

skynews



this month

The Large Hadron Collider and the ATLAS Experiment

by Dr. Michel Lefebvre

October 8th, 2008, 7:30 PM, Elliott Lecture Theatre, Rm 060, UVic

The Large Hadron Collider will soon start operation at CERN, near Geneva, Switzerland. With its 27 km long tunnel and related accelerator complex, it is the largest scientific tool ever made, and it will allow scientists to probe the very fabric of nature to unprecedented depth. One of the two multi-purpose particle detectors to make use of this facility is called ATLAS. Over 2000 scientists from around the world, including many from Canada, have collaborated for more than fifteen years in the design and construction of the ATLAS detector. This talk will briefly describe the Large Hadron Collider, the ATLAS detector and its scientific program, with emphasis on Canadian involvements and contributions.

Bio: Dr. Michel Lefebvre is Professor of Physics at the University of Victoria in the Physics and Astronomy Department, where he is also Graduate Advisor. Dr. Lefebvre obtained his Degree from the Université Laval, and his Doctorate from the University of Cambridge. Shortly after joining UVic in 1991 he founded the Canadian ATLAS collaboration, now comprised of over 150 scientists, which contributed to the construction of the ATLAS particle detector, soon to study high energy proton-proton collisions at the Large Hadron Collider, located at the European Centre for Particle Physics Research, CERN, near Geneva. Dr. Lefebvre has been involved in many aspects of the ATLAS detector, including the construction of detector components at UVic.



Dr. Lefebvre is currently a member of the Subatomic Physics Grant Selection Committee of the NSER. He enjoys teaching undergraduate and graduate students, and working with colleagues both at UVic and at CERN. He received the UVic Science Award for Teaching Excellence of the Faculty of Science, and the 2006 UVic Craigdarroch Silver Medal for Excellence in Research.

*on the cover***ISS-Endeavour Pass, August 10, 2007****by Charles Banville**

Optics: Canon EF 17-40mm f/4L USM.

Camera: Canon 20Da on Manfrotto mount.

Exposures: 137 light frames of 1 minute, ISO 800. Zoom-lens set at 17mm, f/4. First frame taken at 22:10:15 on August 10, 2007. Last frame taken at 00:34:40 on August 11, 2007.

Process: RAW images converted to JPEG in Canon Digital Photo

Professional. Star trails created in Photoshop. Gaussian blur applied.

*Upcoming Events***Astronomy Cafe** October 6, 13, 20, 27, 7:30 - 11 pm (and each Monday through the winter), Fairfield Community Centre, 1330 Fairfield, Victoria. Call John at 250.480.0928 for directions and information.**Monthly Meeting** - October 8th, 7:30 pm, Elliott Lecture Theatre, Room 060, University of Victoria, **The Large Hadron Collider and the ATLAS Experiment, by Dr. Michel Lefebvre.****AGM** - Saturday, November 15, 2008, Gorge Vale Golf Club, 1005 Craigflower Rd, Victoria. **Speaker: Dr Jasper Wall, Tales from the Top: Tails from Telescope Mountains***Nominations*

This year's 2008 Annual Dinner and General Meeting is tentatively schedule for Sat. Nov. 15 at the Gorge Vale Golf Club.

This announcement is to serve "as formal notice" of our early November elections, positions in Council include: President, Treasurer, VP 1 and possibly various others. All individuals seeking nomination and wishing to serve are ask to contact Past-President Scott Mair for further details.

*President's Report***President's Message
October, 2008**

As I mentioned in my September Message, it is time for me to step down as your President. My two year term is over when our Annual General Meeting is held November 15th. Although Council (and Scott Mair in particular, as our current Past President) has formed a pretty solid slate of candidates, nominations are still open for several positions on our Council. Please seriously consider volunteering some of your time to support our Centre over the next year or two. Having new Council members actively involved ensures our Centre remains healthy and vital. Please contact any current Council member, should you have questions or want to volunteer. As I said in my last message, "you can do a little or a lot."

Speaking of participating, one of our members Sherry Buttnor took the lead to get Victoria Centre involved in the recent Metchosin Days. Solar viewing during the day was a big hit with the crowds, however due to some promotional glitches, the night sky viewing wasn't well attended. We are planning to be there again next year, and you can be sure we will have the kinks worked out next time!

The Fairfield Night Sky Viewing event held September 15th in cooperation with the Fairfield Community Association was a resounding success. Attendance was up significantly over our last event at this location, and both our volunteers and the public were very happy with how things went. Thanks to Tim Horton's on Shelbourne Street, we had beverages and snacks to offer. Thanks also to Scott Mair and the CRD Parks Department for producing a very nice looking banner. Photo gallery

It's good to see our observers and photographers were busy taking advantage of our beautiful autumn weather recently. If you browse the RASCVic email list, you will see some impressive photos and observing reports. I have just returned from a short trip to Long Beach on the west coast of Vancouver Island, and can report we had clear skies - what a rarity for this time of year in that part of the Island! I hope we all get more opportunities for observing before the winter storms close in on us.

Astrobabble

Zodiacal Light by Li-Ann Skibo

Did you wake up too early today because you thought it was morning? You're not the only one. Over the centuries, countless numbers of people have been fooled into thinking zodiacal light was the first sign of morning twilight.

Sometimes the night sky seems to glow. There are a few reasons this might be. Often the glow is from either sunlight or moonlight reflecting off a cloud. If the glow looks like a faint band of light stretching across the sky you are seeing the Milky Way Galaxy. But, if the glow you are seeing is triangular in shape extending up from the horizon, you may be seeing zodiacal light.

What is zodiacal light?

This eerie sky glow is caused by sunlight reflecting off cosmic dust particles that have slowly become concentrated in orbit, near the plane of the solar system (the ecliptic). The dust is thought to have come from the many orbiting asteroids as they collide with one another and from comets that have periodically made their way around the Sun over the past many eons.

When can I see zodiacal light?

In the Northern Hemisphere, this "false dawn" can be seen during morning twilight about an hour or two before sunrise in September and October. It can also be visible as "afterglow of the day" during evening twilight after sunset in February and March. The reason it is best to see zodiacal light at certain times of the year is due to Sun angle. The Sun rises and sets more abruptly, or at a steeper angle, in the spring and the fall. Have a look for yourself.



see if you can spot the elusive lights

For the next several weeks zodiacal light should be visible during morning twilight, but due to light pollution it may be difficult to spot this phenomenon from within Victoria. For your best chance to see this glow, you may wish to venture out to the dark skies like Sooke or the Highlands. On a clear night, if the Moon isn't too bright,

Extreme Starburst by Dr. Tony Phillips

A star is born. A star is born. A star is born.

Repeat that phrase 4000 times and you start to get an idea what life is like in distant galaxy J100054+023436.

Astronomers using NASA's Spitzer Space Telescope and ground-based observatories have found that the galaxy gives birth to as many as 4000 stars a year. For comparison, in the same period of time the Milky Way produces only about 10. This makes J100054+023436 an extreme starburst galaxy.



The "Baby Boom" galaxy loosely resembles the galaxy shown here, called Zw II 96, in this Hubble Space Telescope image. This galaxy is only 500 million light-years away, while the Baby Boom galaxy is 12.3 billion light-years away.

"We call it the 'Baby Boom galaxy,'" says Peter Capak of NASA's Spitzer Science Center at the California Institute of Technology in Pasadena, CA. "It is undergoing a major baby boom, producing most of its stars all at once. If our human population was produced in a similar boom, then almost all people alive today would be the same age."

Capak is lead author of a paper entitled "Spectroscopic Confirmation of an Extreme Starburst at Redshift 4.547"

detailing the discovery in the July 10th issue of *Astrophysical Journal Letters*.

The galaxy appears to be a merger, a "train wreck" of two or more galaxies crashing together. The crash is what produces the baby boom. Clouds of interstellar gas within the two galaxies press against one another and collapse to form stars, dozens to hundreds at a time.

This isn't the first time astronomers have witnessed a galaxy producing so many stars. "There are some other extreme starburst galaxies in

the local universe," says Capek. But the Baby Boom galaxy is special because it is not local. It lies about 12.3 billion light years from Earth, which means we are seeing it as it was 12.3 billion years ago. The universe itself is no older than 14 billion years, so this galaxy is just a youngster (Capak likens it to a 6-year-old human) previously thought to be incapable of such rapid-fire star production.

The Baby Boom galaxy poses a challenge to the Hierarchical Model of galaxy evolution favored by many astronomers. According to the Hierarchical Model, galaxies grow by merging; Add two small galaxies together, and you get a bigger galaxy. In the early years of the universe, all galaxies were small, and they produced correspondingly small bursts of star formation when they merged. "Yet in J100054+023436, we see an extreme starburst. The merging galaxies must be pretty large."

Capak and colleagues are busy looking for more Baby Boomers "to see if this is a one-off case or a common occurrence." The theory of evolution of galaxies hangs in the balance.

Meanwhile... A star is born. A star is born. A star is born.

See more breathtaking Spitzer images at www.spitzer.caltech.edu/Media/mediaimages. Kids can play the new Spitzer "Sign Here!" game at spaceplace.nasa.gov/en/kids/spitzer/signs.

AGM

Victoria Centre RASC- AGM and Dinner Meeting

Saturday, November 15, 2008. Cocktails 6:15 pm, Dinner 7 pm, Meeting 8 pm, Speaker 8:30 pm.
Gorge Vale Golf Club, 1005 Craigflower Road, Victoria

The cost will be \$35.00 per person (**Those who wish to attend the Business Meeting, ONLY, can do so - FREE !**)
 Purchase tickets (by cash or cheque) either by mail or at the October regular meeting, or order by phone or email - with payment at the door. Let Sid Sidhu know by Monday, November 3rd, so he can reserve you a spot. Please EMAILvp@victoria.rasc.ca

www.islandeyepiece.com
 Ph: 743-6633

Island Telescope

Science Emporium

107-2690 Mill Bay Rd (near Thrifty's)

New Location Opening May 2008

Telescopes, Spotting Scopes, Binoculars
 Science Kits, Globes & Posters, Dinosaurs
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address change? information incorrect

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contact us on-line

observers group

RASC Victoria Centre and the NRC have signed a License to Use Land Agreement which gives members of Victoria Centre expanded access to NRC property on Observatory Hill.

If you are a member in good standing of Victoria Centre RASC, consider yourself an "active observer", and wish to take advantage of this opportunity, please send an email to the 1st or 2nd Vice President. More information on this program see: <http://victoria.rasc.ca>

International Year of Astronomy

As most of you already know, next year is the *International Year of Astronomy* (IYA2009) and more than 124 countries are participating in the celebrations. It is a global acknowledgement of the contributions of astronomy to society and culture, highlighted by the 400th anniversary of the first use of an astronomical telescope by Galileo.



The **Royal Astronomical Society of Canada** (RASC) is celebrating this event in partnership with the **Fédération des astronomes amateurs du Québec** (FAAQ), the **Canadian Astronomical Society** (CASCA), the **Hertzberg Institute of Astrophysics** (HIA), the **Canadian Space Agency** (CSA), and representatives from the media, planetarium and science centre communities.

Some of the major international goals of IYA2009 are to:

- Increase scientific awareness
- Promote widespread access to new knowledge and observing experiences
- Support and improve formal and informal science education
- Provide a modern image of science and scientists
- Facilitate new networks and strengthen existing ones
- Facilitate the preservation and protection of the world's culture and natural heritage of dark skies in places such as urban areas, national parks and astronomical sites

The latest news on IYA in Canada is at www.astronomy2009.ca

Some program ideas for celebrating IYA in Canada are:

- "Galileo Moment" Experiences – Goal of 1,000,000 Canadians to look through a telescope or otherwise enjoy a moment of personal astronomical discovery
- Official IYA2009 Student Astronomy kit
- Canadian First Nations and Inuit Peoples: Historical knowledge of the Heavens
- Dark-Sky Preserves and Reserves across Canada
- Planetarium and Science Centre Productions
- Heavenly Arts and Entertainment IYA2009 Collaborations
- Galileo Legacy Lectures by Canadian Astronomers working at the research frontiers
- Educational poster featuring Canadian astronomy – Complement the NRC poster Canadian Skies
- Contests for children that reach into every school in Canada
- National lecture series with high Canadian content
- Canadian astronomy DVD
- Series of astronomy-themed stamps (proposal approved by to Canada Post)

The Victoria Centre has created a list of proposed IYA2009 related activities in the Capital Regional district. Some of these will possibly be joint activities with other local partners such as HIA, CU and UVic. A meeting of the group has been scheduled to plan for a coordinated action regarding some the activities that will enhance the overall strategic objectives of IYA.

Here is a list of proposed IYA2009 activities by the Victoria Centre:

Goals: At least 20,000 + CRD citizens will have the opportunity to look through a telescope in 2009.

- Public Viewing session to launch IYA2009, January 10 (meeting scheduled to plan this).
- *From Earth to the Universe* (FETU) exhibit at the Bay Centre, Feb.
- Explore the possibility of participation at the Victoria Airport during FETU display – February to April.
- Promote the Centre's 'School Telescope Program' (target, 2500 public participation).
- Continue providing public outreach programs to youth groups (Beavers, Girl Guides, Cubs, and Scouts).

- Participate in the Annual *Beaverree* at Camp Barnard.
- Participate in the *Globe at Night* events.
- Participate in the *Earth Day* activities.
- Participate during the *Early Music Society* event, 28 March (see <http://www.earlymusicsocietyoftheislands.ca/concerts/lucidarium.php>).
- Continue providing night sky viewing sessions for people with disabilities.
- Conduct at least 4 night sky viewing sessions for the general public (2 at Cattle Point, one at Dallas road in Beacon Hill Park and one at the West Shore Rec. Centre).
- Host a 100 hour *Side Walk Astronomy Marathon* (possible location front lawn of Empress Hotel and/or at the Butchart Gardens), site still to be confirmed. First Day of Issue ceremonies for the new postal stamps will occur at the Observatory during 100 hours of Astronomy.
- Host two public viewing sessions at the Fairfield Community Centre.
- Continue participation at the CU.
- Host *International Astronomy Day* celebrations.
- Facilitate distribution of 100 Galileoscope kits.
- Possible participation at the following local community events:
 - Oak Bay Tea party
 - Saanich Fair
 - Buccaneer Days
 - Sidney Days
 - Luminara at Beacon Hill Park
 - Sandfest Family Day
 - Metchosen Day.

As you can see it is an extensive list of activities, however many of these are an expansion of our existing public outreach programs and there are some new ones especially geared for the IYA2009.

To make IYA2009 a success will require a concerted effort from every one of us. So please get involved by being a willing volunteer. All we have to do is share a small part of the load to make IYA2009 a year to remember. In essence we will be fulfilling the RASC's mission of sharing our hobby with the public having fun at the same time.

For more information contact Sid Sidhu.

RASC victoria council

this month

monday nights

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Astronomy Cafe

Fairfield Community Centre,
1330 Fairfield, Victoria
7:30-11pm

Call John at 250.480.0928 for directions and information. New comers are especially welcome. Come and enjoy!

**ASTRONOMY
CAFÉ**



second wednesday of the month

Monthly Meeting

7:30 PM, Elliott Lecture Theatre,
Rm 060, UVic.

as sky and interest dictate

New Observers Group

Hosted by Sid Sidhu.
1642 Davies Road, Highlands.
Call 391-0540 for information and directions.

by email

Observer/CU Volunteers/ Members email lists

Contact Joe Carr to subscribe to these email lists for important, timely, member-related news.