Cygnus is easy to find high in the sky, though winter stars and deep sky objects are coming around later at night. Steve mentioned some nice bright stars that many may overlook while observing galaxies or nebulae with large telescopes. Fomalhaut is one of the closest stars to Earth and rises high enough above the southern horizon to see. Challenge yourself with binoculars by trying to view Piscus Austrinus, and then you can claim you've viewed the southern constellation Grus. Even Sculptor's brightest stars can be seen over the lake.

Art Rae's photo of October 8th's lunar eclipse was shown, and Tom agreed with Steve that it was a rather dark eclipse early that morning. Steve also mentioned the following upcoming events:

October 23: The **Partial Solar Eclipse** will be visible starting at 5:39 p.m..
Monster **Sunspot AR2192** is very active, five M-class flares so far, potential for good aurora display.
October 20 to November 3 - **Zodiacal Light** visible in early morning twilight
October 24 - **Mercury** high enough above horizon for binoculars, few more days will be more easily visible with naked eye.
October 25 - **Saturn** near very slender crescent Moon
October 27 - 29 - **Moon** moving just past **Mars**
November 8 - **Mercury** below Spica
November 17 - **Leonid meteors** peak

Rick thanks Steve for his presentation and the membership for coming out to the meeting. The meeting was **adjourned at 10:15 p.m.**

Recorded by Matt McCall, RASC Windsor Centre Secretary.

Melotte 15 is the small open cluster and the embedded emission nebula is IC 1805, in Cassiopeia. Photo by Brian Thomas with his Celestron 9.25" f/10 telescope, Modified Canon 5D camera, 152 minute total exposure at ISO 1600.

Aurora

The Royal Astronomical Society of Canada - Windsor Centre

November 2014 Volume 40, No. 3

Flyer

Next Meeting

Tuesday, January 20, 2015
7:30 p.m.
at
Ojibway Park Nature Centre
5200 Matchette Road

Speaker: To Be Announced

Topic: *"To Be Determined"*

Upcoming Events

December Social: Our annual Holiday Party will be held on Friday December 5th 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 Mike Mastronardi at (michael.mastronardi@stantec.com) to coordinate what you will be bringing and confirm the number of people in your party.

Open House Night at Hallam: The next open house night at Hallam is on Saturday November 29th at 7:00 p.m.. The December open house night also begins at 7:00 p.m. on December 27th.

Geminid Meteor Shower: Peaks at 7:00 a.m. EST on the morning of Sunday December 14th.

Winter Solstice: Winter officially begins for the northern hemisphere at 6:03 p.m. EST on Sunday December 21st.

Monthly Meeting Minutes
October 21, 2014

The monthly meeting of the Royal Astronomical Society of Canada - Windsor Centre was held at the Ojibway Park Nature Centre.

Windsor Centre **President Rick Marion** chaired the meeting. Rick called the meeting to order at 7:33 p.m. and welcomed members and guests to the Ojibway Nature Centre.

Motion to accept the minutes of the September 16, 2014 meeting was made by Art Rae, seconded by Brian Thomas. MOTION CARRIED.

Rick called upon **Past President Paul Pratt** to provide the **RASC Windsor Centre proposed slate of Executive positions for 2014 . . .**

President: Open Position
1st Vice President: Mike Mastronardi
2nd Vice President: Open Position
Secretary: Open Position
Treasurer: Greg Mockler
National Council Rep: Mike Mastronardi

Paul expressed the Centre's interest in receiving some more members for council, anyone willing to step up to fill any positions is encouraged for coming year.

Main Presentation

Rick introduced the main speaker for the evening, **Dr. Pierre Boulos**, and his talk: **Historical Models of our Solar System and Kepler's Laws of Planetary Motion.**

Before moving into his main talk, Pierre asked the audience to come up with various celestial objects that change their appearance over time, and certain members described what they observed. Dave Panton said he has been imaging Barnard's Star 5 years in a row to see how its position relative to other background stars has changed. Others mentioned the phases of Moon and Venus.

After someone mentioned Jupiter, Randy Groundwater described the Great Red Spot having altered its size and colour over the past few decades, having faded and shrunk but may increase again in near future.

The Sun's position differs over time at rising, setting and moving through the sky. Tom Sobocan had his students chart an entire lunar cycle in the course of a month to show not only phases but also libration and position during night and day. Pierre and Tom then discussed how astronomers came up with the Mars epicycles to explain away the motions around the Sun that didn't make sense to them. Afterward, Pierre moved further into the main talk.

The problem with most geocentric models is that it's very hard to explain retrograde motion - with Moon and planets going around Earth. Though scientists before Copernicus had discussed theories of a heliocentric solar system, his Sun-centered model was the one that was finally adopted by the world at large. Of course since then, the idea of completely circular orbits has been replaced by more elliptical ones.

Around the time Galileo was supporting this heliocentric model, Tycho Brahe was compiling a massive archive of his very accurate planetary observations. His assistant, Johannes Kepler, used this data to work out details of their orbits. Tycho's preferred model was a geo-heliocentric one, in which Sun and Moon go around Earth, but all other planets move around the Sun.

Kepler's laws of planetary motion are actually among the biggest misnomers in science, Pierre explained. They describe and idealize planets' orbits, but there is not a single planet out there that we know of that really follows these laws. Only if a solar system literally had only one star with a solitary planet orbiting it would you have a perfect system following Kepler's laws.

An example of how something in our system doesn't completely follow his laws of motion would be the interaction between Earth and Moon, especially how our satellite does not come back to the same position after each revolution. Pierre continued explaining how the laws work and showed numerous equations and images before finishing the presentation.

Rick thanked Pierre for his presentation and announced a break.

Announcements

1. Next **Members Meeting** is November 18 at 7:30pm.
2. **Hallam Open House** is October 25 starting at 7pm.
3. **Point Pelee Dark Sky** Night is November 22 starting at 7pm.
4. **Hallam Observatory key fee** - Steve Mastellotto reminded members that key fees are now due and have increased from $40 to $60.

Fifty-fifty draw: Winner was Pierre Boulos, who donated the winnings back to the Centre.

Director of Observing Report, Steve Pellarin: The Great Square in Pegasus is prominent this time of year, and even the teapot in Sagittarius is still visible above the horizon in the early evening, though it's the dense starfields of the Milky Way above that constellation that are most worth observing.