

AUTORA



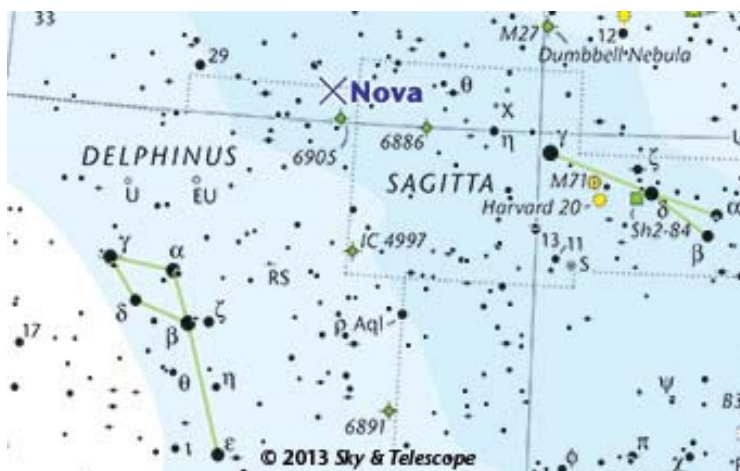
Volume 39, No. 1

The Royal Astronomical Society of Canada - Windsor Centre

September 2013

Nova Delphinus 2013

The nova was discovered by Koichi Itagaki of Yamagata, Japan, in an image taken at 14h Universal Time (2 p.m. EDT) on August 14th. It was not present in a photo that he took the previous day. The star was apparently 17th magnitude before erupting, so it brightened roughly 100,000-fold to its peak a little brighter than magnitude 4.5 on August 16th. It has since faded slowly and nearly stopped fading in the last two weeks. The nova is now at about magnitude 7.4.



A classical nova happens in a special kind of tightly-orbiting binary star system: one where a relatively normal star pours a stream of hydrogen onto the surface of a companion white dwarf. When the layer of fresh hydrogen on the white dwarf's surface grows thick and dense enough, the bottom of the layer explodes in a runaway hydrogen-fusion reaction — a hydrogen bomb in the shape of a thin shell roughly the size of Earth. The underlying white dwarf remains intact, and as new hydrogen builds up, the process may repeat in a few years to tens of thousands of years.

The nova is easy to locate north of the familiar star pattern of Delphinus. To its west, Sagitta, the Arrow, points toward it. See chart above.

The nova has been observed and photographed by a number of Windsor Centre members almost from the day of discovery. We were lucky enough to capture our first views while it was still brightening, watched it peak and are now following it fade. Some of us made our first AAVSO magnitude estimates and reports. The photo at right shows the nova as the bright star in the center of the frame and was taken by Pete Bararo on the night of August 15th.



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Calendar of Events

Our next meeting...

Tuesday October 15, 2013

7:30 p.m.

at

Ojibway Park Nature Centre

5200 Matchette Road

Main Speaker...

Dave Panton

Topic...

"Infra Red Starlight Detector Project"

Activities...

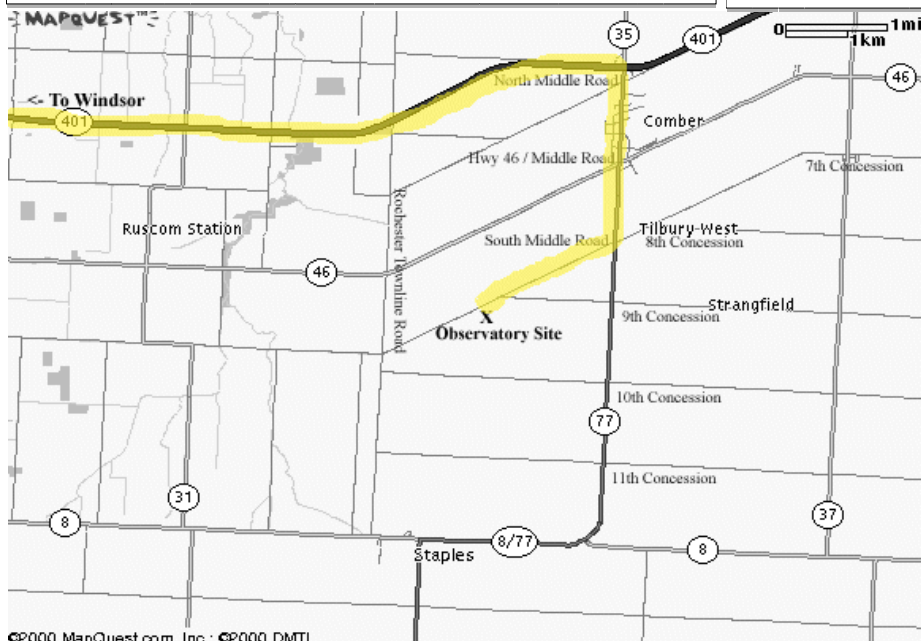
Fall Equinox: Autumn officially begins in the Northern Hemisphere on Sunday September 22nd at 4:44 p.m. EDT.

Mercury and Spica: Are less than a degree apart on the evening of September 24th.

Draconid Meteor Shower: Peak on the moonless night of October 7th. The **Orionids** peak in strong moonlight on October 20th.

Jupiter Shadow Transits: A rare triple-shadow transit on Jupiter occurs on the morning of **October 12th** from 12:32 - 1:37 a.m.. In addition a double-shadow transit occurs on the morning of **October 19th** from 2:25 - 4:27 a.m..

Open House Night at Hallam: The next open house night at Hallam is on Saturday October 12th at 7:30 p.m..



Hallam Observatory Site

Directions: The map at left shows the Comber area and it includes the major highways (401, 77, 8 and 46) that are in the area of the observatory.

The most direct route from Windsor is "highlighted" on the map which is to take Highway 401 East to Highway 77 South to South Middle Road. Turn right onto South Middle Road and go about 1 kilometer and just after the point where Concession 9 joins it (it is hard to see this intersection) you will find the observatory site on the South side (left) of the road. 3989 South Middle Road.

If you hit the Rochester Townline Road (you come to a stop sign) you have gone too far.

Submissions

Aurora is published monthly except for July, August and December. The September, October, January, March and May issues are full newsletters (usually 6 pages) with a number of member submitted articles. The November, February, April and June issues are short flyers (2 pages).

Submitted articles can be of any length from a paragraph to multiple pages. I can scan pictures and/or diagrams (both prints and film) to support your article and the originals will be returned to you.

Submission deadline is the 1st of the month.

Editor: Steve Mastellotto Email: mmastellotto@cogeco.ca

Membership

The Windsor Centre of The Royal Astronomical Society of Canada meets on the 3rd Tuesday of every month (except July and August) at the Ojibway Park Nature Centre. In addition to regular meetings the centre hosts a number of observing nights, a picnic and a December social. Members receive a copy of the Observer's Handbook, a subscription to SkyNews magazine and access to the Centre's library and telescopes. Optionally the RASC Journal is available in print form—online version free.

Annual Membership Fees: Please see the RASC website at www.rasc.ca for current rates.

Contact Greg Mockler at (519) 326-7255 or visit our website at <http://www.rascwindsor.com> for more information.

June 2013 Meeting Minutes by Matt McCall

The monthly meeting of The Royal Astronomical Society of Canada - Windsor Centre was held at the Ojibway Park Nature Centre on June 18, 2013.

Windsor Centre **1st Vice President Brian Thomas** chaired the Meeting. Brian called the meeting to order at 7:36 p.m. and welcomed members and guests to the Ojibway Nature Centre.

Motion to accept the minutes of the April 2013 meeting was made by Steve Mastellotto, seconded by Randy Groundwater.
MOTION CARRIED.

Main Speaker

Brian introduced the main speaker for the evening, **Dr. Bill Baylis**, and his talk: **Novae & Supernovae**.

Dr. Baylis began by explaining that people like to look to the heavens to understand our place in the cosmos, and that the primary ingredients of the known Universe consist of ordinary matter, dark matter, and dark energy.

After explaining various other aspects of how the Universe works, along with the basic nature of stars, Dr. Baylis got into dozens of slides starting with the 'History of Novae'.

Tycho Brahe coined the term 'De Stella Nova' (About a New Star). However, we now know they are not actually new at all, and in the case of Supernovae, they are old, dying stars.

Supernova (SN)1572 was one event that helped stir a scientific revolution in the understanding of the night sky, which is also known as 'Tycho's Nova'.

Supernovae are now recognized as different from regular Novae, but this difference in thinking only started in the 1930s. The first known recorded was SN185, viewed by Chinese astronomers in 185 A.D. Records indicate that the brightest ever supernova was SN1006. Another very famous one was SN1054, whose remnant is now known as the Crab Nebula. It is believed that the Crab originally had to be a Type II supernova due to the remnants that we see now.

A photo of SN1572's original position as an exploded star was displayed; showing the audience where it was located within Cassiopeia.

SN185 was a Type 1A in the general direction of Alpha Centauri between constellations Centaurus and Circinus.

Bill then returned to speaking about Novae, which are not nearly as bright as Supernovae.

Hydrogen and Helium accrete onto a white dwarf from a larger companion, resulting in H, He fusion. There is no gravitational collapse, with burn off of about 0.01%. There can be as many as forty to fifty per year in the Milky Way alone. Change in magnitude and luminosity is not very great – only 3.5 to the third power, which is not very great.

Bill returned to Supernovae properties and classifications in detail, saying that they can become as bright as 100 billion suns – equivalent to an entire galaxy, for a matter of weeks.

Later he spoke of Dark Energy – not to be confused with Dark Matter – which comprises about 68.3% of all the mass in the known Universe, saying it's a real embarrassment to astrophysics when so much stuff is out there and we don't even know exactly what it is. Summarizing some data from earlier in the talk, it was discussed that ordinary matter only makes up approx. 4.5% of the Universe, with Dark Matter being just under 30%.

At the end of the presentation, Dave Panton asked if any Cepheid Variables could end up getting confused with Novae or Supernovae, to which Bill said he didn't believe so, telling about how they are one of the main 'candles' used for distance measurements. We can tell from these variables just how big the gap between us and the stars are (how close or distant we are from them).

Brian thanked Dr. Baylis for his wonderful presentation, and then announced the break period.

Break and Fifty-Fifty Draw: Tom Bondy won and donated the winnings back to the Centre.

Juliana Grigorescu gave a brief talk about **Macomb Community College's open house** where she was able to use the RASC Windsor Centre's 8-inch Orion Intelliscope to view the night sky. She gave out numerous star finders to the children present at the event, remarking on how much they loved using them.

Visitors were thrilled to see the Moon & Saturn despite the fact that light pollution was quite high. They were able to watch the International Space Station crossing from west to east, low in the sky.

The pinnacle of the event was the talk given by astronaut Andrew Feustel, who serviced the Hubble Space Telescope back in 2009 & flew aboard Shuttle Endeavor's last mission to the ISS in 2011. Juliana spoke of the great presentation & how he had attended Queen's University in Kingston, Ontario.

Director of Observing Report, Juliana Grigorescu: Juliana began her presentation by asking the audience if anyone had done any observing lately. Brian Thomas indicated that he has been taking time lapses of the Milky Way. Randy Groundwater remarked how there has been an excellent view of Mercury; perfectly held in the sky above Venus & that June 2013 is prime time for viewing the planet.

She also asked for any photos from any members to be sent directly to D of O Reporters for use in future talks. Tom Sobocan mentioned seeing an Iridium flare that was brighter than Venus as he'd been watching for them and had been quite good over the past few days. Dave Panton indicated that he has not been out to Hallam Observatory in the past few weeks, but that he'd

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Windsor Centre Events



On Saturday April 20th the Windsor Centre hosted the Shooters Photography Club at Hallam Observatory. Anna Lamarch from the group shared the two scenic shots of Hallam at left along with a shot of the moon - thanks Anna. Other activities included the Science Rendezvous at the University of Windsor on Saturday May 11th (no photos) as well as the annual Earth Day celebration on Sunday April 28th at Malden Park - a photo of our display is below left. We have also been regular contributors to the Point Pelee Dark Sky nights which had a large turn out for the Perseids on Sunday August 11th.

Thanks to all the volunteers who help out at all of these public events.



June Meeting Minutes (continued)

had reasonable success with his infrared light detector. It can now be plugged in under the Warm Room's computer desk. Juliana then remarked that Dave's been pushing the limits of the science that can be done within the Centre noting also the construction of his spectroscope as well as various other devices.

Juliana shared that Antares is readily visible in Scorpius within the southern sky, with the Messier 4 globular cluster nearby. She mentioned that she had been looking at M4 a few nights earlier & that it was really something. Saturn and Spica in Virgo are still easily visible, with Libra looking good too. We've all but lost all the winter constellations by now, with Castor and Pollux very low in the western sky.

In the eastern part of the sky, we're beginning to see the beautiful summer constellations. A bright area of the Milky Way contains the Summer Triangle, formed by Vega, Deneb, and Altair.

Juliana told the audience to look for certain events that we should try to observe:

June 18-19: the Moon with Spica and Saturn.

June 20: Venus and Mercury 2° apart low in the west. Use binoculars to pick them out.

June 21: Summer Solstice

June 23: Full Moon at Perigee (closest point to Earth)

June 25: Venus and the stars of Gemini – Castor and Pollux line up just after sunset.

M3 globular cluster is another good target, with half a million stars in it. M8 – Lagoon Nebula, and M20 – Trifid Nebula, both in Sagittarius. A photo of M27, the Dumbbell Nebula, taken by Rick Marion was shown – another good object.

As for galaxies look for: M51 – the Whirlpool in Canes Venatici, M81 & 82 in the Big Dipper.

Brian thanked Juliana for her presentation.

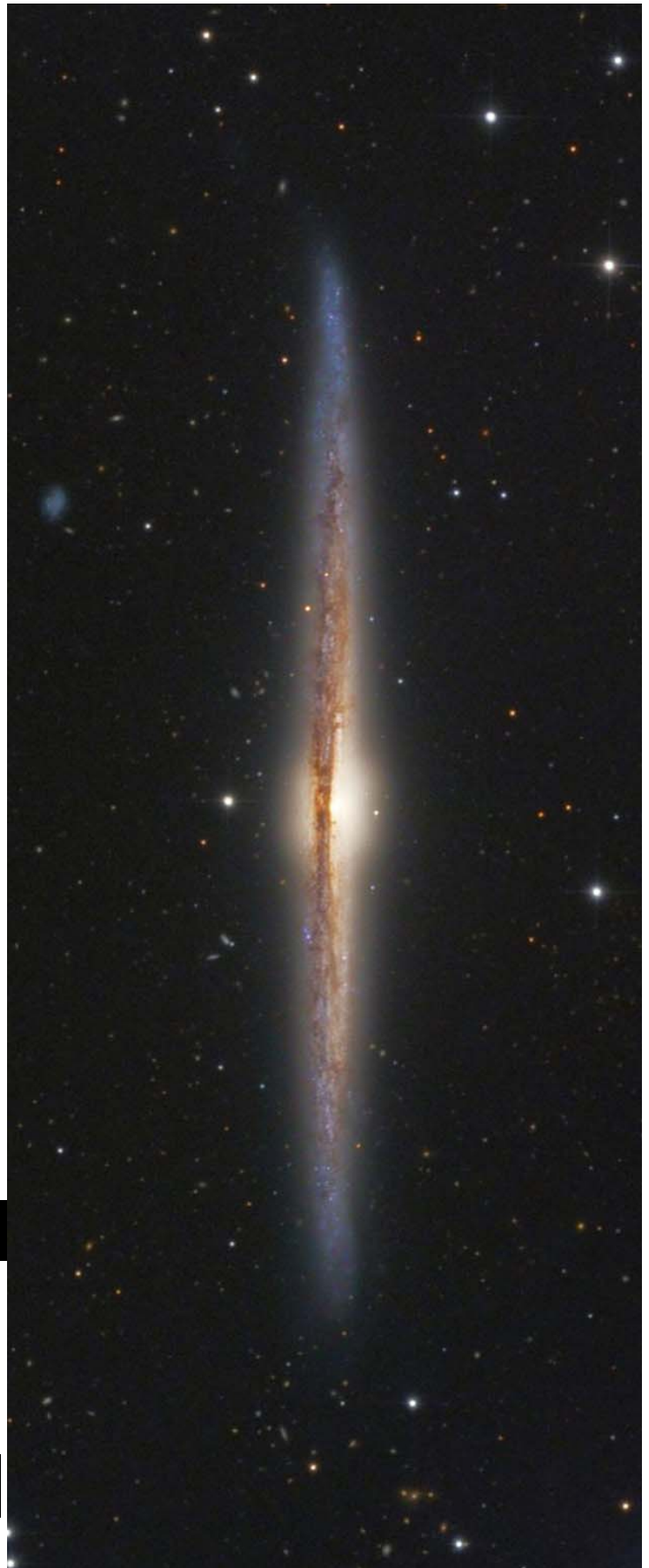
The meeting was **adjourned at 9:37 p.m.**

Hallam Happenings

A reminder that the Hallam Observatory annual access fee of \$40 is due on October 1st so please see our Treasurer Greg Mockler at the September or October meeting. If you no longer wish to use the observatory please turn in your key to Steve Mastellotto.

Calendars

Our Treasurer, Greg Mockler is taking orders for the 2014 Calendar. Price will be \$17.50 including S&H and HST if gets over 10 orders. Please see Greg at the September meeting.



Editor's Note: I needed to fill a long narrow space and love this image of NGC 4565 by Bob Franke I found on the web. 12.5" RCOS, SBIG STL-11000. Lum 25x15min, RGB 5x15 min each.

Member Astrophotos



Clockwise from Top Left: M27 by Pete Barbaro from downtown Windsor, Moon and Venus Brian Thomas, M82 Mitch Arsenault, Clavius Brian Thomas, Moon and Venus close-up Mitch Arsenault, SN 2013ej in M74 Brian Thomas and The Crescent Nebula Brian Thomas.

