
Journal

of the

Nottingham Astronomical Society
February 2017



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Thursday, February 2nd

British Geological Survey
Nicker Hill, Keyworth

8 pm (doors open at 7.30pm)

Tonight we welcome
Dr Dan Brown



of Nottingham Trent University

who will be speaking on

**“Passage Graves:
Ancient telescopes without lenses”**

LATEST NEWS IN COSMOLOGY:

The Most Recent Measurement of the Hubble Constant

A team of astrophysical collaborators has used a combination of ground-based and space-based telescopes, including the Hubble Space Telescope, the Spitzer Space Telescope, the Subaru Telescope, the Canada-France-Hawaii Telescope, the Gemini Observatory, and the Keck Observatory to image some **gravitationally-lensed quasars** in order to measure the Hubble constant. They used a new approach, based on gravitational lensing of the light from distant quasars that vary in brightness monthly or yearly.

Light from the quasars follows varying routes as it travels around the foreground galaxy, ultimately arriving on Earth at different times. By measuring the brightness of each lensed image of the quasar and recording the time at which a change in brightness was observed, the team was able to determine the delays due to the differing light paths. These delays are related to the Hubble constant.

The team claims that their method is the most direct way to measure the constant, as it depends only on geometry and General Relativity, with no other assumptions.

The value for the Hubble Constant obtained by this new method is **71.9 kilometres per second per megaparsec**, which agrees fairly well with measurements that have used **Type 1a supernovae** as standard candles, giving a value of **73.24**; but it doesn't agree very well with the value of the constant obtained by the ESA Planck satellite using the **cosmic microwave background** radiation, which gave a result of **66.93**.

Sky Notes

February 2017

Compiled by Roy Gretton



All times given below are in Universal Time (Greenwich Mean Time)

PHASES OF THE MOON

| <i>Phase</i> | <i>Date and time</i> |
|---------------|-------------------------------------|
| First Quarter | 4:19 am on February 4 th |
| Full Moon | 12:33 am on the 11 th |
| Last Quarter | 7:18 pm on the 18 th |
| New Moon | 2:58 pm on the 26 th |

This month the Moon is closest to the Earth on the 6th, and furthest on the 18th.

Penumbral Eclipse of the Moon, February 11th

The Moon will pass almost completely into the Earth's penumbral shadow on February 11th, with maximum eclipse at 12:44 am. Consequently the Full Moon will look a little dimmer than usual, but this will not be apparent at a casual glance.

THE PLANETS

Mercury spends the whole of February as a morning object, beginning the month 21 degrees from the Sun but more than 22 degrees south of the equator, so very difficult to observe from the UK. As the month progresses Mercury moves steadily toward the Sun until it disappears completely.

Spectacular **Venus** adorns the western sky as the Sun sets. At magnitude -4.6 it can be observed long before the sky is fully dark, and can even be found in broad daylight. Through a small telescope it appears as a bright white crescent, which thins but increases in diameter as the month progresses. Throughout February, Venus will be moving steadily closer to the Sun, beginning the month at an elongation of 45 degrees and ending it at 32 degrees. Greatest brilliancy will occur on February 17th.



Looking WSW
at 7 pm on
February 9th

Mars continues to accompany Venus in the constellation of Pisces in the evening sky, although it is fading (down to magnitude 1.3 by the end of February) and shrinking in apparent diameter (only 4.6 arcseconds at the end of the month). On the 27th it will be less than one degree NNE of Uranus, making the ice giant easy to find.

Jupiter, close to Spica in the constellation of Virgo, will be due south at 4:50 am at the beginning of February and at 3 am at the close of the month, and by then will have an equatorial diameter of 42 arcseconds. It will reach its first stationary point on the 7th, after which it will move westwards until mid-June. At magnitude -2.3 it will be the brightest object (other than the Sun and the Moon) in the morning sky.

Saturn is not yet well placed for observation, as it spends the whole of February more than 22 degrees south of the equator in southern Ophiuchus, and so will be very low in the southeastern sky before sunrise.

Uranus, in the constellation of Pisces, can still be observed in the evening sky, as it doesn't set until 6 hours after the Sun at the start of February; but observation will become increasingly difficult toward the end of the month.

Neptune, in the constellation of Aquarius, is now disappearing from the evening sky, ready for conjunction with the Sun next month.

METEORS

There are no notable meteor showers in February.

The Nottingham Astronomical Society: E - SERVICES

Whether or not you are a NAS member, you can keep up to date with details of the Society's meetings and other events by visiting the NAS website: www.nottinghamastro.org.uk

NAS on Facebook

You are welcome to connect with other members and friends of the NAS on Facebook by going to: <http://www.facebook.com/nas.org.uk>

NAS on Twitter

The Society has a Twitter account at <https://twitter.com/NottinghamAstro>

NAS Journal e-mailing list

To register for your monthly e-mailed copy of the NAS Journal, just e-mail secretary@nottinghamastro.org.uk

You don't have to be a Society member to take advantage of this service.

FOR SALE

| | |
|-----------------------------------------------------------------|-----|
| Set of four 1¼-inch coloured filters (red, yellow, green, blue) | £20 |
| Celestron lens pen | £2 |
| Micro-fibre cleaning cloth | £2 |

Sam Boote s.boote@bcs.org or at Society meetings

DIARY DATES 2017

Monthly Meetings of the Nottingham Astronomical Society

1) Meetings at the British Geological Survey, Keyworth

Nicker Hill, Keyworth, Nottingham, NG12 5GG

Held on the **FIRST** Thursday of each month except **August**

Doors open at 7:30pm for 8pm start.

*These events are normally centred around a talk by a visiting speaker, except Opening Evenings, when NAS members provide the activities. Normally we have a **Library** and a **Helpdesk** open at each meeting.*

| <u>Date</u> | <u>Topic</u> | <u>Speaker</u> |
|--------------------------------------|---------------------------------------------------------------|------------------------------------------------|
| February 2 nd | Passage Graves Ancient telescopes without lenses | Dr Dan Brown Nottingham Trent University |
| March 2 nd | Finding Exoplanets with Small Telescopes | Dr Peter Wheatley University of Warwick |
| April 6 th | The Art of Astrophotography | Prof Ian Morison University of Manchester |
| May 4 th | Juno: Exploring the Mysteries of Jupiter | Prof Emma Bunce University of Leicester |
| June 1 st | Charles Messier | Dr Allan Chapman, FRAS |
| July 6 th | Gravitational Waves | Dr Ed Daw University of Sheffield |
| August 5 th (SATURDAY) | BBQ at the Observatory (<i>members and guests only</i>) | |
| September 7 th | Galaxy Evolution revealed by the Hubble Space Telescope | Dr Clive Tadhunter University of Sheffield |
| October 5 th | Space Stations from Salyut to the ISS | Dr Mike Leggett, FRAS |
| November 2 nd | Annual General Meeting | |
| December 7 th | Voyager 40 Years On (Part 1) | Paul Money, FRAS |

Check our website: www.nottinghamastro.org.uk
for the latest information about the Society's meetings
and for further information about the talks and speakers.

2) Social and Practical Astronomy Meetings at the Burnside Memorial Hall, Plumtree

Church Hill, Plumtree, Nottingham, NG12 5ND

Held on the **THIRD** Thursday of each month from **7:30pm**

These meetings are of a more informal nature, providing opportunity for members and guests to share their hobby over a cup of tea or coffee, as well as listening to a short talk

The next meeting will be on February 16th

Social and Practical Astronomy

The January meeting was a great success and I lost count of how many people came up to me and said how enjoyable they found it. I'm unreservedly grateful to the four helpers: Leigh Blake, Gareth Davies, Roy Gretton and Bryan Lilley.

For anyone who didn't attend the meeting we had four stations with one of these helpers at each. Each station was dedicated to two or three of the winter constellations: Andromeda and Cassiopeia; Orion and Canis Major and Canis Minor; Taurus and Auriga; Cancer and Gemini. We divided the audience into four groups and these groups rotated around the four stations, spending 20 minutes at each, listening to information about the constellations, and asking questions. It worked extremely well.

I think we should repeat this in about June time and talk about the summer constellations, so if there are any volunteers let me know.

The February meeting is going to focus on practical astronomy, and will be a talk on planetary imaging. Jupiter is now rising above the horizon at midnight and crosses the meridian at about 5am when it is highest in the sky; throughout February and March Jupiter will continue to rise earlier in the evening so it will be a good time to think about having a go at imaging this amazing planet. One of my images from a few years ago is shown here.



The next meeting is on Thursday 16th February; the doors will open at 7:30pm and the talk will start at 8pm. If it is clear bring your binoculars and we can try and do some observing. The success of these meetings very much depends on the contribution from the membership, so please do let me know if you have an idea for a session or if you have a talk or practical session you could deliver.

James Dawson

NAS Helpdesk helpdesk@nottinghamastro.org.uk

Andromeda and her Great Galaxy

M31, sometimes called the Great Galaxy in Andromeda, came up for discussion in our “constellation group” at the January meeting in Plumtree. I showed an image of the central portion of the galaxy that I had captured earlier in the month, with a Canon camera at the prime focus of my telescope:



M31, total 22-minute stacked exposures at ISO800
2017 January 2nd

M31, over two million light-years from Earth, is said to be the most distant object visible to the naked eye. To see it easily you will need a clear sky and an absence of serious light pollution. It also helps if you have young eyes rather than old ones! The galaxy will appear as a hazy spot just to the west of *nu* Andromedae. As M31 is reckoned to be over 100,000 light-years across, you may wonder why it looks so *small* in our sky. The fact of the matter is that the galaxy subtends an angle much greater than does the Full Moon, but it is only the nucleus that glows brightly enough to be seen with the unaided eye. Hence the “hazy spot”.



M31 and the Moon compared in angular size

The other two hazy spots nearby, visible through binoculars, are satellite galaxies of M31. The one that looks more or less spherical is M32, and the oval one is M110. (The “M”’s all refer to the designation of the objects in Charles Messier’s 18th Century catalogue).

Roy Gretton

Nottingham Astronomical Society

Affiliated to the **British Astronomical Association**
Member of the **Federation of Astronomical Societies**
Member of the **Society for Popular Astronomy**
Supporters of the **Commission for Dark Skies**
Registered Charity No: 1066645

PRESIDENT:

John Hurst

e-mail: president@nottinghamastro.org.uk

VICE PRESIDENT:

Roy Gretton

e-mail: vicepresident@nottinghamastro.org.uk

SECRETARY:

Sam Boote

e-mail: secretary@nottinghamastro.org.uk

TREASURER:

David Anderson

e-mail: treasurer@nottinghamastro.org.uk

JOURNAL EDITOR:

Roy Gretton

e-mail: nottinghamastrojournal@gmail.com

CURATOR OF INSTRUMENTS:

Robert Bush

e-mail: curator@nottinghamastro.org.uk

DIRECTOR OF OBSERVING:

(vacant post; Acting Director: John Hurst)

email: observatory@nottinghamastro.org.uk

Observatory line: 07726 940700 (line open during observing sessions)

ORDINARY COMMITTEE MEMBERS:

Barrie Chacksfield

Lynda Foot

Meetings

Our formal meetings, often with an illustrated talk by a guest speaker, are held on the first Thursday of each month (except in August) at:

The British Geological Survey

Nicker Hill

Keyworth

Nottingham NG12 5GG

Doors open 7.30pm

Meetings start 8.00pm

Meetings end 10.00pm

These meetings are open to the public, and visitors are welcome to attend.

Annual subscriptions 2017

| | |
|----------------------------------------------------|-----|
| Full | £30 |
| Joint rate for partners living at the same address | £45 |
| Under-18s and full-time students | £5 |

Subscriptions become due on 1st January. Half-price subscription is charged if joining after 30th June (minimum subscription £5).

Please make cheques payable to:
Nottingham Astronomical Society.

If you would like more information about the **Nottingham Astronomical Society**, or would like to become a member, please contact the Secretary secretary@nottinghamastro.org.uk or speak to any NAS committee member at one of the regular monthly meetings. A membership application form is inside this issue of the Journal.

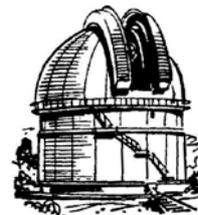
The Nottingham Astronomical Society

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NOTTINGHAM ASTRONOMICAL SOCIETY

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Affiliated to the British Astronomical Association
Member of the Federation of Astronomical Societies

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Membership application and Gift Aid declaration

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| Subscription rate: | Full | £30.00 | (year) | £15.00 | (half year) |
| | Partnership | £45.00 | (year) | £22.50 | (half year) |
| | Under-18 and full-time students | £5 | | | |

Partnership = two members living together as a couple at the same address

I wish my subscriptions to be eligible for Gift Aid **Yes / No**

Gift Aid declaration

(HMRC reference XR32048)

I want Nottingham Astronomical Society to treat all subscriptions and donations that I make from the date of this declaration as Gift Aid donations, until I notify you otherwise.

I pay an amount of UK Income Tax and/or Capital Gains Tax at least equal to the tax that Nottingham Astronomical Society reclaims on my donations in the appropriate tax year.

Signature:

Date: