



## SOCIETY NEWS

### VAS Christmas Dinner

The VAS Christmas dinner this year will be held at **19.30 on Friday 29th November at The Merrie Garden (near Morrison's Lake)**

Booking forms are available at the observatory on Thursday evenings and at monthly meetings. Please pay by the November meeting (cheques to society) £15.99.

*For more details contact Barry Bates 872979.*

### Revised - BBC Stargazing Live!

**Advanced warning** - BBC Stargazing Live! will be on 7th, 8th and 9th Jan 2014. We are hoping to arrange an event at the observatory to coincide with the TV programmes - **probably on Fri 9th or Sat 10th** if we can hire the Pavilion.

Help will be needed so if you can spare a couple of hours please contact any Committee member.

### Radio Astronomy

A number of members met recently and discussed how we might try to start up a radio astronomy project. Main discussion centred around basic equipment we might try to use. The group discussed several projects found on the BAA website (<http://britastro.org/radio/projects>).

A presentation of some further ideas is hoped for the near future. Anyone interested, please email the NZ editor.

## MERRY CHRISTMAS

On behalf of the Committee: Merry Christmas and a Happy New Year to all VAS members and many thanks for your support in 2013.

*There's a lot more planned for 2014!*

*Clear Skies!  
Brian Curd  
Observatory Director*

### VAS Website: [www.wightastronomy.org](http://www.wightastronomy.org)

Submissions or letters to New Zenith are always welcome and should be sent to:

**The Editor New Zenith**  
**35 Forest Road**  
**Winford**  
**Sandown PO36 0JY**

Tel: **01983 864303** or email: [editor@wightastronomy.org](mailto:editor@wightastronomy.org)

Material for the next issue by the 6th of the month please.

### VAS Registered Office

35 Forest Road, Winford, Isle of Wight, PO36 0JY

The Vectis Astronomical Society and the Editor of the New Zenith accept no responsibility for advice, information or opinion expressed by contributors.

Registered Charity No 1046091

### Observatory Diary

Monday, 19.30hrs	Members Only by arrangement Telescope and night sky training. Contact Barry Bates 01983 872979
Thursday, 19.30hrs	Members and Public. Informal meeting and observing.

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## Monthly Meeting Calendar 2013

Check the website for up to the minute information.

Travel for our monthly speakers is sponsored by:



Date	Subject	Speaker
22 Nov	Dark Skies Report Measuring the Moon VAS Future Projects	Chris Wood Bryn Davis Brian Curd

*All details correct at time of publication.*

## Monthly Meeting Calendar 2014

Date	Subject	Speaker
24 Jan	TBA	
28 Feb	History of the Dark Sky	Alan Dowdell
28 Mar	Fascinating Facts About Solar Eclipses	Sheridan Williams BAA
25 April	Cosmic Rays	Prof. Alan Watson
23 May	TBA	Dr Thomas Kitching
27 June	The Radio Sky	Paul Hyde BAA
25 Jul	Exoplanets and How We Find Them	Jakub Bochinski, Chairman OU Astronomy Club
22 Aug	TBA	
26 Sep	Mysteries of the Solar System	Dr Stuart Eves Astrium
22 Oct	TBA	
28 Nov	TBA	

## Telescope Training

Members wanting training on the observatory Meade LX200 should contact:

*Barry Bates on 872979*

## VAS Contacts 2013/14

President	Barry Bates president@wightastronomy.org
Chairman	Bryn Davis chairman@wightastronomy.org
Secretary	Rebecca Mitchelmore secretary@wightastronomy.org
Treasurer	David Kitching treasurer@wightastronomy.org
Observatory Director	Brian Curd director@wightastronomy.org
Programme Organiser	Elaine Spear & Chris Wood progorg@wightastronomy.org
NZ Editor	Brian Curd editor@wightastronomy.org
Membership Secretary	Norman Osborn members@wightastronomy.org
NZ Distribution	Brian Bond distribution@wightastronomy.org
Others	Mark Williams Nigel Lee

### Island Planetarium @Fort Victoria

*The Island's Telescope Professionals*

New and Used Meade Celestron Telescopes  
New dealers in Skywatcher & Vixen in 2013

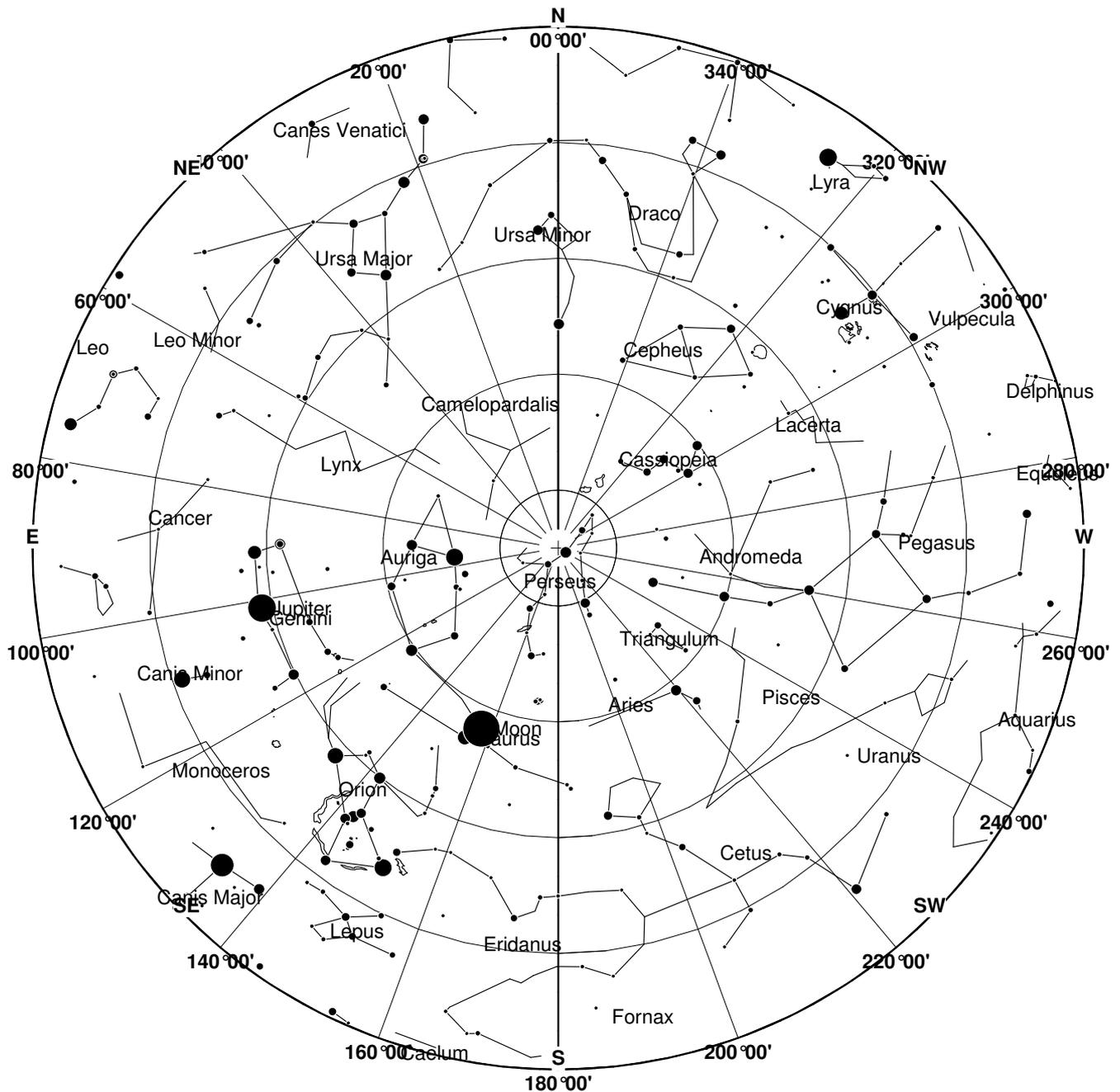
#### **Used equipment in stock**

TAL 200mm Newtonian Reflector  
Skywatcher 180mm Maksutov Cassegrain  
Celestron 150mm Reflector (NEW)  
Celestron 120mm Refractor  
Skywatcher 120mm Refractor  
*Various starter scopes and accessories*

#### **Discounts and deals for VAS members**

**Call Paul England – VAS Member**  
on 761555 - leave your number  
if I am not there and I'll call you back  
also - enquiry @islandastronomy.co.uk

# December 2013 Sky Map



View from Newchurch Isle of Wight UK - 2200hrs - 15 December 2013



**The Pleiades, or Seven Sisters (M45)**, is an open star cluster containing middle-aged hot B-type stars located in the constellation of Taurus. It is among the nearest star clusters to Earth and is the cluster most obvious to the naked eye in the night sky. The celestial entity has several meanings in different cultures and traditions.

The cluster is dominated by hot blue and extremely luminous stars that have formed within the last 100 million years. Dust that forms a faint reflection nebulosity around the brightest stars was thought at first to be left over from the formation of the cluster, but is now known to be an unrelated dust cloud in the interstellar medium, through which the stars are currently passing.

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*It uses material from the Wikipedia article "Pleiades"*

## December 2013 Night Sky

### Moon Phases

	New	1 <sup>st</sup> Qtr	Full	Last Qtr
Dec	3rd	9th	17th	25th
Jan	1st	8th	16th	30th

The Winter Solstice, the point at which the Sun is at its furthest south is on Dec 21 at 10:59. At this time nights in the northern hemisphere are at their longest.

### Planets

#### Mercury

In late Nov and early Dec Mercury can be found in the morning sky. It is very low down and the sky will be brightening making this a challenging apparition. On Nov 26 it is very close to Saturn. From about Jan 16 until the end of the month Mercury may be seen in the SW sky for about an hour after sunset.

#### Venus

The current evening apparition of Venus comes to an end during the first week of the new year as the Evening Star becomes the Morning Star. Look for it very low down in the SW just after sunset until the end of Dec when a telescope will show the very thin crescent phase. After this it will be too close to the Sun for easy observation until mid Jan when it will appear low down in the SE pre dawn sky.

#### Mars

An early morning object it is about half way up the sky in the south at sunrise. From the start of Dec until the end of Jan it crosses most of Virgo travelling from west to east. It starts below Denebola in Leo and finishes between Spica and Heze in Virgo. The brightest object in this part of the sky and with its red hue should be unmistakable.

#### Jupiter

Jupiter is to be found shining brightly in the middle of Gemini. It is extremely well placed for observation over the new year period, being visible for most of the night.

#### Saturn

During Dec Saturn is too low down in the pre dawn sky to be favourably placed for observation. During the latter half of Jan it starts to clear the horizon and is better placed for those who are early risers. Look among the rather dim stars of Libra.

#### Uranus

After sunset and during the early evening Uranus is well placed in the southern sky. It is about 4° below the faint star 51 piscium.

#### Neptune

The dim stars of Aquarius which paid host to Neptune for the past year are low in the SW in the early evening making the faint planet Neptune a difficult object.

### Comet ISON

At the time of writing comet ISON is at the lower end of brightness estimates, it looks like its brightness may have peaked too early. Look for it after it passes behind the Sun and heads away from the eastern horizon towards Hercules and Corona Borealis during the early morning hours of the first weeks of Dec.

### Deep Sky

#### ***M52 The Scorpion Cluster R.A 23h 25m Dec 61° 37' mag 8.0***

Follow the line from Schedar through Caph for 6° beyond Caph and you will find this fine open cluster. It is large, almost half the size of the full moon and the density of stars makes it relatively bright such that it stands out from the background Milky Way. A telescope will resolve many of the cluster members. A chain of 11th magnitude stars form a hook shape that bears a passing resemblance to the tail and sting of Scorpius. Two other stars of similar brightness mark out the claws. The brightest star in the cluster, a red tinged eighth magnitude star is not actually a cluster member but a line of sight coincidence

#### ***NGC7789 Open cluster R.A. 23h 56m Dec 56° 47' mag 6.7***

Turn right at Caph instead of going straight on, and only go half the distance and you will find one of the oldest galactic clusters known. Slightly larger than M52 this cluster is home to about 1000 stars many of which can be resolved with a telescope. The bright cluster takes magnification well helping to show some of the dark dust lanes.

#### ***NGC2264 RA 6h 41m Dec 9° 38' mag 4.1***

This is a large relatively bright cluster surrounded by a faint diffuse nebulosity. It is visible to the naked eye as a fuzzy patch, but observation with a pair of binoculars will show the inverted triangle shape that gives this cluster its popular name, the Christmas Tree Cluster. The brightest star in the group marks the trunk of this upside down tree. Just to the south of the 7th magnitude star on the top of the tree is the cone nebula. This and the other surrounding nebulosity is best observed using a CCD camera.

#### ***M45 Pleiades RA 3h 47m Dec 24° 13' mag 1.4***

Known since ancient times as a herald of the wet season, the Pleiades is probably the most famous of all star clusters. It is an object that has something for all observers whether they are using naked eye, binoculars or a telescope.

*Peter Burgess*

## Spectroscopy - Part 2

### Image acquisition

For those familiar with astrophotography techniques', obtaining a stellar spectrum is a similar process requiring stacking and reduction of several images. In order to ensure as much data is recorded as possible, the FITS or RAW format is the ideal capture profile. Lossy formats such as jpegs should be avoided as data is lost from spectrum and final results will lack quality.

Flat frames and bias frames have, in my experience, played a significant role in reducing the noise in continuums. It is also important to mention that as the light from the star is being spread out, longer exposures are required and therefore auto guiding may be a requirement for faint objects. With spectroscopy you cannot take enough sub exposures of the target star!

My method of acquiring the spectrum of stars is:

Process	Rationale	Notes
Slew to target and plate solve without Star Analyser on the telescope if the target is faint.	To ensure correct location of the star and ensure that it is centred on screen	Maxim DL has a plate solve function that I find easy to use.
Attach Star Analyser, slew to and record spectrum of Vega	To achieve good focus and ensure spectrum is horizontal on the laptop screen.	As the Balmer absorption lines are easily visible, this makes spectrum calibration easy.
Slew to target and determine exposures	To make sure that spectrum is recorded with minimal artifacts	Trial and error. I zoom into images at 100% and look for visible artifacts.
Record sub exposures. Usually 25-30 frames.	To accurately record as much detail as possible and reduce noise in spectrum.	I dither the mount during the acquisition phase and have found the quality of my work has improved significantly.
Take calibration frames.	Darks, flats and bias frames are essential for Spectroscopy.	I use Maxim DL for all image acquisition
Go inside and process work in Rspec	I complete reduction and stacking in Maxim DL and then produce final spectrum in RSpec.	

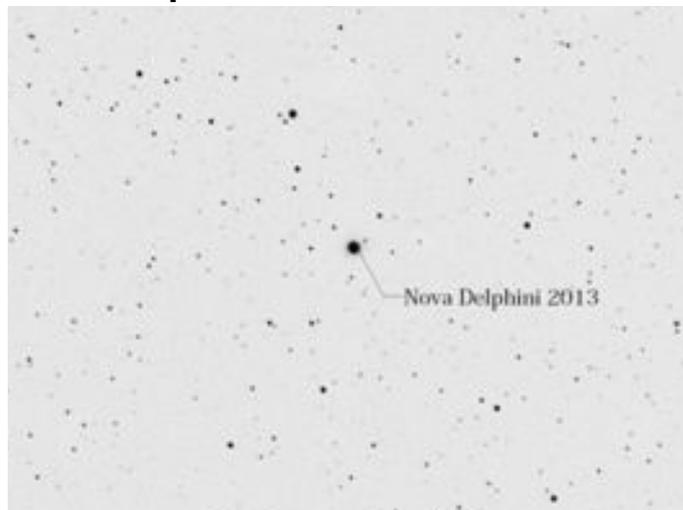
### Projects

Having gained some experience in studying bright stars, this Summer I decided to make observations of Wolf Rayet stars. These stars are of interest as they are extremely hot with temperatures exceeding 30000 to 50000K. The mass loss from Wolf Rayet stars is such that the majority of what is seen with the Star Analyser is the ejecta that is being removed from the star. Spectroscopically Wolf Rayet stars present with emission lines showing an abundance of either carbon or nitrogen. The presence of these elements determines the classification of the star.

The constellation Cygnus contains several Wolf Rayet stars including WR136. This is the star at the centre of the Crescent Nebula. A popular astrophotography target; images of the nebula clearly show the ejecta from the star. Although the actual processes taking place are quite complex we can at least determine the composition of the material with our Star Analyser.

My personal project culminated in obtaining the spectra of WR136 and imaging the nebula as well. Although my astro image processing leaves a lot to be desired it is nice to see produce an image of the nebula and determine its composition with spectroscopy.

### Nova Delphini 2013



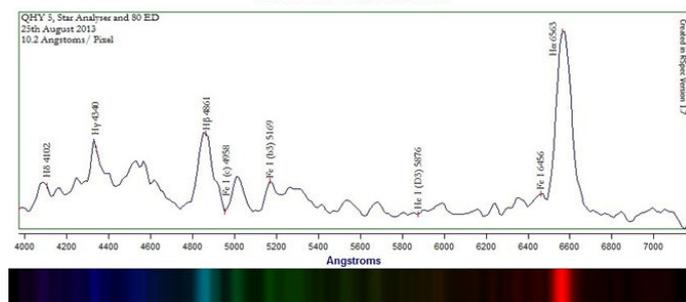
*Nova Delphini lights up to 4th magnitude. An exciting target for amateur spectroscopy.*

On the 14th August, Nova Del 2013 made an appearance in the constellation Delphini. Discovered by an amateur Japanese astronomer, Nova Delphini is one of the brightest nova recorded and presents an exciting target for both spectroscopy and photometry. Normally estimated to be around 17th magnitude, the star rapidly became 4th magnitude and was a naked eye target for a few nights before beginning to fade in brightness again.

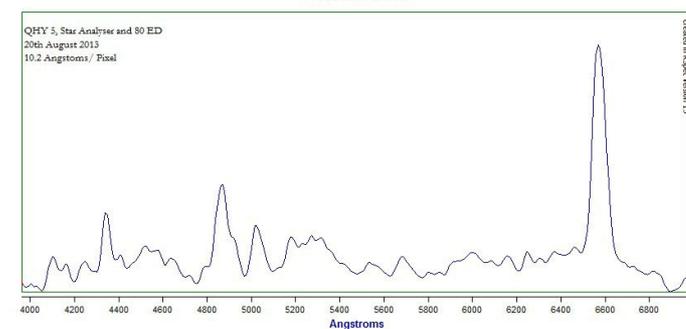
Though not uncommon (cataclysmic variables are regularly observed by variable star observers) it was the

brightness of the star has led to it becoming widely observed by many spectroscopists. The ejecta from the star produced changes at higher spectroscopic resolutions and many amateur spectroscopists have submitted their results to professional observation campaigns asking for measurements of the spectrum. The American Association of Variable Star Astronomers has an active photometry campaign running at the moment so that the changing magnitude can be monitored. Nova Delphini is currently around a magnitude of 7.6 so is well worth a look.

Elements in Nova Del 2013



Nova Del 2013



## Summary

Spectroscopy is a fantastic area of astronomy and I actively encourage anyone with an interest to give it a try. At low resolution, we cannot plot radial velocity however we can record elements and get an idea on temperature the star as well as determine the spectral class. Combining spectroscopy with photometry is also a very interesting pastime and gives you the option to submit your observations to one of the numerous campaigns run by the BAA or the AAVSO. If anyone is interested in finding out more, please do get in touch.

## Further Reading

Ken M. Harrison. “**Grating Spectroscopes and How to Use Them**”. Perfect for Star Analyser users.

Ken M. Harrison. “**Astronomical Spectroscopy for Amateurs**”. Instructions on building a spectroscope.

James B. Kaler. “**Stars and Their Spectra**”. A wonderful book for anyone interested in astronomy.

Keith Robinson. “**Spectroscopy the Key to the Stars**” available on Amazon. An excellent introduction to the theory of spectroscopy.

<http://basebe.obspm.fr/basebe/> This is the BeSS database of Be stars and is produced by professional and amateur spectroscopists. A quick search will reveal the quality of work achieved by dedicated amateurs.

<http://www.patonhawksley.co.uk/staranalyser.html>  
All about the Star Analyser.

<http://www.rspec-astro.com/> The Rspec software website with several videos as well as sample results.

<http://www.ursusmajor.ch/astrospektroskopie/richard-walkers-page/> A free spectroscopic atlas! This invaluable resource contains all the spectral classes in a pdf document. Scroll to the bottom to find the English version.

There are also several forums and yahoo groups dedicated to spectroscopy.

*Steve Dean*

## Final Reminder

There are a number of members who have not paid their subscription which was due 1st October. Early next month members who are overdue will receive a Final Reminder.

Anyone whose subscription is outstanding at the end of December will have their membership terminated.

Payments may be made by cash, cheque or standing order so please ensure your subscription is paid if you wish to continue to enjoy the benefits of membership.

*Many thanks*

*Norman Osborn, Membership Secretary*  
[members@wightastronomy.org](mailto:members@wightastronomy.org)

## Active Galactic Nuclei and Radio Astronomy

Lecture Report 25 October 2013

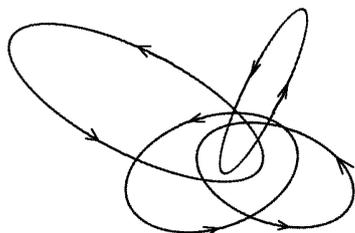
Dr. Sadie Jones - Soton Astrodome - Outreach Leader

University of Southampton

The Chairman, Professor Bryn Davis, introduced the speaker, and we were presented with a charming, well illustrated lecture, easy to follow, containing new material relating to the recent award of a PhD degree with new perspectives on NGC 4051.

Sources of funding were mentioned, including The Ogden Trust. The South East Physics Network, SEPnet, has grouped Physics Departments together, and with the closure of the physics department at Reading University, it is important that Outreach helps to fill the gap. This involves visiting local schools within a range of 1.5 hrs driving time, with a mobile planetarium. Two schools have been visited on the IW and this talk today will include more details of recent research work.

The electromagnetic spectrum, from radio to gamma rays, was presented in a very clear semi-circular diagram with the **Chandra satellite** above - this satellite specializes in X-rays, one of several areas of particular interest at Southampton University.

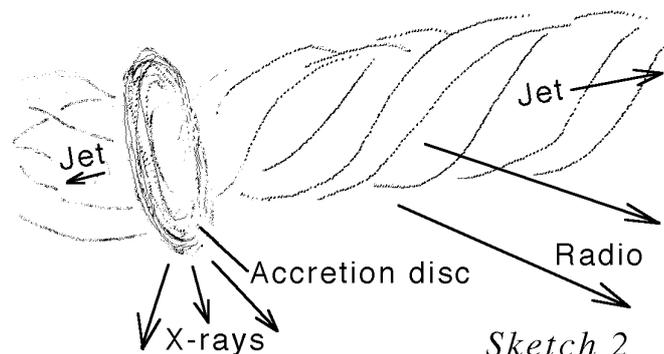


Sketch 1

The disc of the **Milky Way** was viewed in several 360° sweeps, forming stripes parallel to the galactic plane, covering all wavelengths from radio to gamma rays. These give data on atomic hydrogen, molecular hydrogen, supernovae remnants, star forming and dusty regions. At the centre of the galaxy, in the direction of Sagittarius, is a supermassive black hole, revealed by stars rapidly orbiting in Keplerian fashion around an invisible object at their common focus, **Sketch 1**. The stars orbit so fast that the object must have a mass equal to 4 million suns.

Black holes can be of stellar mass too, but the supermassive ones, millions of times more massive than the Sun, are found at the centres of galaxies. If they emit huge quantities of radiation, they are known as Active Galactic Nuclei, AGN, characterized by jets, **Sketch 2**. There are plenty of unknowns concerning the mechanisms

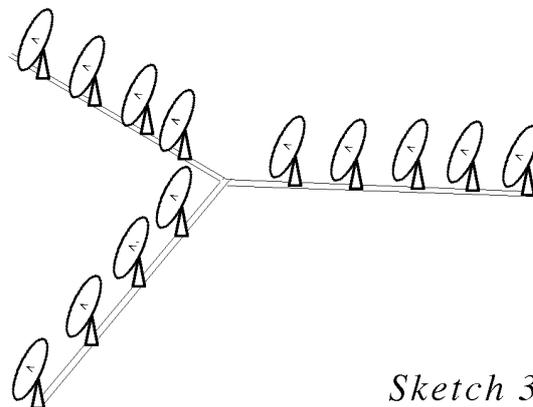
of jets - the spinning magnetic field lines, the origin of the material in the jets, the locations of the emission regions, internal absorption, re-emission and so on.



Sketch 2

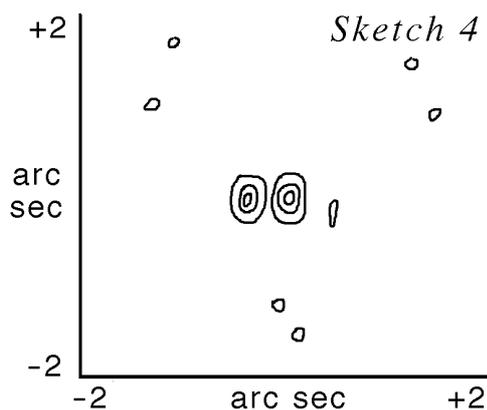
According to theory, there are a lot more stellar-mass black holes in the Milky Way than have yet become apparent, and of greater total mass than the supermassive black hole at the centre. Excitement is growing concerning a cloud of material heading towards this supermassive black hole in Sagittarius. As the cloud is drawn towards the black hole, this will cause the normally fairly quiet Milky Way, to become active at a low level. Quasars are powerful AGN, outshining their host galaxies, and how they appear depends upon the viewing angle.

Galaxy NGC 4051, in Ursa Major, is a Seyfert 1 type with an AGN, particularly targeted in this research. The **Rossi X-ray Timing Explorer** launched in 1995, detects X-rays in two bands, from 2 to 250keV and soft X-rays from 2 to 10keV. AGN can give emissions changing over time in amplitude and wavelength. The question is - are the X-rays and radio emissions in NGC 4051 linked? To obtain data particularly from a galactic nucleus requires the greatest resolution - we don't know yet what an X-ray cloud close to the centre looks like. Lower resolutions are used to obtain radio data out to the spiral arms of a galaxy and re-emission information.

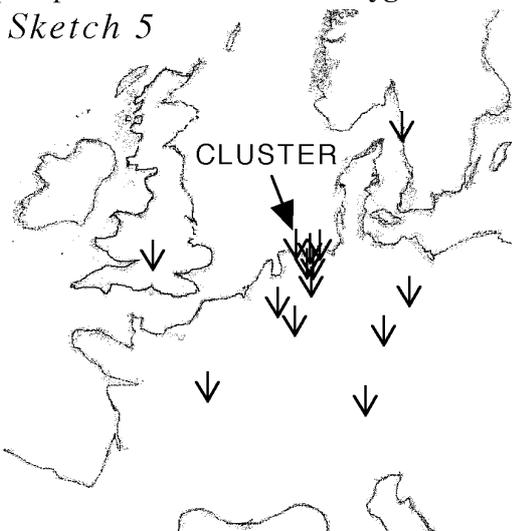


Sketch 3

The **VLA** in New Mexico **Sketch 3**, has a diameter of 22 miles and four configurations, A, B, C and D, following a schedule, when the dishes move along radial tracks. Configuration A, with the dishes spaced by the largest distances, gives 0.23 arcsec resolution at 8.4GHz. Configuration D gives the least resolution of 7.83 arcsec.



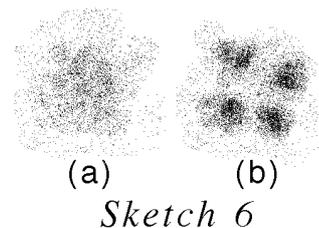
In *Sketch 4*, the isoradio-contours relate to an A type picture of NGC 4051, the symmetry suggests the presence of jets, but 3-sigma quality, equivalent to three times the noise level, is needed to confirm them. Suggestive radio connections between the lobes possibly exist but there are difficulties of interpretation due to extended emission zones (see reference), and the possibility that the small variations in radio signals compared to X-rays might be due to the jets being parallel to the ‘plane of the sky’ - but the jury is still out on the evidence for weak jets in NGC 4051. VLBI images suggest a similarity with the more radio-quiet phases of emission from **Cygnus X1**.



**LOFAR** promises to provide more data at low frequencies, similar in frequency to Jocelyn Bell-Burnell’s first detection of pulsars. She used hundreds of dipoles and the Earth’s rotation to sweep the sky. These frequencies will be further explored by LOFAR, which consists of some 77 stations with thousands of antennae, operating at less than 240MHz. The UK station is located at Chilbolton, forming part of the European system, *Sketch 5*, linked centrally to a supercomputer in the Netherlands. Data comes in at some 15Gb/s, from the whole sky above. Pointing is achieved by interferometry, with all-sky steerable coverage using software rather than mechanics. Sometimes the reception of signals has been affected by sheep grazing, their bodies being about half-a-wavelength long, or hawks alighting on the aerials can blanket an antenna, but the system contains plenty of redundancy.

Atmospheric scintillations also occur for radio, so there’s plenty of processing to do, with solar wind physics, space weather and transient radio phenomena to study too. The question was raised - in relation to pulsars and possible new discoveries - will history repeat itself? This system avoids missing interesting signals.

The effect upon the resolution of LOFAR of so many antennae is seen in *Sketch 6*, where, with the antennae of just one country, only one blob is seen for this object in (a), but using antennae in the other countries too, the object resolves into four blobs in (b). See [www.lofar-uk.org](http://www.lofar-uk.org)



LOFAR will be able to detect neutral hydrogen from the epoch of reionization, shortly after the Big Bang. This radiation is sufficiently redshifted, having travelled for more than ten billion years in the expanding universe, to show up now in the radio bands detected by LOFAR.

**The Square Kilometre Array SKA** (southern hemisphere) pathfinder radio telescope, being built in Australia and South Africa, will be the most sensitive radio telescope (tuning from 70MHz to 10GHz in the first phase) and cover the sky more rapidly. The first observations will be in 2019.

**Discussion.** One question concerned the additional undiscovered black holes in the Milky Way and what might happen if one comes close - but there’s no need to worry, their ranges are many light-years and more. Another was about the antenna system of the VLA, and another enquired about lightning strikes into the huge antenna area of LOFAR - about two per year are expected. Others were interested in how the size of a supermassive black hole relates to the regulation of star formation, influencing galaxy size, growth and evolution.

**Outreach:** The lecture finished with a picture of the mobile planetarium and discussion of the importance and impact of this work. The lecturer can be followed on Twitter, with interesting contributions from young work experience students at Southampton University.

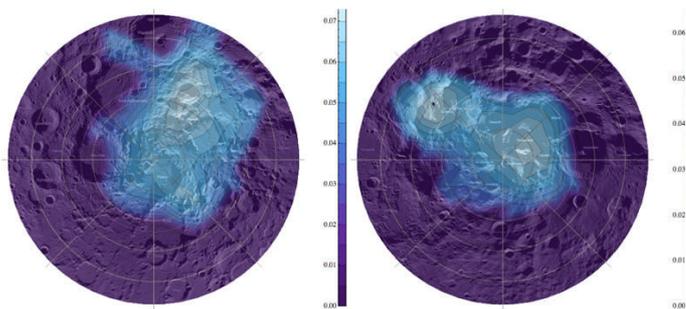
*Congratulations to the lecturer on her PhD and we wish her every success in her astronomical career.*

#### Reference

- “Radio and X-ray variability in the Seyfert galaxy NGC 4051” S. Jones et al., Mon. Not. R. Astron. Soc. arXiv 1011.6633 [astro-ph] 2010.

*Dr. Guy Moore*

## Researcher Helping to Solve Moon's Water Puzzles



*Polar water enhancements at the moon's north pole, left, and south poles, right, derived from neutron measurements made by NASA's Lunar Prospector and Lunar Reconnaissance Orbiter missions.*

*(Credit: Miller, Nerurkar, Lawrence, 2012)*

Making a visual connection with his subject is usually not an option for the professor at The University of Alabama in Huntsville (UAH), who specializes in high-energy astrophysics. Now, after having been part of the discovery of surface water at Shackleton Crater at the moon's south pole, Dr. Miller finds himself on a team investigating questions that have been raised by that discovery.

"I remember as a little kid watching the Apollo missions to the moon and the lunar landings," he said. "As a little kid, I watched and daydreamed about this, and then through a series of almost random events in life to find myself working as a part of the team on this is really pretty awesome."

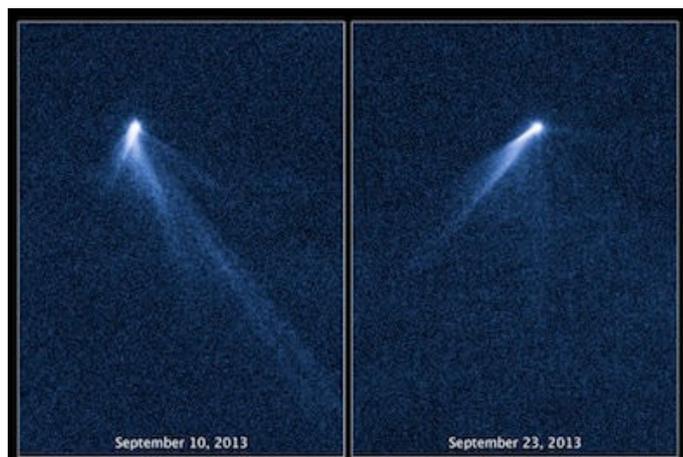
The five-year effort is focused on a deeper understanding of regolith, or soil, and volatiles -- including water and hydroxide -- on airless planetary bodies like the moon, asteroids and other bodies in the solar system.

"My particular component of the effort builds upon the previous work I've done identifying lunar water resources at the moon's poles, including the first detection of lunar surface water within Shackleton Crater," Dr. Miller said. "I have received great support and encouragement from the entire Johns Hopkins team."

Some scientists think Shackleton's formations make a unique place for water collection from elsewhere, with high peaks around the rim that are exposed to near continual sunlight to invite volatile molecules and a deep and cold floor shrouded in darkness to hold and freeze them so they can't escape.

More at: <http://www.sciencedaily.com/>

## Hubble sees asteroid spouting six comet-like tails



Astronomers viewing our solar system's asteroid belt with NASA's Hubble Space Telescope have seen for the first time an asteroid with six comet-like tails of dust radiating from it like spokes on a wheel.

Unlike all other known asteroids, which appear simply as tiny points of light, this asteroid, designated P/2013 P5, resembles a rotating lawn sprinkler. Astronomers are puzzled over the asteroid's unusual appearance.

"We were literally dumbfounded when we saw it," said lead investigator David Jewitt of the University of California at Los Angeles. "Even more amazing, its tail structures change dramatically in just 13 days as it belches out dust. That also caught us by surprise. It's hard to believe we are looking at an asteroid."

P/2013 P5 has been ejecting dust periodically for at least five months. Astronomers believe it is possible the asteroid's rotation rate increased to the point where its surface started flying apart. They do not believe the tails are the result of an impact with another asteroid because they have not seen a large quantity of dust blasted into space all at once.

Scientists using the Pan-STARRS survey telescope in Hawaii announced their discovery of the asteroid Aug. 27. P/2013 P5 appeared as an unusually fuzzy-looking object. The multiple tails were discovered when Hubble was used to take a more detailed image Sept. 10.

When Hubble looked at the asteroid again Sept. 23, its appearance had totally changed. It looked as if the entire structure had swung around.

More at: <http://www.astronomynow.com/>

## THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

### Dark Skies Project Update



Regular monthly meetings continue with AONB regarding several projects. A possible IW appropriate Lighting Plan is being developed with AONB which might be adopted in future.

Contributions have already been made to recently revised AONB policy statements and VAS is now an official AONB supplier.

VAS are project managing the entire installation for up to ten fixed and ten mobile SQM stations distributed across the IW. This equipment will be funded by an AONB grant.

Mark and Brian continue to develop hardware, software control and data reporting for SQMs. Fixed and mobile SQM prototype stations have now been constructed and continue to be developed, these are feeding data to Mark's map on [www.darkwightskies.com](http://www.darkwightskies.com). A permanent SQM station is now installed at the Watery Lane observatory and is providing data 24/7. **Control is temporarily via the classroom PC so, please do not turn this machine off.**

Chris continues to be CPRE VAS rep and to discuss/comment on Lighting/Light Pollution issues in general with CPRE and AONB.

Chris Wood

### Garlic Festival



Thanks to the efforts of volunteers from our Society, we recently received a donation of £850 to club funds. Please consider helping with this event in 2014 as it provides our single biggest source of income.

Many thanks to all who helped and especially to Richard Flux for his overall management of the weekend.

### Good News - The Sky at Night gets new slot on BBC4

The astronomy show – first broadcast in 1957 – will run an expanded 30-minute programme in its new monthly home.

The sun will not set on the The Sky at Night after the BBC announced the long-running science show would move to a new slot on BBC4 following a petition signed by 40,000 viewers who feared it would be axed.

The astronomy show, first broadcast in 1957, will lose its slot on BBC1 but will be expanded from 20 to 30 minutes in its new monthly home on BBC4, with a repeat on BBC2.

The future of the series appeared to be in doubt last month after the corporation declined to confirm its future beyond the end of the year.

### Observatory

For your own safety, when visiting the VAS observatory, please bring a torch. Also, please make sure you close and lock the car park gate if you are the last to leave - if you need the combination to the lock, please contact a member of the committee.

### Articles Needed

New Zenith needs letters, articles or pictures related to all aspects of astronomy. Contributions to the Editor please at the email or postal address on the front page.

*“In theory there is no difference between theory and practice, but in practice there is.”*

*Unknown*

*“[I can't accept quantum mechanics because] I like to think the moon is there even if I am not looking at it.”*

*Albert Einstein*

*“When you change the way you look at things, the things you look at change.”*

*Max Planck*

*“Very interesting theory - it makes no sense at all”*

*Groucho Marx*

**MERRY CHRISTMAS!**