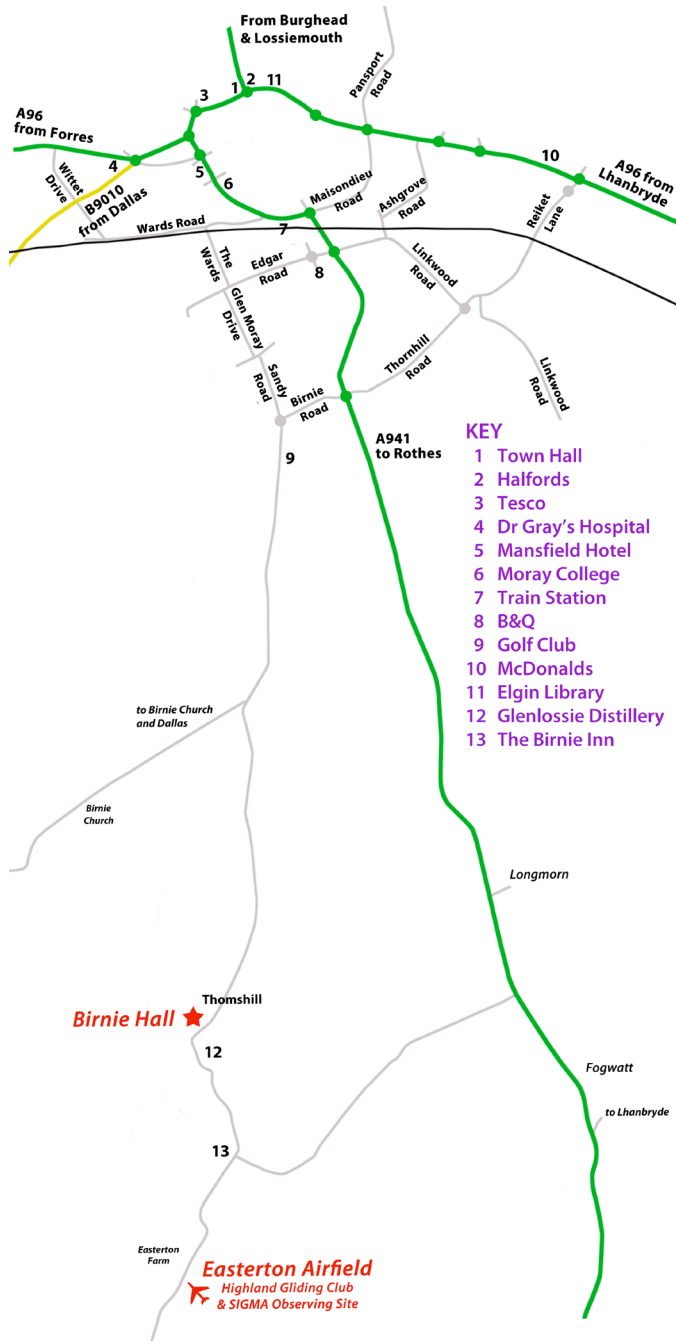


## Where to Find Us



\*\*Doors open 7pm for 7.30pm start\*\*

Come along and join us - your first meeting is free.

Membership is open to everyone and children's membership is free, but a parent or guardian must accompany them if they're under 16 years of age. You can 'try before you buy' as the first meeting is free. So do come along and join us.

SIGMA holds its meetings on the first Friday of every month (*with the exception of January*) at Birnie Village Hall, Thomshill, just south of Elgin as depicted on the map.

From the hall it's a short hop to our dark site at Easterton Airfield, which allows us to hold observing sessions immediately after meetings when conditions are suitable. We also have a number of Club telescopes available for members' use.

Observing sessions are also held at our dark site on Friday and Saturday evenings (*conditions permitting*). Site opening is advised by email but those without this service can be advised by telephone on request. The site is well worth visiting as many deep sky objects can be seen, that would otherwise be obscured by light pollution.

Additionally, SIGMA has an active 'outreach' programme to bring astronomy to schools, groups, clubs and societies. Full details on how to 'Rent an Astronomer' can be found on our website, or by contacting the SIGMA Chairman, Stan Barber.

### Membership Rates

£24.....Ordinary

£12.....Student (*over 18 in full time education*)

£18.....Concessionary (*over 60s may apply for this - please contact the Membership Secretary for information*)

Membership is renewed in full (*unless there are extenuating circumstances*) in January, those joining during the year will pay a pro-rata fee. The first meeting is always free.

SIGMA and Highlands Astronomical Society members may attend each other's monthly meetings and events. (*Note this does not confer voting rights.*)

All information correct at time of publication. E&OE.



## Club Meetings and Information 2017

### Presidents

Bill Leslie

Tim Schroder

### Committee

Stan Barber (Chairman)

Neil Kemp (Secretary)

Stuart Brooks (Treasurer)

Pete Sherman (Events)

Stewart Argo (Webmaster)

Mike Thornton (Membership)

Contact emails for the above are on the website

[www.sigma-astro.co.uk](http://www.sigma-astro.co.uk)

<https://www.facebook.com/SigmaAstro/>

<https://twitter.com/sigmaastro>

**Friday 6th January 2017**

**Equipment Night and SIGMA Stargazing Night  
at Lhanbryde Community Centre**

SIGMA's annual Stargazing meeting. Another chance to hold a joint club night and public observing session. Held at Lhanbryde, the event will give members and visitors a chance to see many of the wonders of the local night sky and engage with local amateur astronomers.

**Friday 3rd February 2017**

**Universe in a Nutshell  
Tim Browett, Robert Gordon's College**

This talk explores our expanding and evolving understanding of the Universe. Tim will examine the development of science's views on the Universe's turbulent 13.8 billion years of history, what we currently believe the state of the Universe to be, and finally examine possible outcomes in its future evolution. A number of practical and novel demonstrations will be used to translate the potentially mind-bending theories into tangible and manageable concepts.

**Friday 3rd March 2017**

**How do They Know That?  
Bill Leslie, SIGMA**

How can anyone know the size of a planet, its distance from the Sun and its mass? Bill will be explaining the science that astronomers use to answer these questions.

**Friday 7th April 2017**

**Recent Curiosities on Mars  
Pauline Macrae, Highlands Astronomical Society**

Pauline will be talking about Mars, and the discoveries made by the Curiosity Rover during its four and a half year trek across the red planet.

**Friday 5th May 2017**

**The Best-Observed Solar Eclipse Ever?  
Dr. Hugh Hudson, University of Glasgow**

In August 2017 a total solar eclipse crosses the entire breadth of the United States. Hugh will describe some of the hoped-for advances in our understanding of the solar corona, the Sun and the Moon. It is hoped that citizen science can play a major role in discoveries following the event itself. Visit [eclipsemega.movie](http://eclipsemega.movie) for more information.

**Friday 2nd June 2017**

**Venue: Morayvia, North Road, Kinloss. IV36 3YA  
AGM, Solar Observing and Social**

Another chance to catch up with events within SIGMA over the last year and to elect the new committee. There will also be the usual Space News and membership draw.

**Friday 21st July 2017  
2nd Prof. George Fraser Memorial Lecture**

**Venue: Morayvia, North Road, Kinloss. IV36 3YA**

In 2014 SIGMA, in association with Morayvia, held its first memorial lecture in honour of Prof. George Fraser (22 July 1955 - 18 March 2014). Born and brought up in Burghead, George was Professor of Detector Physics and Director of the Space Research Centre of the University of Leicester. Though his work was recognised internationally, his achievements are virtually unknown locally. Prof. Martin Hendry, University of Glasgow, a renowned international scientist and regular speaker at SIGMA will deliver this 2nd memorial lecture.

**2020 Vision: Multi-Messenger Astronomy  
and Cosmology From Earth and Space-Based  
Observatories**

The direct detection of gravitational waves by LIGO, (*Laser Interferometer Gravitational-Wave Observatory*), from the collision of two massive black holes more than a billion light years from Earth, has been hailed as the scientific breakthrough of the century, opening up an entirely new way to explore our Universe, and future prospects for simultaneously observing both electro-magnetic and gravitational-wave signals in the distant cosmos. This new field of "multi-messenger" astronomy offers rich opportunities to address some of the deepest unsolved mysteries in astrophysics - from probing the runaway expansion of the Universe to understanding how stars and galaxies formed. This lecture will highlight some of the exciting discoveries that might lie ahead and showcase some of the remarkable technology that underpins our efforts to explore the Universe across the entire electromagnetic spectrum and beyond.

**Friday 4th August 2017**

**TV Astronomy  
Robert Law, Mills Observatory, Dundee**

Robert will show how to use simple video cameras to get pictures of the moon and planets with small telescopes. He will also show pictures from the 16 inch reflector telescope at Mills Observatory.

**The second half of most meetings features an in-depth look into what you can see in the Moray's night sky for the coming month, as well as Space and Club news with details of any forthcoming SIGMA events.**

**Unless otherwise stated, monthly meetings are held at Birnie Village Hall, Thomshill, Elgin, Moray, IV30 8GY.  
In the event of any changes/cancellations these will be advised on our website [www.sigma-astro.co.uk](http://www.sigma-astro.co.uk)**

**Friday 1st September 2017**

**Hunting the Dragon  
Prof. Andy Lawrence, Royal Observatory Edinburgh**

Mysterious and violent events take place in the very centres of galaxies - huge outpourings of X-ray and ultraviolet radiation, jets streaking out at nearly the speed of light, and erratic changes from week to week. Andy will trace the history of how we have pieced together the puzzle over several decades, with telescopes, detectors, and theory, and look at what we think we understand now.

**Friday 6th October 2017**

**Transiting Extra-Solar Planets:  
From Hot Jupiters to Super-Earths  
Prof. Andrew Cameron, University of St. Andrews**

Extrasolar planets transiting their host stars are highly prized - their radii and mass can be measured. Andrew will describe some problems faced determining planetary bulk densities, which offer clues as to whether planets are mainly rocky, icy or gaseous from the various types of observations. A variety of planetary compositions are beginning to emerge, many that are not represented in our own solar system. The Kepler/K2 space mission suggests that we may soon have an idea of the prevalence of Earth-sized planets around other stars.

**Friday 3rd November 2017**

**Astrophotography and Nightscapes  
Maciej Winiarczyk - [wildnorthskies.com](http://wildnorthskies.com)**

Renowned astrophotographer Maciej will be explaining how he captures his stunning images of the Northern lights (Aurora) and wonderful nightscapes from his dark sky advantage point of Wick.

**Friday 1st December 2017**

**Christmas Quiz and Prize Draw  
for SIGMA Members and your Families**

Another chance to bring along the family for a night of fun, questions and mince pies to end the year. There will also be the usual Christmas raffle and an update on future planned events for SIGMA in 2017.