

Where does this all fit in? In the main sequence of stars all stars constantly evolve but some stars change quickly, some slowly. From studying variable stars we see they come in all shapes and sizes in result of many different processes. By coming to understand how things work (in these variable star systems) and how we got to where we are we gain a stronger appreciation for the complexity and unending beauty of our universe that we have the privilege to explore.

After the lecture Steve handed out an information sheet on some variable star examples.

Announcements, Dr. Baylis announced the “Shifting Sands” lecture at Science City on Wednesday October 17, at 7:30 p.m..

Guest speaker at the RASC London Centre next month (November 16) is former Apollo 17 astronaut Harrison (Jack) Schmidt the “last man on the Moon”.

Break and 50-50 Draw: Winner was Mike Mastronardi who kindly donated it back to the Centre.

Director of Observing Report, Matt McCall:

Activity over the last month:

- Aurora visible in our area 2 days ago (Oct. 13)
- Mars imagery and Marc Garneau visit to Science City at which Windsor Centre participated with our own display. Member participation included Steve Pellarin with a solar scope and Rick Marion staffing our booth display.

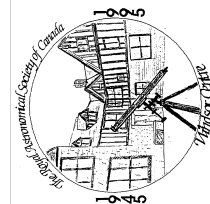
Coming Events:

- Orionid meteor shower peaks on the night of October 20/21 close to Perseid rate at a possible 60/hr
- Leonid meteor shower in the morning of November 17th
- Asteroid Pallas is in view
- Comets: C.168P Hergenrother is brightening, presently mag.10, in Pegasus near Alpha Pegasi. K5(Linear) discovered May 20th is in Bootes in the western sky. Currently magnitude 10, may be 8.5 at end of month
- November planets visible include Jupiter that will be 0.9°N of the Moon on November 1
- Matt showed videos of Marc Garneau's Science City speech.

Paul thanked the members for attending and **adjourned the meeting at 9:49 p.m..**

Next meeting will be on November 20, 2012 at the Ojibway Park Nature Centre.

Reported by Arthur Rae, RASC Windsor Centre Secretary.



AURORA



Volume 38, No. 3

The Royal Astronomical Society of Canada - Windsor Centre

November 2012

Flyer

Next Meeting

Tuesday, January 15, 2013

7:30 p.m.

at

[Ojibway Park Nature Centre](#)

5200 Matchette Road

Speaker: TBD

Topic: “TBA”

Upcoming Events

December Social: Our annual Holiday Party will be held on Friday December 7th at 6:00 p.m. at the Ojibway Park Nature Centre. The dinner is “pot luck” style and will be served around 7:00 p.m.. Please contact Sue Iihola at (sueiihola@hotmail.com) to coordinate what you will be brining and confirm the number of people in your party.

Meteor Showers: Watch for the Geminids to peak overnight on December 13. This years’ peak coincides with the New Moon so expect to see 80 to 100 meteors an hour. Meteors will appear to radiate from a point near Castor.

Open House Night at Hallam: The next open house night at Hallam is on Saturday December 15 at 7:00 p.m..

Monthly Meeting Minutes

October 16, 2012

The Royal Astronomical Society of Canada - Windsor Centre, Ojibway Park Nature Centre.

Windsor Centre **President Paul Pratt** chaired the Meeting. Paul called the Meeting to order at 7:37 p.m. and welcomed members and guests to the Ojibway Nature Centre.

Motion to accept the Minutes of the September 18, 2012 Members' Meeting moved by Steve Pellarin, seconded by Greg Mockler. MOTION CARRIED

Business

RASC Windsor Council recently held a Council Meeting and determined a **proposed slate of officers for 2013**. Past President Pierre Boulos was called to announce the proposed slate for the Windsor Centre 2013 officers, Council and appointed positions to be voted upon at the November Meeting. He asked that members let him know if they are willing to stand for a position in the still unfilled jobs before the election night.

Steve Mastellotto, Aurora Editor, informed that the next full issue of the newsletter will be January 2013 and requested articles for that publication.

Steve Mastellotto reminded members that the **Hallam Observatory Key Fee** collection is due at \$40. Key holders must be members in good standing for 1 year. For new key holders there is an initial \$10 key fee and that training is needed if they wish to use the observatory.

Steve Mastellotto reminded members that we do have a **Facebook page**.

Paul introduced the **Main Talk by Steve Pellarin; “Weird Variable Stars and the Stories They Tell”**

Stars are the essential building blocks, nature's chemical factories. The AAVSO is the organization that studies variable star activity. All chemicals including those in our bodies came from stars. Stars are defined as being mostly hydrogen gas with other trace elements. Stars are created with nuclear fusion and are a balance between gravity and expansion.

Stars that change in brightness are called variable stars. The period of time over which the brightness changes has a large variation of from seconds to years and centuries. Variable star behavior is a useful study.

Variable types: Pulsating variables show expansion/contraction of physical shape. Examples are Cepheids of which there are three types including supergiants which vary up to 25% in size. Type 1 has luminosity relative to the variable's period. These help gauge distances in the universe. Type 2 variables have high

speed eccentric orbits and are of old age. Type 3 are dwarf types, very old stars and blue stragglers.

MIRAs(LPVs) have a period of less than 100 days. An example, R Leo, has a one-year cycle and varies through 5 magnitudes of brightness.

Young Inconstant Stars haven't reached their balanced/stable fusion process, are considered protostars like the T Tauris.

Cataclysmic Variables result when one star accumulates matter from its partner. Mass, separation distance and age of secondary decide brightness.

Novae show large outbursts of 6 - 9 magnitudes just one time. Recurrent Novae outburst a 4 to 6 magnitude increase in about every 10 to 80 years. An example, RS OPH. Dwarf Novae are from many classes of stars. One star consumes the other, shifts brightness 5 magnitudes in a period of 100 days. Supernovae are type 1A stars. The white dwarf reaches a 1.4 mass limit then all energy is released in a runaway nuclear fusion.

Eclipsing Variables are a situation where one star is eclipsed by a dimmer star. Examples include Algol or Beta Persei and Sheliak or Beta Lyrae with periods of one week.

Weird Variables: EV Lacertae, a UV Ceti type which is a flare star fluctuates 5 to 10 magnitudes. It is a young star in its period of adjustment and a dwarf. It shows a fast rotation of 4.4 days. It flared on April 25, 2008 for 8 hours and released UV radiation.

P Cygni is a blue variable, super massive at 75 times that of our Sun and 55 times brighter. It shifts from magnitude 6 to 3. Numerous fluctuations showed in the early 1700s then stopped. Blue giants have different life paths than main sequence stars and develop incredible stellar winds. It took spectral analysis to explain its function.

W Ursae Majoris is a contact binary, a main sequence star like our Sun. It has an eight hour cycle and is an eclipsing binary. Its period has shortened since 1903.

FK Comae Berinices is a rapidly rotating G5-class star at 160Km/sec. Variability goes from 8.1 to 8.4 magnitude in a 2 to 4 day period, it being 30 times larger than our sun. It is probably comprised of two stars that have merged based on the giant flares and prominences showing.

V838 Monoceros is a peculiar red variable that varies between 16 and 6.7 magnitude, distanced 20,000 light years away from us. V838 is possibly the largest known star even though it was unknown before 2002 when it exploded and its image was captured by the Hubble Space telescope.

The anatomy of a light echo through various dust cloud bands illuminated by a possible new classification of a nova was then explained.