near Phoebe on June 11, and going into orbit around Saturn on July 1st. Then on Christmas day the Huygens probe separates from the Cassini orbiter, and early in 2005 Huygens does its one way trip to Titan's surface. Plans for Cassini include 74 orbits of Saturn, 44 close flybys of Titan. Amazing. There are some details on a NASA web site at `http://saturn.jpl.nasa.gov` .

So just to bone up on Titan's weirdness I've been reading "Lifting Titan's Veil", by Ralph Lorenz and Jacqueline Mitton, Cambridge University Press, 2002. This seems to be a book we needed.



The first chapters describe what's known so far about Titan's thick atmosphere and landscape. The measurements, theories, computer models, and educated guesses are too complicated to summarize here, but definitely are worth a read. Will the Huygens probe hit rock, ice, organic slush or an ocean? Will there be crater lakes, tides, ice volcanoes, lightning?

The second part of the book details the Cassini-Huygens mission and Ralph Lorenz's own involvement in it, his experiments, technical problems, the incredible paperwork mess and project management nightmares as ESA and NASA co-operate. This is the best-written part of the book just because he's lived through it. Lorenz even suggests a Titan cloud-hunting project for amateur astronomers; he's used a Rainbow Optics grating and a CCD camera to attempt a rough look at the spectrum. Titan's weather may be strongly season dependent, but large telescopes don't have time to look at this regularly. For a real challenge, take a look at `http://www.lpl.arizona.edu/~rlorenz/amateur.pdf` .

As they summarize, the authors mention that JPL's Viktor Kerzhanovich once called Titan the Mars of the outer solar system, "not because Titan's size or meteorology is comparable with that of the Red Planet, but because Titan is likely to capture the imagination of the public in the same way Mars does."

Could a lot of people ever get that interested in Titan? Maybe. It's an occasional TV backdrop. And a couple of Titan science fiction books are out there. Stephen Baxter's 1997 "Titan" is technically rather detailed, and quite accurate, although the story and its telling seem a bit contrived to me. But in 1975, when Arthur C. Clarke wrote "Imperial Earth", although he had a few Titan facts wrong, he had tons of really interesting ideas to tell us all about, and many of them have already come to pass. The ideas include Titan as an outer solar system gas station, and oh yes, something a bit scary about ULF radio! If you haven't read that bit, I mustn't spoil it for you.

by Doug Black

Nominations for the new HAA council

Honorary Chair ..... Jim Winger
Chair ..... Glenn Muller
2nd Chair ..... Doug Welch
Secretary ..... Marg Walton
Treasurer ..... Cindy Bingham
Observing Dir ... Stewart Attlesey
Membership Dir .... Ann Tekatch
Publicity ..... Gail Muller
Newsletter ..... Anthony Tekatch
Webmaster ..... Anthony Tekatch
Councillor 1 ..... Grant Dixon
Councillor 2 ..... Barb Wight
Councillor 3 ..... Ray Badgerow
Councillor 4 ..... Bob Christmas
Councillor 5 ..... Cathy Tekatch

Banquet door-prize donors

The following Companies and people have generously donated door prizes for our 10th Anniversary HAA banquet being held on November 8th, 2003.

- Camtek
- Main Sequence Software
- Mountain Equipment Co-op
- O-Neil Photo and Optical Inc.
- Perceptor
- Rob Dick
- Terry Dickenson
- TALScopes

There are still tickets left for the HAA banquet on November 8, 2003. See last page for details.

Ask the Experts

If you have any questions about astronomy we have experts in the following fields that are ready to answer your questions; galactic astronomy, astrophysics, stellar physics and variables, astrophotography using emulsion/print film, polar-aligning an equatorial mount, scanning photos and image processing.
Send in your questions to
`editor@amateurastronomy.org`

Motion: to move the general meeting from November 2003 to December 2003

RASC publications

2004 RASC handbooks and calendars Order your 2004 RASC handbooks and calendars. Handbooks are $20, calendars are $12 each.
E-Mail Margaret Walton `<mwalton@cogeco.ca>` to place your advance order. We will take orders at the meetings up to the December meeting.

Event Horizon is a publication of the Hamilton Amateur Astronomers (HAA).
The HAA is an amateur astronomy club dedicated to the promotion and enjoyment of astronomy for people of all ages and experience levels.
The cost of the subscription is included in the $25 individual or $30 family membership fee for the year. Event Horizon is published a minimum of 10 times a year.

HAA Council
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Chair ..... Doug Welch
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Observing Dir... Stewart Attlesey
Publicity .. Glenn and Gail Muller
Editor/Web .... Anthony Tekatch
Membership Dir..... Ann Tekatch
Councillor ..... Ray Badgerow
Councillor ..... Barb Wight

Web: `amateurastronomy.org`

Mailing Address:
PO Box 65578
Dundas, ON
L9H 6Y6

Upcoming Events

Dates: Tonight, October 10th, 2003

Speaker: Dr. Sergey Mashchenko, a post-doctoral researcher in the Department of Physics and Astronomy at McMaster University

Topic: Globular Clusters: Relics of the Early Universe

Web: www.physics.mcmaster.ca/%7Esyam/index.shtml#software

Dates: October 17,18,24,25

Item: Future Observing dates

Date: October 18th, 2003

Event: Mountsberg star party

Date: October 20th, 2003 8PM

Event: Public Lecture

Topic: Life in Our Universe and Others

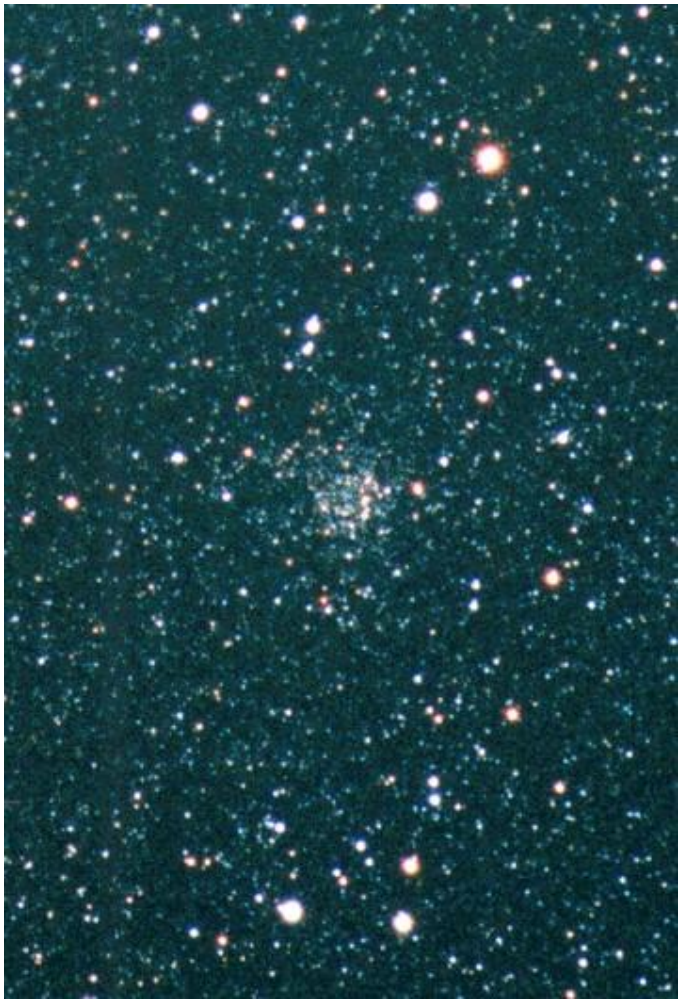
Location: McMaster University, Togo Salmon Hal, Room 120

Speaker: Sir Martin Rees (See page 9 for more details)

Date: November 8th, 2003

Event: HAA Anniversary Party (details on Page 8)

Eye Candy



Open Cluster NGC 7789 In Cassiopeia
Photo by Bob Christmas

This image was scanned at 600 dpi (magnification 4X) from original 200mm telephoto print. The bright star near top right is Rho Cas. Date: September 21, 2003 Location: Barry's Bay, ON Exposure: 7 minutes @ f/3.5 Film: Fuji NPZ 800

Photo by Bob Christmas

Aurora at Spectacle Lake at about 1-ish Wednesday morning, September 24, 2003. Lens: 50mm @ f/1.8 Exposure: 25 seconds Film: Fuji NPZ 800”

Mars Photo by Bob Botts

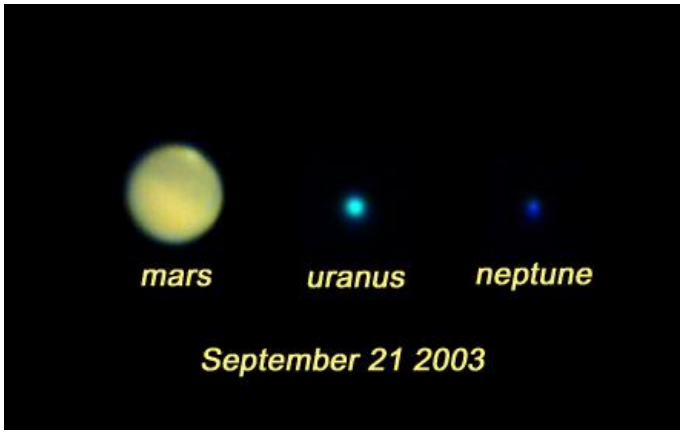


Photo by Bob Botts

The planet trio is interesting to illustrate the relative sizes of the planets as observed from Earth. These images were all captured while still at fairly low altitude, so in the case for Mars, there’s not much detail available. Neptune and Uranus never reveal ‘surface’ details to the backyard telescope, so they are interesting mostly for their size and colour.

Neptune was a particularly interesting challenge, as at an apparent diameter of just over 2 arcseconds, it offers a disk that is about half of the average distortion due to seeing. The result of seeing in the image, is that seeing smears the apparent disk so that it appears larger in diameter and proportionally dimmer.

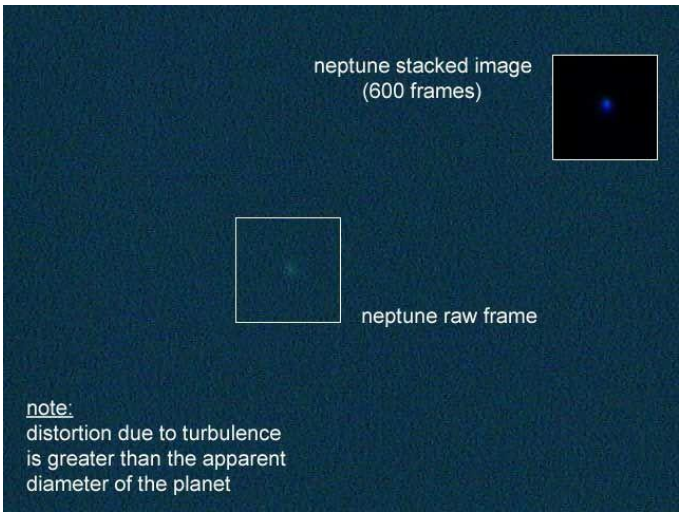


Photo by Bob Botts

The raw frame was shot at 640 X 480, maximum shutter duration (1/25 second) and maximum gain. Neptune is discernable in the lower inset box, but almost lost in the noise.

The processed inset is the result of stacking ≈ 600 frames, and raising the black point as the final tweak.

A NEW SITE GIVES NEW LIFE TO HURONIA

by Glenn Muller

After 13 years of turning a farmer's field into a star party, the members of the South Simcoe Amateur Astronomers were nearly burned out to the point of dropping the Fall gathering altogether. Fortunately, a chance meeting between Scott Gilmour and one of his clients presented Camp Sauline as just the alternative the group was looking for.

Located on the bank of the Nottawasaga River, just 2 minutes from the center of Ivy (a 4-way stop and not much else), the Camp is a Latvian church retreat. Though surrounded by trees, the two "viewing" fields afford plenty of sky and room for about 200 people to camp. Three large buildings occupy the site. The first, a barn, is where the vendors display their wares. The second, a dorm style structure, has rooms containing 4-6 bunks on the top floor (which can be rented) and washrooms and communal showers below. This building also has a hall large enough to accommodate 150 people and that is where the presentations were held. The third, and most modern building, is somewhat like a lodge. It has full banquet kitchen facilities, dining areas, and some sleeping quarters upstairs that can also be reserved.

Whereas the organizers were delighted to find a location with "facilities", drinking water came in the form of several carboys from Culligan. A nice touch was the individual water bottles provided by The Investors Group. For those with long enough cords, electrical service was available, and those not wishing to cook could buy their meals from a caterer, starting with Thursday's breakfast.

Gail and I arrived about Noon, on Wednesday September 24th. The Sun shone while we erected our tent, but clouds soon moved in and the rain ensued. Gracious enough to stop while we made supper and visited with HAA members Lou and Ollie Darcie, it began again about 10 p.m. With rain pounding the tents, and train whistles interspersed with thunder and lightning, all but the soundest sleepers were kept awake until the wee hours. However, eventually everything settled down and in the morning sunshine returned. Astronomers are rarely phased by loss of sleep and by 10 a.m. our 6" Newtonian capped with a Baader solar filter had attracted a friendly bunch of sunspotters.

Clouds scudded overhead throughout the day but holes large enough to allow observing opened in the evening. While the Milky Way was visible, transparency could have been better and by 11 p.m. the dew was heavy enough to send most folks to bed. Equipped with everything from a propane heater to hot water bottles, we slept until the cold penetrated at 5 a.m. While Gail burrowed deeper into the sleeping bag, I figured it would be a good time to grab a hot shower. Upon my return, Orion had leapt high into the sky and I had a magnificent view of the nebula M42 through an 8" Celestron SCT.

Soon, I realized that Saturn was even higher than Orion and went to uncover my scope. At this point not only did I find there had there been a frost but that the dew had turned to ice. Nonetheless, with the sky pleasantly dark, the air still, and the optics acclimatized I had the best view ever of the ringed planet, through our scope. As dawn approached, and Orion faded, I could easily detect tan shading along Saturn's South Equatorial Band and South Polar Region. Cassini's Division was a sharp black line dividing the creamy inner "B" ring from a grayish outer "A" ring, and careful observation of the planet's limb also revealed a slim but well-defined shadow cast on the rings just above the left ansae (reversed image). Blazing between Saturn and the Sun was Jupiter. Though it boiled in the atmosphere 3 of the 4 moons rode the turbulence with it, and I enjoyed views of all the orbs until nearly 7 a.m.

Though Friday was a cool but pleasant day, the weekend forecast was dismal indeed. Since we were less than two hours drive from Grimsby we decided to pack up after supper and spend the night in the comfort of home. Registrants continued to arrive but even the vendors decided not to open until Saturday. Our decision was sound as Friday night was cold and rainy. We returned Saturday afternoon with money in our pockets yet the few vendors that did display did so half-heartedly with a minimum of stock. What was stocked, however, was the river. Those folks that came equipped with fishing gear were teased by spawning salmon and trout splashing their way through the shallows.

One area in which the star party did shine was the presentations. In two days, Gail and I attended more than half a dozen talks, and they were all top-notch. We also signed up for the banquet supper featuring turkey, roast beef, veggies, tea, coffee et al, along with four different kinds of pie. After that came the door prizes. Here, the advantage of attending small venues like this became apparent. With nearly 60 prizes and just over

100 registrants the odds of winning something were very good indeed, and our table did well: Lou won a video about Comet Hyakutake; Ollie won a copy of the astro-software Desktop Universe; Gail won a folding "observing" table; and I came home with plans for a roll-off roof observing shed.

The keynote speaker on Saturday night was Discovery Channel's Ivan Semeniuk. His topic about Mars exploration featured a pair of excellent videos, one of which was an animation by a teenage prodigy who now works for NASA. Then it was back into the cold. Stars shone through clear breaks though, again, transparency wasn't good. As we surveyed the main field from the height of the hall we saw streamers of mist between the tents. Another cold, damp night had begun so, after chatting for an hour in the comfort of the Darcie's camper, we left for the final time.

In retrospect, Huronia is a nice event plagued by unsettled weather. The organizers clearly put much effort into the exercise, and the new location though still rustic in some ways appears to make their job easier. Next year's dates will be September 15-19, and perhaps that will provide drier days and darker skies. If not, the camaraderie factor will always make up for a lack of viewing, and we've yet to attend a star party we didn't like. This one doesn't sell out quickly so you can afford to check the forecast before committing but, if you pencil it on your calendar, we just might see you there.

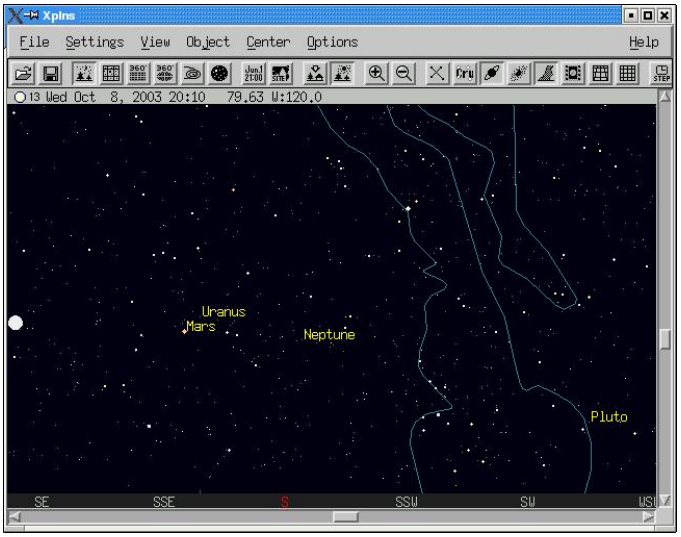
by Glenn Muller

Despite the inclement weather, star parties have revitalized Glenn and Gail's love of camping.

XPLNS review

by Anthony Tekatch

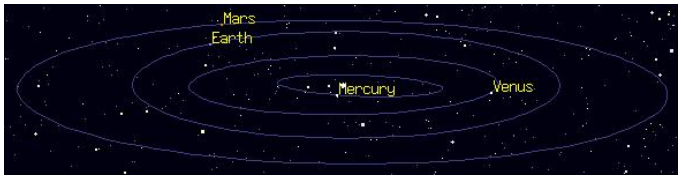
There is a host of free software available for Astronomy appreciation that can be run on the Linux operating system. XPLNS is one that I have been using for a long time now without any problems.



XPLNS in Horizontal viewing mode showing the Moon and some visible planets

XPLNS is a great little program for cheking where stuff will be in your sky tonight. It has many features like regular sky view (horizontal mode), Solar System mode, Planisphere mode, and a few others. After installing the binary package, you must configure XPLNS for your location.

Constellation lines and names can be toggled on/off easily. Pictures of planets and some Nebula are also available at the touch of a few buttons.



XPLNS in Solar System viewing mode showing the proximity of Mars to Earth

The program does not come with source code, but that isn't much of a problem unless you intend on debugging the software or adding some features.

If you've been holding off that conversion to Linux because of the lack of Astronomical software then your wait is over :)

You can get XPLNS from
`http://www.astroarts.com/products/xplns/`

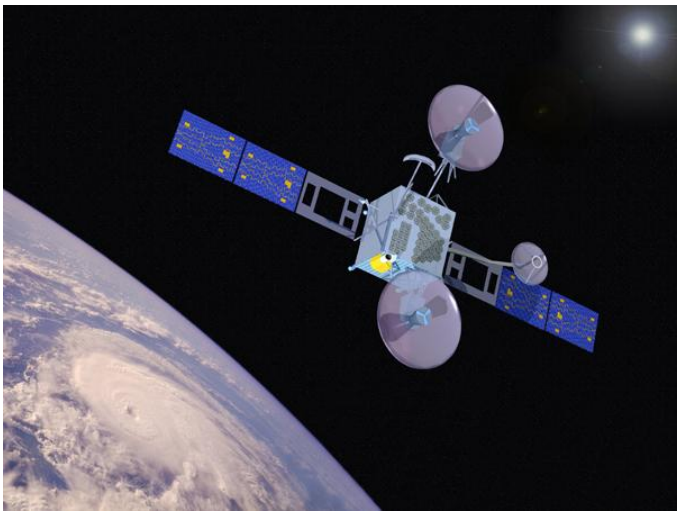
Another top-notch astronomy program for Linux is XEPHEM
`http://www.clearskyinstitute.com/xephem/`

by Anthony Tekatch

NASA's Space Place

(un)Fasten your Seatbelts

by Patrick Barry and Tony Phillips



EO-3, carrying the GIFTS instrument, will be in a geosynchronous orbit for extended monitoring of large regions of our planet and enabling observation of weather patterns at higher resolution than possible with existing geostationary satellites.

The "fasten seatbelts" light turns off, and you get up to ask the stewardess for a pillow; it's going to be a long flight. Only a kilometer ahead in the cloudless sky, a downward draft of sheering winds looms. When the plane hits these winds, the "turbulence" will shake the cabin violently and you could be seriously hurt.

You don't know about those winds, of course, and neither does the pilot. Today's weather satellites can't see winds in clear skies: they rely on the motion of clouds to infer which way the winds are blowing.

"Believe it or not, their best indication of wind sheer right now is warnings from aircraft that have gone through it ahead of them," says Bill Smith of NASA's Langley Research Center.

But a new satellite technology being pioneered by NASA and NOAA could improve this shaky situation. It's called GIFTS, short for Geosynchronous Imaging Fourier Transform Spectrometer. GIFTS is an infra-red sensor that can detect winds in cloudless skies by watching the motions of atmospheric water vapor. Water vapor is mostly invisible to the human eye, but it reveals itself to GIFTS by the infra-red radiation it absorbs.

Smith is the lead scientist for EO-3, a satellite designed to test out this new technology. Slated for launch in 2005 or 2006, EO-3 will carry GIFTS to Earth orbit where it can produce 3-dimensional movies of winds in the atmosphere below.

These wind data will not only improve safety, but also help the airlines save money. Knowing the winds along a flight route allows airlines to adjust the plane's fuel load accordingly, thus reducing the weight that the engines must lift. Saved fuel means saved money and less pollution.

GIFTS can help planes avoid another potentially lethal problem, too: Ice forming on their wings. If a cloud contains "supercooled" water droplets whose temperature is below freezing, those droplets will form ice on the wings of planes that pass through it. By looking at about 1700 different frequencies of the light coming from clouds, GIFTS can measure the temperature of the cloud top and determine whether it contains water droplets that could cause aircraft icing. With information from GIFTS in hand, pilots can simply avoid clouds that appear dangerous.

Once EO-3 demonstrates the accuracy of GIFTS, airlines will be able to capitalize on this potential to make flying a cheaper and safer experience.

Learn more about the GIFTS instrument and other advanced technologies being tested on the EO-3 mission at `nmp.jpl.nasa.gov/eo3` . Kids can go to The Space Place to play a data compression game related to EO-3 at `spaceplace.nasa.gov/eo3_compression.htm` .

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

November 2003

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8 **HAA 10th Anniversary Banquet**
9	10	11 Rememberance Day	12	13	14	15
16	17 Leonid meteor shower	18 Leonid meteor shower	19	20	21	22
23	24	25	26	27	28	29
30			For observing info, call Stewart Attlesey 827-9105, Rob Roy 692-3245, Glenn and Gail Muller 945-5050, http://amateurastronomy.org/events.php			

October 2003

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12	13	14	15	16	17	18
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26	27	28	29	30	31	

December 2003

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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

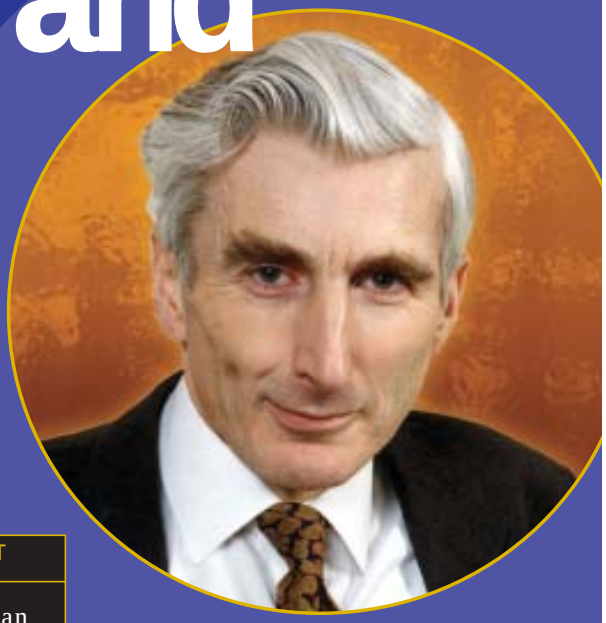
Origins

MCMASTER UNIVERSITY PRESENTS

PUBLIC LECTURE

Life in Our Universe and Others

McMaster University



Speaker:

Sir Martin Rees

UNIVERSITY OF CAMBRIDGE

Monday October 20, 2003 at 8:00 pm
McMaster University • Hamilton, Ontario
Togo Salmon Hall, Room 120

ABSTRACT

Astronomers can trace cosmic history back to an era before even the first stars had formed - right back, indeed to the initial instants of a big bang nearly 14 billion years ago. They have discovered planetary systems orbiting many other stars. This progress brings into focus a set of fascinating questions. Is there life - even intelligence - beyond the Earth? How can we best look for it? What is life's long-term future, here on Earth and perhaps far beyond? And we are emboldened to speculate further. Could there even be other big bangs? If so, would they generate other 'universes' governed by the same 'biofriendly' laws that have allowed the emergence of our complex cosmos from simple beginnings?

BACKGROUND

Martin Rees is Professor of Astronomy and Cosmology at the University of Cambridge and Astronomer Royal of the United Kingdom. In 1973, he became Plumian Professor of Astronomy and Experimental Philosophy at Cambridge (until 1991). He served for ten years as director of Cambridge's Institute of Astronomy and has been president of the Royal Astronomical Society (1992-94). His many awards include the Gold Medal of the Royal Astronomical Society, the Heineman Prize for Astrophysics of the American Astronomical Society, the Cosmology Prize of the Peter Gruber Foundation and the Einstein Award of the World Cultural Council. He is the author of hundreds of research papers and several books for general readership. His main current research interests are in high energy astrophysics and cosmic structure formation - especially in the formation of the first stars and galaxies that formed at the end of the cosmic 'dark age'.

Origins

Origins is a proposed institute to be based in the Faculty of Science. The scientific focus of Origins is to create and foster multidisciplinary research on origins themes across a spectrum of interrelated research fields.

www.mcmaster.ca

The Hamilton Amateur Astronomers

proudly announce :

THE HAA 10TH YEAR ANNIVERSARY BANQUET

When: Saturday, November 8th, 2003, 6:00 p.m.

Price: $40 up to and including October 10th - $45 thereafter

Where: Royal Botanical Gardens
680 Plains Rd. West, Burlington

Who: Everyone welcome! (spouses, friends, non-members etc.)

What: Cash bar, dinner, guest speaker and door prizes

Speaker: Bob McDonald, Quirks and Quarks (CBC)

Bonus: Total lunar eclipse that night!

HAA BANQUET REGISTRATION FORM

NAME: _____ #TICKETS: ☐ E-MAIL: _____

TELEPHONE #: ( ) _____

ADDRESS: _____

Please mail your cheque or money order to:

Hamilton Amateur Astronomers
c/o Margaret Walton
114 Cameron Avenue
Dundas, Ontario L9H 1J3

**Tickets are $40.00 up to and including October 10th and $45.00 after October 10th to November 4th, the cut-off date.

☐ I will pick up my tickets at our general meeting ☐ I will pick up my tickets at the door ☐ I would like acknowledgement by e-mail/phone

*If you are paying by mail, you have a choice of picking up tickets at one of our general meetings or at the door on the date of the event. We will acknowledge receipt by e-mail or telephone. If you have any questions, please contact us by e-mail at: secretary@amateurastronomy.org or call Margaret Walton at (905) 627-7361. Please visit our website at www.amateurastronomy.org for details