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OSFS Statement

Newsletter of the **Ottawa Science Fiction Society, December, 2014,**
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Cover is an aurora over Tromso, Norway. Nov. 29, 2011 http://www.flickr.com/photos/salomonsen
There is a 5 minute video by Alister Chapman of an auroral display at
http://www.slate.com/blogs/bad_astronomy/2012/01/28/real_time_footage_of_aurora_shows_them_dancing_and_shimmering.html

a**We are suspe**nding requirements of membership dues for now, as we are not paying for meetings. The Executive will review our financial situation regularly.
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Rates

Regular	$0.00
Family	$0.00
Extraordinary & Senior	$0.00

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Contents

For Your Viewing Pleasure:

Jupiter rises around 9pm. Mars still lurks low in the sunset glow. Saturn lies low in the dawn sky. The Moon will reach First Quarter on the 28th.

Coming Events:

Nov 14-16 - SFContario 5, Ramada Plaza Hotel, Toronto. Guests: Robin Hobb, James Murray, www.sfcontario.ca.

Nov 22-23 - Toronto Mini Maker Faire 2014, Toronto Reference Library, www.makerfairetoronto.com.

Jan16-18, 2015 - Back to the ConFusion/ConFusion 41, Dearborn Doubletree Hotel, Detroit. Guests: Karen Lord, Dr. Cynthia Chestek, Heather Dale, Monte Cook, Shanna Germain, Aaron Thul, www.confusionsf.org.

Jan 23-25, 2015 - GAnime, Palais de Congrès, Gatineau, QC. Guests: Doug Walker, John Lang, www.ganime.ca, @ganime on Twitter.

April 10-12, 2015 - Ad Astra 2015, Sheraton Parkway North, Richmond Hill, ON. SF literary convention. Guests: Anne Bishop, more, www.ad-astra.org, Facebook.

April 16-19, 2015 - FilKONtario 25. Filk convention. www.filkontario.ca.

May 22-24, 2015 - Anime North 2015. , www.animenorth.com.

June 6 or 7 – 2015 - Prose in the Park near the Parkdale Market.

Aug 19-23, 2015 - Sasquan/73rd World Science Fiction Convention, Spokane Convention Center, Spokane, WA. Guests: David Gerrold, Leslie Turek, Tom Smith, Vonda McIntyre, Brad Foster. www.sasquan.org.

Sometime in early 2017 - CostumeCon 35, somewhere in Toronto-Hamilton area. Information to com

Oct 12-15, 2017 - Bouchercon XLVIII, Hotel TBA, Toronto. World Mystery Convention. Guests: Louise Penny, Chris Grabenstein, Twist Phelan, Gary Phillips.

Movies: List submitted by Sandi Marie

The Hobbit: The Battle Of The Five Armies 17 Dec 2014 The conclusion of Bilbo Baggins (Martin Freeman), the Wizard Gandalf (Ian McKellen) and the thirteen Dwarves' epic quest to reclaim the lost Dwarf Kingdom of Erebor from the dragon Smaug (voiced by Benedict Cumberbatch).

Cellar Door Film Festival invites filmmakers to submit speculative films of both short and feature length. This includes films made within the genres of horror, thriller, science fiction, fantasy, avant-garde, experimental, the supernatural, alternative history, mystery, grindhouse, and everything else in-between!

CDFF welcomes films from local, national, and international filmmakers, and encourages submissions from filmmakers of diverse backgrounds. CDFF also invites filmmakers from the Greater Ottawa Area to submit one short film for free (see website for details). By encouraging local productions, CDFF spotlights the strength of the Ottawa film scene and showcases works by local filmmakers alongside those of their international peers.

Please visit our Submissions page for more information on eligibility and how to submit your film.

The Sunburst Award for Excellence in Canadian Literature of the Fantastic is a juried award which recognizes exceptional writing in three categories: adult, young adult and short story. Starting with the 2015 awards, they will accept e-book versions of submissions as well as print ones. www.sunburstaward.org.

“As the publishing landscape continues to change, we expect the number of print books submitted to drop significantly over the next few years," says Rebecca Simkin, the organization’s current chairperson. “Since most of our jurors and administrators overwhelmingly prefer print books they will indeed be missed, but with the generous support of Kobo Writing Life, we are able to supply the jury with new Kobo Arc tablets for their Sunburst deliberations.”

BOB BERMAN AT RASC, submitted by Sandi Marie 5 Dec 2014.

Just got home from a RASC meeting. (Royal Astronomical Society of Canada, Ottawa Observers Group). The main speaker was Bob Berman, columnist for Astronomy and Sky and Telescope magazines. His speech was enthralling. Topics covered - the nature of the universe and the true colours of space. Definitely dear to my heart.

The dictionary describes metaphysics as the branch of philosophy that deals with the first principles of things, including abstract concepts such as being, knowing, substance, cause, identity, time, and space.

His coverage of astronomy within this branch of science dealt with the concept of perception which made me think of Schrodinger's cat. Only when observed is the cat really there (paraphrased). Current theories being examined seem to extrapolate that the universe is only viewable through the perception aspects of our brains. Intriguing - as Carl Sagan once said - "We are a way for the cosmos to know itself." — Cosmos.

As an astronomical artist I was disheartened to again hear that there really isn't much colour in space. Astronauts have consistently noted that the sun in space is white and not bright yellow. Also that the so-called red giants are not red at all but light orange. So many times I have been told that my space art isn't colourful enough. I suspect that this point of view comes from the highly 'decorative' photos released by Hubble. These photos however are originally observed as black and white and are enhanced using photographic filters to give greater detail and to emphasize the colours of various gases, (red for presence of hydrogen) etc. Altogether an interesting and thought provoking presentation.

Sandi Marie

Astronomy:

23rd December, 2014

The universe started just under 14 billion years ago, with some sort of tweak of the fabric of space-time. At that moment the conditions leading to the universe we live in today were established. If it had a beginning, it is logical to think it could have an end. What are we finding out about that?

In the beginning the universe was tiny, unbelievably dense and extremely hot. It then started to expand, became less dense, and the temperature fell. Eventually atoms could exist, and then galaxies, stars, planets and us. The expansion is the result of a push outwards. This is being opposed by every object in the universe tugging gravitationally at every other object. The future of the universe will be determined by which wins: the force driving the expansion, or the gravitational force pulling everything back together.

If the expansion of the universe was not initially fast enough, the expansion will gradually slow, stop and then everything will start falling back, until at some time in the distant future, everything would be back in one lump. Maybe that lump will start to expand again. However, if the expansion began fast enough, the universe will expand forever. Gravity would gradually slow it, but never stop it

To test this idea requires totalling up all the mass in the universe, and then seeing if its combined gravity is enough to stop the expansion. Scientists have gone through this process several times, and each time they got the same answer. There is not enough matter to stop the expansion. The universe will continue to expand indefinitely. Recent discoveries have underlined this conclusion. There is something in the universe called “dark energy”, which helps drive the expansion, and as the universe gets more spread out, weakening its collective gravity, the dark energy is becoming increasingly dominant and is speeding up the expansion. So what lies ahead for us?

Over billions of years the other galaxies will get

more distant, as they get carried away by the expansion. Our Sun will run out of fuel, sneeze off its outer layers and end up as a slowly-cooling white dwarf star. New stars will continue to be born in the great gas clouds in the spiral arms of galaxies for some time yet, but eventually there will be no material left and star formation will cease.

However, white dwarf stars cool very slowly and red dwarf stars are so niggardly in their use of fuel that they will smoulder on for tens of billions of years. So eventually the universe will consist of cooling white dwarf stars and dim red dwarfs. When they eventually go out all will become dark. Eventually even the elementary particles making up all matter will themselves decay, leaving the universe as an increasingly rarified miasma of decayed particles. Given enough time even black holes will decay.

Actually, the tale is not quite as dark as it might seem. An idea attracting a lot of scientific attention is that there may be a sort of multidimensional cosmic foam, in which universes form as bubbles, which expand and then eventually dissipate. New universes are forming all the time. Some researchers report evidence of contact points between our universe and others.

With accumulating knowledge and ever-improving research tools, we have reached a position that would have been hard to predict even a few decades ago. However, it is also clear that we are uncovering ever bigger and more subtle questions. There is no danger of our learning everything, or even of understanding more than a tiny bit of what is going on. This is a book we've hardly begun to read. We're at the best place, near the beginning, with the end of the book nowhere in sight. Have a Great Christmas and a Happy New Year.

Ken Tapping is an astronomer with the National Research Council's Dominion Radio Astrophysical Observatory, Penticton, BC.

Sub-Atomic Particles predicted by Canadians found at CERN

New baryons found at Large Hadron Collider are 6 times more massive than protons

By Emily Chung, CBC NewsPosted: Nov 19, 2014 9:01 AM ETLast Updated: Nov 19, 2014 3:50 PM ET

Two new subatomic particles whose existence was predicted by Canadian particle physicists have been detected at the world's largest particle collider.

The discovery of the particles, known as Xi_b'- and Xi_b*-, were announced by CERN, the European Organization for Nuclear Research today and published online on the physics preprint server Arxiv. Summary of the paper on Arxiv at http://arxiv.org/abs/1411.4849. The new particles are baryons – a type of particle each made up of three elemental subatomic particles called quarks. The protons and neutrons that make up atoms are also baryons, but the new particles are about six times more massive than a proton.

That's because they contain a very heavy kind of quark called a b quark – also known as a beauty or bottom quark. The two other quarks in the particles are the d or down quark – a very light type of quark that is also found in protons and neutrons – and a middleweight strange quark.

The existence of the two new baryons had been predicted in 2009 by Canadian particle physicists Randy Lewis of York University and Richard Woloshyn of the TRIUMF, Canada's national particle physics lab in Vancouver.

"I saw the title [and] I thought, 'Oh, I predicted those — I wonder how it turned out?" recalled Lewis. "I looked up their numbers and I said, 'Yeah, that looks a lot like what I predicted — great!"

Lewis and Woloshyn had predicted the composition and mass of the new baryons using a computer calculation based on a theory called lattice quantum chromodynamics, which describes the mathematical rules for how quarks behave.

Knowing where to look

The predictions give scientists at particle accelerators like the Large Hadron Collider an idea of where to look for undiscovered particles and, if they find something, what it might be.

Blusk acknowledged that he was specifically looking for the kinds of particles that were

discovered, based on the predictions of scientists like Lewis and Woloshyn.

"We did have good reason to believe those particles would be there," he said, although he didn't know whether there would be one or two.

But he noted that even when particles are predicted, there is no guarantee that they will be found.

Meanwhile, Lewis said he's never quite sure that his calculations are correct until the discovery of particles that match his predictions: "One always worries, 'Have I made a mistake?'"

Blusk said the new discovery's precise real-world measurements can be used to refine the calculations made by scientists such as Lewis and Woloshyn, allowing them to make more precise predictions in the future.

The new particles are very short-lived; they last only a thousandth of a billionth of a second before breaking up into five smaller pieces. Blusk and Charles detected them by measuring the momentum and mass of those smaller pieces when they hit the detector and extrapolating backwards to where they originated. He said the extrapolation showed that the new baryons travelled about a centimetre before falling apart.

"I'm happy," Lewis said. "These are little details of physics that we're getting right."

The new particles are the third and fourth ever discovered at the Large Hadron Collider. The first, found by the CMS experiment in 2012, was a related particle called Xi_b*0, which also contains a b quark and a strange quark, but contains an up quark instead of a down quark. The second was the famous Higgs boson.

The LHC is currently shut down so it can be equipped with more intense beams that will operate at higher energies when it restarts in the spring of 2015.

"I'm quite confident that they will be discovering many more particles at CERN," Lewis said, "and I think that will be really valuable for us to solidify our understanding."