

Event Horizon

November 2005

Volume 13 Issue 1

PUBLIC MARS MADNESS NIGHTS

by Mike Spicer

HAA recently held observing nights in Hamilton and Grimsby as part of Mars Madness to show Mars at opposition to the public. The local papers and TV advertised the events and the public attended with interest at Murray Park in Grimsby on Saturday evening 29 October and at Bayfront Park in Hamilton on Friday 4 November.



St. Catharines cubs visit the Bayfront.
Photo by Glenn Muller

Club members turned out with over a dozen telescopes of all kinds, binoculars and a great deal of enthusiasm at both sites. Saturday night in Grimsby and again in Hamilton the following Friday the weather co-operated with clear skies and unseasonably warm evenings. The turnout of people with their many questions and their patient waiting in line for looks at Mars, showed great public interest.



Tim Philp and Bayfront visitor.
Photo by Mike Spicer



Grimsby's Murray Park.
Photo by Sanjoy Acharya

The opportunity to look through Newtonian reflectors, Maksutov and Schmidt Cassegrains and large refractor scopes gave everyone attending the events, a perspective on Mars and on the types of instrumentation available to our hobby. Comments on the various imaging setups that we demonstrated were very positive, too. I am sure HAA will be seeing some new members at meetings, as a result of our very successful Mars Madness outings. Thanks to the dozens of club members who attended and to the several hundred members of the public, too!

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Email Reminder notice

We send email reminders before each meeting which describes the location, time and topic of the general meeting.

If you're not on the list, make sure that you receive your reminder by sending a note to: publicity@amateurastronomy.org

An Offer

Thinking of buying your first telescope but wondering what kind to get? Before you buy, consider this offer from Mike Spicer: a "loaner" 5 inch telescope with electronic alt-az controls. The scopes are lightweight, easy to set up and very easy to use. Mike is offering newer members of our club one of these telescopes to try out for a month or so. Interested? You can reach Mike by email at deBeneEsse2001@AOL.com or by phone at (905) 388-0602.

RASC publications: 2006 RASC handbooks and calendars



Order your 2006 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.

HAMILTON AMATEUR ASTRONOMERS

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.

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Submissions to the web site or newsletter are welcome, and may be edited for size & content.

Chair's Report*by Glenn Muller*

How many astronomers does it take to shed light upon the mysteries of the Universe? Could be one, as in the case of Greg Emery giving Summer talks at Hamilton's libraries. Could be two, as in John Gauvreau and I spending a Saturday with Halton's cub packs at Mount Nemo Scout Park. Or it could be any number of HAA members volunteering to bring Mars, and other delights of the night sky, to the public eye at gatherings like the Mars parties recently held in Grimsby and Hamilton parks.

While the objective is to broaden horizons, which we do through sharing the equipment and expertise of our special interest, these contributions enhance the community for all of us and I doubt I'm alone in feeling that these events often give back as much as we put into them.

A case in point being the Cub Jamboree. Our presentation hut was next to an activity involving a home-built trebuchet. A trebuchet is a medieval siege engine used to fling rocks and "assorted other items" at fortifications. This one did an excellent job of flinging pumpkins at cardboard castles placed over fifty yards away! On hand for the assembly, John and I got to fire the test shots. For two guys with a primary interest in launching things, releasing the power of this great wooden contraption was a real treat!

Though we often take on the role of teacher, I'm always amazed at what I learn. Especially from kids. While the younger generation will never be as wise to the ways of the world as their older counterparts, they will always be a step ahead when it comes to assimilating information. At the Cub Jamboree, I asked if anyone knew why the Moon turned red during an eclipse. A

boy who looked barely old enough to walk to school by himself clearly explained that it was due to the Sun's light being refracted and filtered through the Earth's atmosphere.

And there was another young fellow who, after looking through my telescope at the Andromeda Galaxy, informed me that although it was 2.2 million light years distant that galaxy was on a collision course with the Milky Way. Even our roster of "tour guides" knows no minimum age since one of our youngest members, Alex Tekatch, often brings her Edmunds Astroscan or binoculars to our public nights.

However, one image stands out for me from the last few weeks. It is of a five year old girl who gamely climbed the stepstool to my eyepiece and not only carefully tucked her long blond locks behind her ear but intuitively held a little hand beside her face to shield it from the glare of streetlights. Now there, I thought, is a natural-born astronomer.

While our public contributions may not count as ground-breaking science I still believe that, in some small way, these events do make a difference. Who's to say we're not planting seeds that foster the next Stephen Hawking or maybe a Subrahmanyan Chandrasekhar. A lofty idea, perhaps, but you've got to admit that lofty ideas have always been in the very essence of astronomy.

Clear Skies!

Glenn invites your comments on these topics or any aspect of the club. He can be reached via chair@amateurastronomy.org

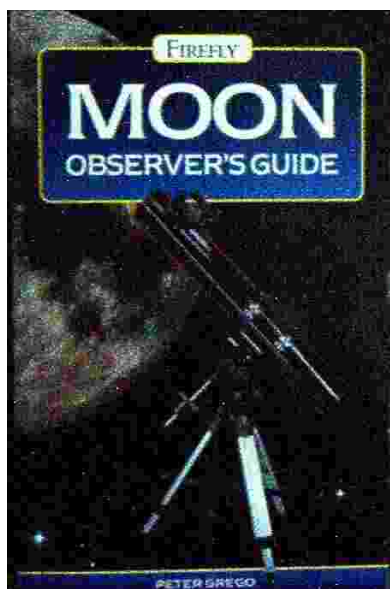
**Lunar Observing Guides***by Mike Spicer*

Most amateurs start out looking at the Moon. Starter scopes reveal thousands of craters and the terminator changes from day to day, so there's plenty to see. The gibbous moon is very bright. You need a good filter to dim the view. I prefer the neutral density (grey) ND9 but a simple \$5 greenish "moon" filter will do. I have seen Bert Rhebergen screw R,G,B and Y planetary filters together to make a lunar filter.

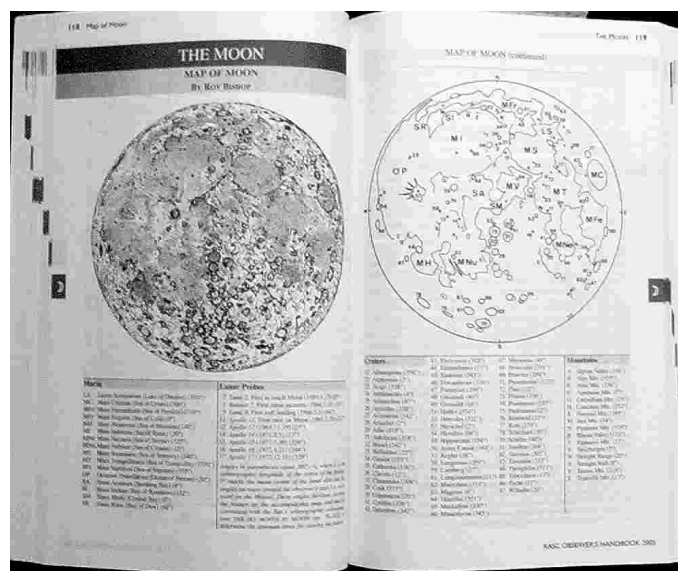
One quickly moves up to telescopes of larger aperture to enlarge the planets and to find deep sky objects. The Moon's size and brightness make it an object to be avoided. Indeed, many experienced amateur astronomers will not even set up a telescope around the

time of the full moon. Ironically, it seems that time of the month has the greatest percentage of clear skies.

As one gets into imaging, the Moon again becomes attractive for a while. With just a small-aperture telescope and electronic eyepiece you can go to town on the Moon, capturing images on a VCR or observing on a TV/computer monitor. Once you start to study the Moon's craters, mountains, fault lines, domes and other features, some sort of guide becomes important. Unfortunately there is very little in the RASC Observer's Handbook beyond a poor-quality 4" diameter "Full Moon map" to assist with identifying lunar features.

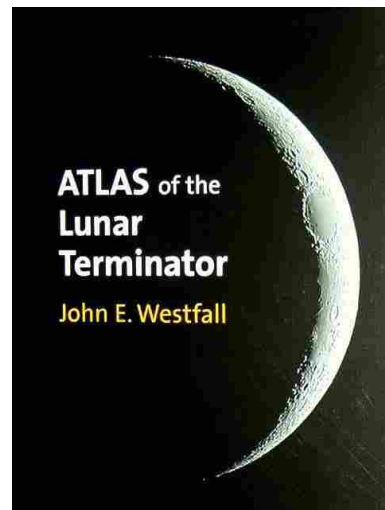


Peter Grego's *Moon Observer's Guide* (Firefly Books, Toronto, 2004) is a 5 x 8" paperback of 192 pages. Grego is an avid amateur with eclectic equipment. His writing is uncomplicated and his book is set up at the introductory level. I got it as a gift but you can buy this great starter's book for \$15. It discusses lunar geology, equipment for observing and recording observations via drawing, photographing or imaging the moon, has a 70 page section of maps that show features at each phase of the month, and a glossary of Latin and other terms associated with the moon.

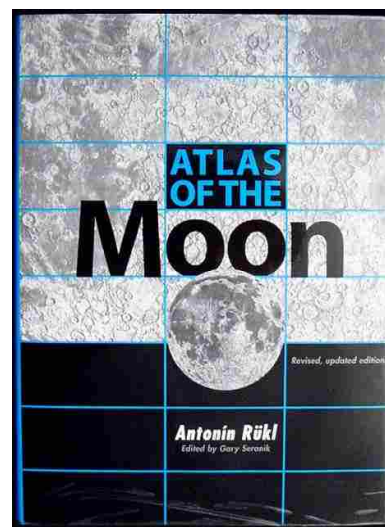


The Royal Astronomical Society of Canada came out with the Williamson Lunar Observing Program in 2005. It's not the Firefly book, but you may want to complete the requirements for an RASC Lunar Observer's Certificate for your wall. Get a free copy of the

program guide in .pdf format (a 545 kb file), or buy a print copy of the 54 page program guide from the cash-strapped Society. Then observe the noted "compulsory" features, have the observations confirmed by an RASC member or noted on the appropriate "application" and apply for a Certificate, paying the appropriate fee if you are not a Society member. You will have to buy your own frame.

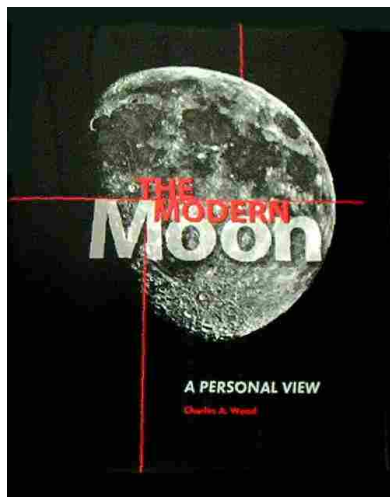


John Westfall's *Atlas of the Lunar Terminator* (Cambridge U. Press, New York, 2000) is a hardbound 9 x 11" text of over 280 pages of large digital images of the lunar terminator. As you study or image the Moon, if you concentrate on the terminator's stark relief, this book may assist you. The quality of Westfall's images is hardly better than you will get with an electronic eyepiece on a calm night. I bought my copy for \$35 from another observer.



Antonin Rukl's original hardcover *Atlas of the Moon* went out of print in 1993 and quickly became a collector's item. HAA members bought discarded library

copies for \$15 but lunar observers were paying over \$100 on the used market until last year, when Sky and Telescope made a 9 x 12" hardcover edition available for under \$50. The two editions look identical except that red ink is not used in the newer books. Rukl has a brief introduction and sets of photographs of the Moon but most of the 200+ page book is a set of extremely detailed drawings of lunar features with the Moon's near side divided into 76 sections.



If you want to know more about the Moon's geology and formation, you may want to buy Charles Wood's *The Modern Moon* (Sky Publishing, Cambridge, 2003) another 9 x 12" 200+ page hardback text that can be purchased alone for under \$50 or in a set with the new Rukl text. Wood writes the lunar column in *Sky & Telescope* magazine and developed the "Lunar 100" for observers that the RASC's new Lunar Certificate program mimics. As you study sections of the lunar surface, Wood shows you not just what the Moon looks like, in photos and detailed drawings, but how it was formed. This is a book you will want to sit down and read, not use at the scope.

I am not a real lunar observer. Nothing ever seems to smash into the Moon while I am observing it and it's dry appearance makes me thirsty. At public observing events I show people the Moon but they are amazed just to see craters. Subtleties like little volcanic domes, fault lines and the meandering lava flows of maria require close study such as Bob Botts has made. If you have an interest in such things I recommend the texts mentioned in this article.

If you just want to identify features as you observe them, the little Firefly guide should be in your coat pocket. Avid observers with large scopes will want Rukl's atlas. The Wood text will make you an expert

on lunar geology - how and when the features you see were formed. If you measure accomplishment through obtaining certificates, paying to take part in the RASC's lunar program may be for you.

Simply Solar

by Sheila Szaboth

Dear Fellow Astronomers:

I am a beginner, enthusiastic, solar observer. With some help from John Hicks I have created a new solar website called

Simply Solar

www.geocities.com/simple_solar/

I hope to reach professionals and amateurs interested in solar education to

- a) have a resource for others at the beginners level
- b) create an interest in my goal to organize a Solar Educational Conference Day in Ontario, Canada

Re Website:

Feedback and expert help/information is most welcome.

Re Solar Educational Conference Day:

We are seeking people who have knowledge of the Sun, experience with observing the Sun and experience with photographing the Sun who would be willing to give a "talk" at such an event to share their knowledge and experiences and techniques and images and data. {more information on website}

- Would you like to be on the executive planning team?
- Would you like to be sent info so you can attend the conference?
- Would you like to share your stuff and speak?
- Would you like to sponsor this event?

Thanks,

Sheila Szaboth simple_solar@yahoo.com

{member of Bruce County Astronomical Society}

Items For Sale



For sale: Celestron 1100 CGE (11") in mint condition. Purchased new in 2003 and used about two dozen times. Package includes: carbon fibre OTA, mount, electronics pier, tripod, finder scope, counterweight, counterweight bar, hand controller, Williams Optics 2"/1.25" mirror diagonal, original Celestron 1.25" diagonal, Telrad finder, Kendrick dew hood, Kendrick dew heater system (controller + heaters for eyepiece, Telrad, and OTA), Celestron 40mm eyepiece. Original packing materials (in excellent shape) for scope, electronics pier, and mount.

If purchased all new today, the complete package would cost about \$5,900 Cdn. (Kendrick pricing). Asking price for the package \$4795. Willing to sell the telescope without the accessories (i.e., OTA, electronics, mount, tripod, counterweight, counterweight bar, hand controller, 40mm eyepiece, and Celestron diagonal). Telescope only price is \$4300 (new price is \$5224). Shipping and shipping insurance costs are the responsibility of the purchaser.

For more information, please email Charles Miller (Ottawa) at telescope@comm-designs.net or call 613.746.9540. Email preferred (you have a better chance

of getting me by email). Note that Glenn Muller has seen and used this equipment as recently as Starfest 2005 if you'd like a first-hand, unbiased assessment of the equipment from someone in your own club.

November Skies

by Greg Emery

The month of November is a potentially good month for observing. The weather has not become too cold, the sun sets nice and early and we can view the Fall Constellations early in the evening and by end of the month do not have to wait too long for the Winter Constellations.

The constellations to view overhead (2300 on November 15, 2005) are Cassiopeia, Andromeda, Perseus, Cetus, Eridanus, Orion, Auriga and Camelopardis. The moon is Full on the 15th of the month and last quarter on the 23rd.

The Leonids meteor shower is on the 17th. The coincides with an essentially full moon and only the brighter meteors will be visible. Estimates are for about 18/hour at the peak.

Saturn and Mars dominate the sky in November. Mars, if you haven't heard is in excellent viewing position. Mars is easily found in the early evening as the bright red thing to the east. Mars is located relatively close to the Pleiades (M45 or Seven Sisters/Subaru) in Taurus. Saturn rises later in the evening and is in good viewing position by midnight or early morning. There has been a lot of time and coverage of Mars, but nothing beats the view of Saturn on a good night of viewing. Saturn is located in Cancer, not too far from the Praesepe or Beehive Cluster (M44).

For those of you getting started in astronomy try to find/see the Pleiades (M45), Hyades, Beehive Cluster (M44), Andromeda Galaxy (M31) and the Great Orion Nebula (M42). The Pleiades can be seen naked eye, with good binoculars or telescope the seven sisters will reveal their 40 or so siblings. The Pleiades are located in the western boundary of the constellation Taurus and right now are very close (slightly NW) of Mars. The orange star to the east of the Pleiades and Mars is Aldebaran, the Eye of the Bull. Follow the V-shape string leading south from Aldebaran to find the Hyades. The Beehive cluster in Cancer can be seen naked eye as a fuzzy patch on a dark night. This open cluster is located on the western side of the star just west of Saturn. The Great Orion Nebula is located at the end of the Sword of Orion. In the late evening or early morning look for a very bright blue-white star to the east, this is Rigel. A bright ruddy orange star to the east is Betelgeuse. Between these two stars is a line

of three stars that are essentially evenly spaced and of the same brightness. From these stars (which are the Belt of Orion) hangs the Sword. The end of the Sword is where you can find the Great Orion Nebula (M42). Look closely at the nebula and the swirling gas clouds. Inside the gas are young hot stars which are in the early stages of life. How many can you make-out?

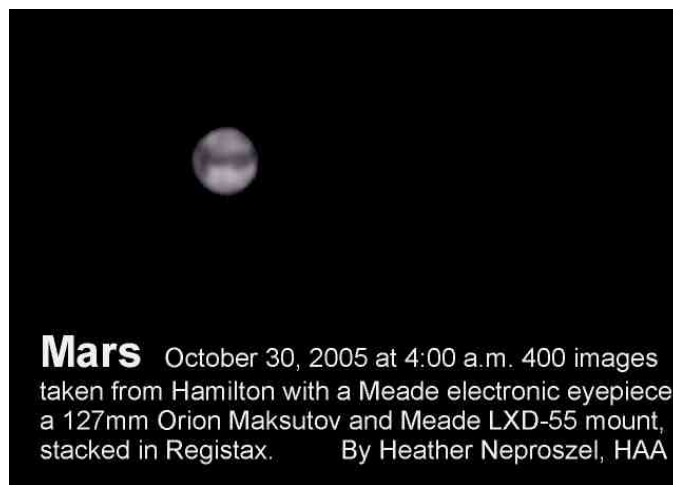
For those of you with more time at the eyepiece consider the following targets. The Cassini and Encke Divisions are gaps in the rings of Saturn. The Cassini Division (named after the space probe – or the other way around) and Encke Division require some steady seeing and a modest size scope. Look for the closure of the rings and any shadows. In between Orion and Monoceros can be found the Rosette and Cone Nebulae.

A target I still have trouble seeing well is M1 the crab nebula. Of course it would help if I looked for the Crab Nebula located between the horns of the Bull and not in the Constellation Cancer.

Some additional objects viewable by both beginner and experienced observers are M52 and the Double Cluster, M19, M36 through M38. M52 and the Double Cluster can be found using the W shape of the constellation Cassiopeia. M19 is a globular cluster in Pegasus while M36, M37 and M38 are open clusters in and around the constellation Auriga.



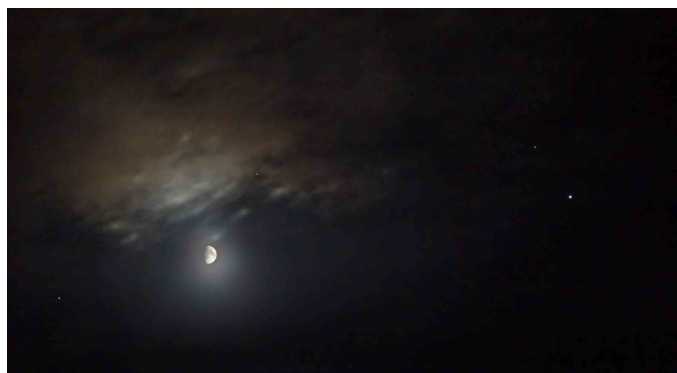
On Saturday October 22nd, Glenn Muller and John Gauvreau gave nine 30-minute presentations at the Wolf Cub Fun Day at Mount Nemo Scout Camp. Over a hundred cubs and leaders attended the talks on the solar neighbourhood which was just one of many activities happening throughout the camp. In this picture John Gauvreau is recruiting a volunteer to be a planet in his solar system.



On October 30 2005 I took advantage of clear skies and Mars at almost opposition to image the planet. I used a B&W electronic eyepiece to record the attached image through a 125mm Orion Maksutov-Cassegrain telescope and a moon filter. No barlow was used. I was quite pleased with the level of detail I was able to achieve with this simple-to-use and inexpensive device. It is also a way to observe Mars (on a TV monitor) without actually looking through the eyepiece.

By Heather Neproszel

EyeCandy



The Moon and Jupiter 6/16/2005, 100 mm (35mm format equiv) Over-exposed to show cloud and stars. Then inserted 1/100 @ f8 moon into halo.

By Peter McHugh



A Wrinkle in Space-Time

By Trudy E. Bell

When a massive star reaches the end of its life, it can explode into a supernova rivaling the brilliance of an entire galaxy. What's left of the star fades in weeks, but its outer layers expand through space as a turbulent cloud of gases. Astronomers see beautiful remnants from past supernovas all around the sky, one of the most famous being the Crab Nebula in Taurus.

When a star throws off nine-tenths of its mass in a supernova, however, it also throws off nine-tenths of its gravitational field.

Astronomers see the light from supernovas. Can they also somehow sense the sudden and dramatic change in the exploding star's *gravitational field*?

Yes, they believe they can. According to Einstein's general theory of relativity, changes in the star's gravitational field should propagate outward, just like light—indeed, at the speed of light.

Those propagating changes would be a gravitational wave.

Einstein said what we feel as a gravitational field arises from the fact that huge masses curve space and time. The more massive an object, the more it bends the three dimensions of space and the fourth dimension of time. And if a massive object's gravitational field changes suddenly—say, when a star explodes—it should kink or wrinkle the very geometry of space-time. Moreover, that wrinkle should propagate outward like ripples radiating outward in a pond from a thrown stone.

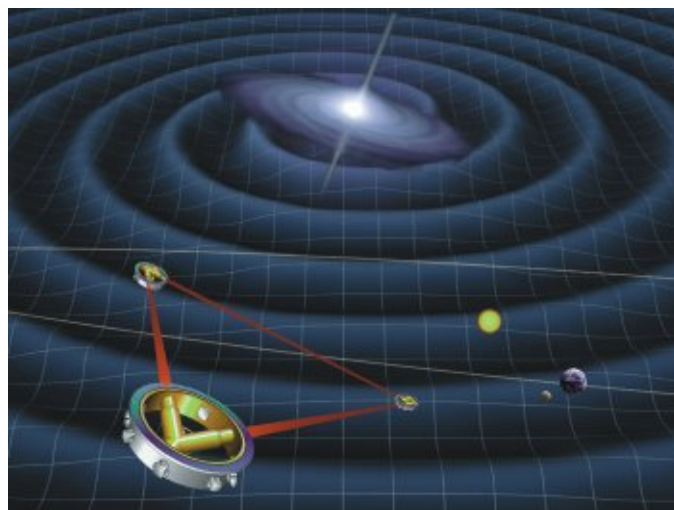
The frequency and timing of gravitational waves should reveal what's happening deep inside a supernova, in contrast to light, which is radiated from the surface. Thus, gravitational waves allow astronomers to peer inside the universe's most violent events—like doctors peer at patients' internal organs using CAT scans. The technique is not limited to supernovas: colliding neutron stars, black holes and other exotic objects may be revealed, too.

NASA and the European Space Agency are now building prototype equipment for the first space experiment to measure gravitational waves: the Laser Interferometer Space Antenna, or LISA.

LISA will look for patterns of compression and stretching in space-time that signal the passage of a gravitational wave. Three small spacecraft will fly in a triangular formation behind the Earth, each beaming a laser at the other two, continuously measuring their mutual separation. Although the three 'craft will be 5 million kilometers apart, they will monitor their separation to one *billionth* of a centimeter, smaller than an atom's diameter, which is the kind of precision needed to sense these elusive waves.

LISA is slated for launch around 2015.

To learn more about LISA, go to lisa.jpl.nasa.gov. Kids can learn about LISA and do a gravitational wave interactive crossword at spaceplace.nasa.gov/en/kids/lisaxword/lisaxword.shtml



LISA's three spacecraft will be positioned at the corners of a triangle 5 million kilometers on a side and will be able to detect gravitational wave induced changes in their separation distance of as little as one billionth of a centimeter.

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

Council meetings

All club members are welcome to attend the council meetings. Contact info@amateurastronomy.org for details.

Hamilton Amateur Astronomers Membership Renewal November 1, 2005 - October 31, 2006

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Do you want the newsletter emailed?:	

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Individual (\$25 Cdn/year)	
Family (\$30 Cdn/year)	
Royal (\$50 Cdn/year)*	
Friend (\$100 Cdn/year)*	
Patron (\$250 Cdn/year)*	
Voluntary Donation \$	

* These levels of membership confer the same rights and privileges as a Family membership. We greatly appreciate the additional financial support our members provide by signing up as a Royal, Friend or Patron.

All membership dues are eligible for tax receipts.

Total:	\$
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CANADA

Membership renewals are due November 1.