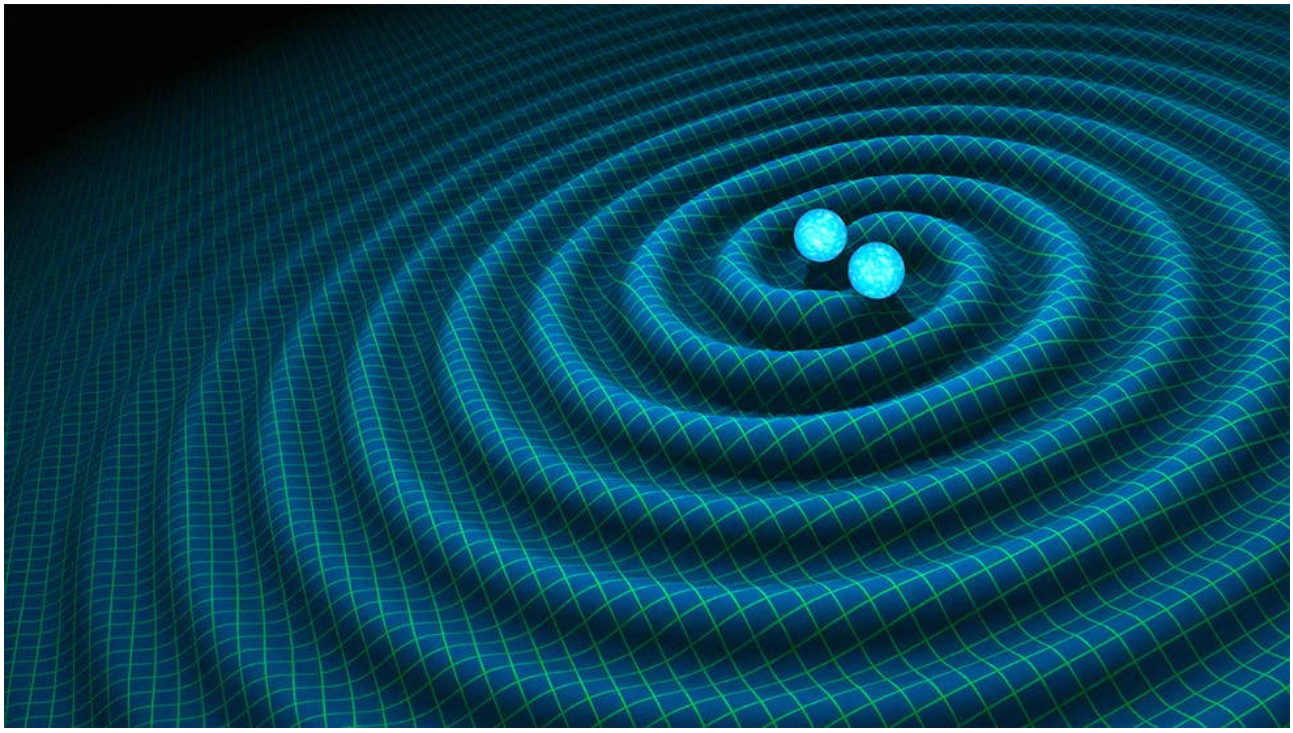
Thanet Astronomy Group

Astronomy for Everyone in Plain English

NEWSLETTER

March 2016



Gravitational-Waves

An artist's impression of gravitational waves generated by binary neutron stars.
Credits: R. Hurt/Caltech-JPL

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Executive Committee Messages

March 2016

March 2nd Wednesdays members' meeting at the cafe.

March 5th Will start the Saturday meetings.

Beginners Guide to Stargazing Course

All those that would like to attend this course (details on the web site) please email ThanetAstronomyGroup@gmail.com to register your interest.

Telescope Making Group

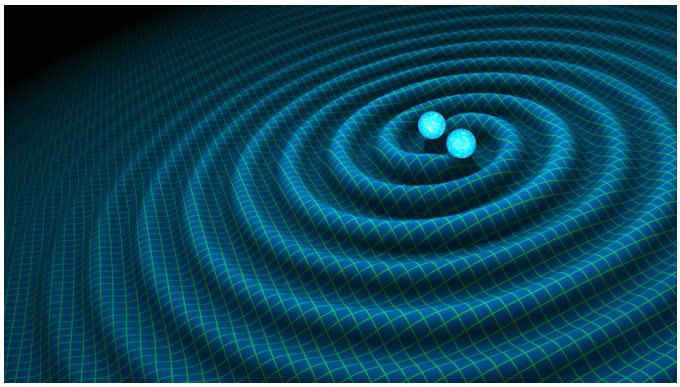
This year 2016 we will be starting work on the first of 3 telescopes we hope to make this year.

Note : There is no knowledge or experience needed to join this workshop.

All those that would like to attend the Telescope Making Group Please email ThanetAstronomyGroup@gmail.com to register your interest.

Danny, George, Gill.

About the Cover Picture



Gravitational-Waves

An artist's impression of gravitational waves generated by binary neutron stars.
Credits: R. Hurt/Caltech-JPL

Gravitational Waves

Just about 100 years ago in 1915, Albert Einstein published his general theory of relativity and predicted the existence of Gravitational Waves. On the 14th September 2015 at 10:50:45 UK time a team of international scientists, including scientists from our own Birmingham university, proved Einstein correct by detecting Gravitational Waves for the first time ever !

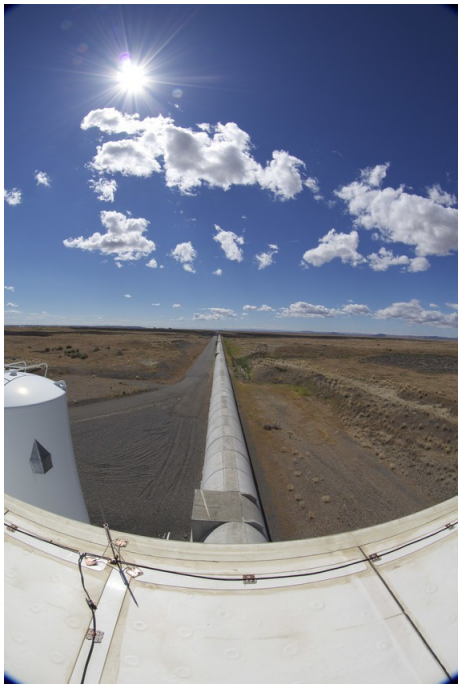
The scientists observed ripples in the fabric of spacetime called Gravitational Waves, arriving at the earth from a cataclysmic event caused by two Black Holes colliding in the distant universe.

LIGO the Laser Interferometer Gravitational Wave Observatory is designed to detect Gravitational Waves. This is a joint project between MIT, Caltech and many other colleges and universities and is funded by the National Science Foundation.

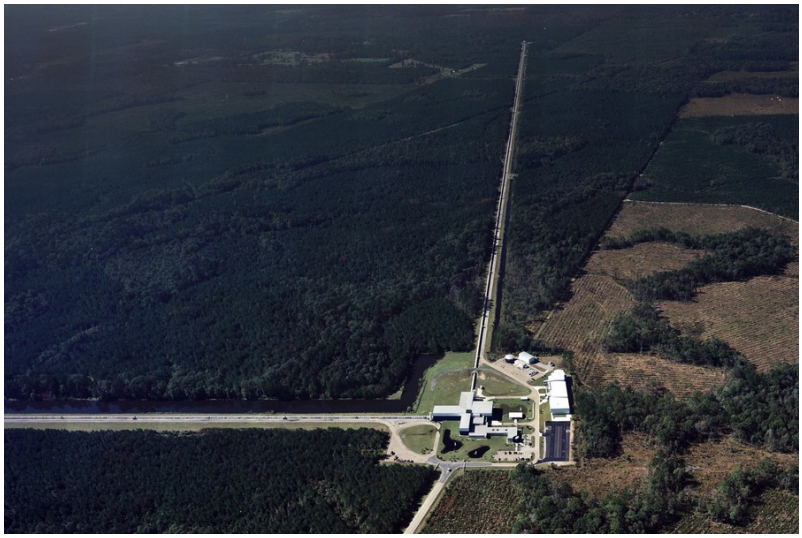
LIGO is based in the USA at two sites, one in Hanford, Washington and the other in Livingston, Louisiana. These two widely separated (1,865 miles) interferometers are operated in unison to detect Gravitational Waves. The (LIGO) is designed to open the field of gravitational wave astrophysics through the direct detection of gravitational waves predicted by Einstein's General Theory of Relativity.

About the Cover Picture

Gravitational Waves



Close up one arm of LIGO Hansford



Aerial view of LIGO Livingston

Each of the two observatories have an “L” shaped detector with each leg 2.5 miles (4km) long.

Mirrors are suspended at each end of the arms and a laser beam is split into two beams and bounced up and down the arms about 280 times. This is a total distance of 700 miles (1120km).

The beam is recombined in such a way (anti-phase) that if there is no gravitational wave present the two halves of the beam will cancel each other out.

If there is a gravitational wave the fabric of space time will be distorted and this will cause the distance travelled to alter and the laser beams will no longer re-combine and exactly cancel each other out.

This results in a small measurable signal that indicates the presence of a gravity wave.

About the Cover Picture

Gravitational Waves

Simplified operation of a gravitational wave observatory

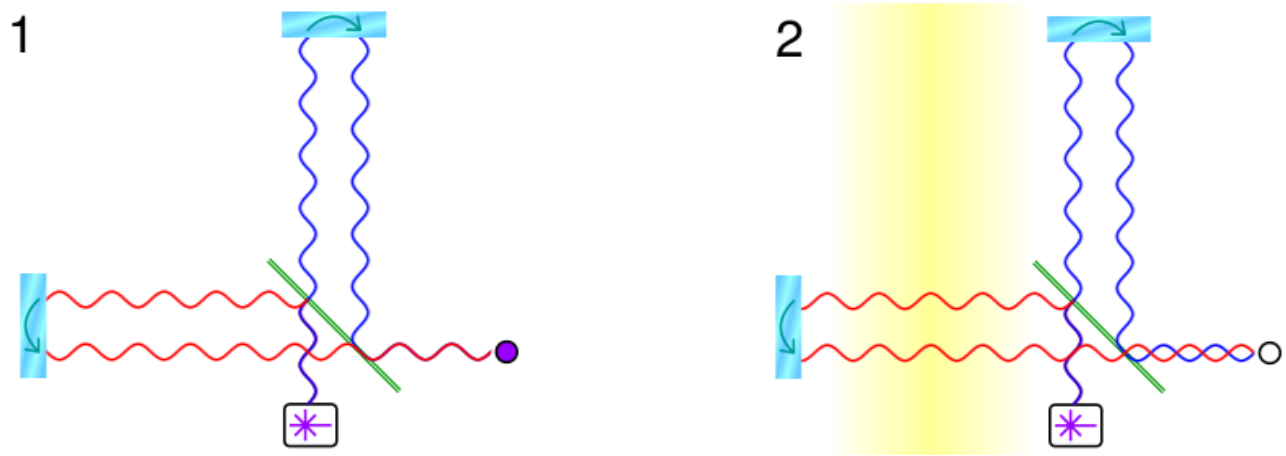


Illustration by Cmglee - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=46950943

***Figure 1**: A beam splitter (green line) splits coherent light (from the white box) into two beams which reflect off the mirrors (cyan oblongs); only one outgoing and reflected beam in each arm is shown, and separated for clarity. The reflected beams recombine and an interference pattern is detected (purple circle).*

***Figure 2**: A gravitational wave passing over the left arm (yellow) changes its length and thus the interference pattern.*

Danny.

Thanet Astronomy Group Contact Details

Executive Committee

Chairman	Daniel Day	01843 228 904
Treasurer	George Ward	01843 292 640
Secretary	Gill Palmer	07543 942 245

Committee

Volunteers	George Cozens	07970 181 395
Members	Sheila Bull	07791 892 057
Newsletter	Janet McBride	01227 364 092
Newsletter	Tracy Howes	07917 710 638
Library	Janet McBride	01227 364 092
Web Site	Danny Day	01843 228 904
JAC & Gill	Gill Palmer	01843 848 064

Members' Meeting Dates and Times

Thanet Astronomy Group

Members' Meetings

Dates and Times

6th January 2016 at 7:30pm

3rd February 2016 at 7:30pm

Next Meeting

2nd March 2016 at 7:30pm

6th April 2016 at 7:30pm

4th May 2016 at 7:30pm

***** Thanet Astronomy Group AGM *****

1st June 2016 at 8pm

6th July 2016 at 8pm

3rd August 2016 at 8pm

*** 7th September 2016 at 8pm ***

*** Anniversary Three Years at West Bay Cafe Party ***

5th October 2016 at 7:30pm

2nd November 2016 at 7:30pm

*** 7th December 2016 at 7:30 for 8:00pm ***

*** Christmas Evening Meal and Entertainment ***

All Members' meetings will be held at the :-

West Bay Cafe, Sea Road,

Westgate-on-Sea,

Kent.

CT8 8QA

Advertisement

WEST BAY CAFE

Sea Road, Westgate-on-Sea
CT8 8QA

Location :-
This Family Friendly Cafe is situated on the promenade just beside the sandy beach opposite the junction of Sea Road and Rowena Road, Westgate-on-Sea, CT8 8QA.

Access :-
via a flight of steps behind the cafe.

Disabled Access :-
via the main entrance to the bay and a slope at the cafe door.

West Bay Cafe run by Alan and Kate has a very friendly atmosphere.

Alan outside the new style West Bay Cafe

There is a wide variety of good food and drinks at very reasonable prices and there are always special offers.

There is seating both inside and outside for those extra hot days.

A Typical Sunset at the West Bay Cafe

The Sunsets at the West Bay Cafe are Spectacular.

With a meal, some friends, and a pint or two.

What more could you ask for!

West Bay Cafe have hosted Thanet Astronomy Group since September 2013.

We would like to say a
HUGE THANK YOU to Alan and Kate
for all the help and support they have shown us over the last year.

Please use this Brilliant Seaside Cafe and Tell Your Friends.

What we did in February

Wednesday 3rd February Members' Meeting

This members' meeting was all about the current Planetary Alignment January 2016. In the first half of the meeting we looked at the planetary alignment from a viewer's point of view as it looks in the sky with the aid of Stellarium.

In the second half of the meeting our attention changed to explaining why the planets appeared where they did and what caused the order they appeared in.

To aid this we used the brilliant Solar System Simulator by NASA's David Seal, to see exactly how events like the Planetary Alignment work. We looked at the Solar System from a point way above it and this accurately showed the actual locations of all the planets.

Saturday 6th February Public Outreach Meeting

Another very cold and windy day. The meeting was inside the cafe with a small group of people. There were many questions and answers all round.

Saturday 13th February Public Outreach Meeting

Today was very cold and windy with the sea breaking over the promenade so we stayed inside for almost all the meeting. Two new visitors were brave enough to go outside for a short while to learn how to set up a telescope and align the finder scope.

Saturday 20th February Public Outreach Meeting

Today was quite a busy day, the weather was almost dry and not too cold. However, visibility was bad as there was a lot of mist on the horizon. We spent the first half outside under the cover of the balcony with the telescopes. There were a surprising number of people around with lots of questions and some interested in joining.

When it started to rain we packed up the scopes and moved into the warmth of the cafe for the second half of the meeting, where many questions were asked and answered.

Saturday 27th February Public Outreach Meeting

It was a cold but dry day with some sunshine, so the telescopes were out looking at the Sun and other objects. The day started very quietly at 1pm with very few people outside because of the cold but the cafe was packed as usual.

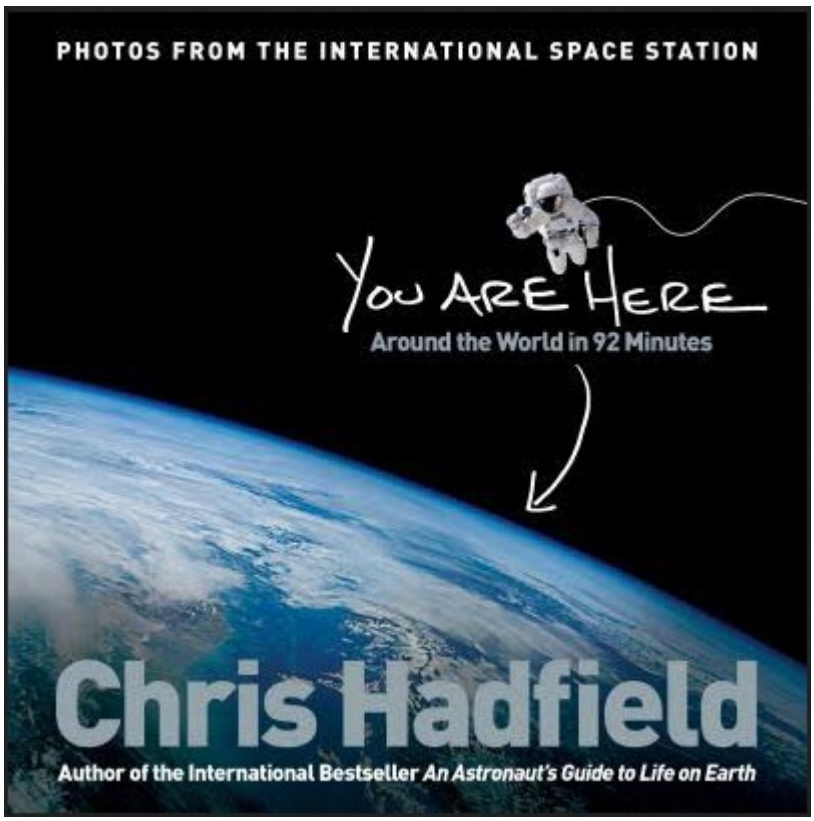
Soon people began to turn up with several new people coming for the second or third week. There were a good number of children braving the cold to learn about astronomy from our brilliant resident teacher & and group Secretary Gill Palmer.

A good day was had by all.

Danny.

Book review

Around the World in 92 Minutes



This book is a visual delight, a view of our beautiful planet as seen from the unique perspective of the International Space Station.

In 1519 the Portuguese explorer Ferdinand Magellan set off on a journey around the world, a journey of three years, and became the first person to circumnavigate Earth.

500 years later man has reduced that time to just 92 minutes !

Chris Hadfield, a Canadian astronaut, took many of the images, and along with images by other astronauts he compiled this book.

He spent 5 months on board the ISS and is probably one of the most accomplished astronauts to date.

The book is priced at £20 but I spotted my hardback copy in Tesco's for £9. This book is also available in paperback.

It contains 200 pages of outstanding photography and informative text. Too often astronomers ignore our own planet, this book reminds us of where we live.

P.S. A portion of the proceeds of this book will be donated to the Red Cross.

George Ward.

What's in the sky this month

Late February Early March

What to see from Sunday 28th February at 7:00 pm.

Asterism (Kimble's Cascade)

Comet (C/2013 US10 (Catalina))

Note : You can see these objects any time over the next few weeks. The pictures and exact positions are set for 28th Feb at 7pm. Overtime the positions will change, especially the Comet C/2013 US10, which will continue to move slowly away from the end of Kemble's Cascade.

Kemble's Cascade

Kemble's Cascade is an A**sterism.** (A*n asterism is just a name for a recognisable pattern of stars but not a constellation).* It was discovered in 1980 by a Canadian Franciscan friar and amateur astronomer Lucian Kemble (1922-1988) using only 7x35 binoculars. This is a particularly low powered Binocular.

The number before the X, "7" tells you the magnification i.e. 7 X magnification. The number after the X, i.e. "35" tells you the diameter of the lens at the front where the light comes in. The bigger the front lens the more light and therefore the brighter the image. **T*elescopes not always required !***

Kemble's Cascade consists of a long line of over 20 stars of various colours spanning the distance of about five times the width of the Moon.

Look north-west at Camelopardalis Ursa Minor & Cassiopeia

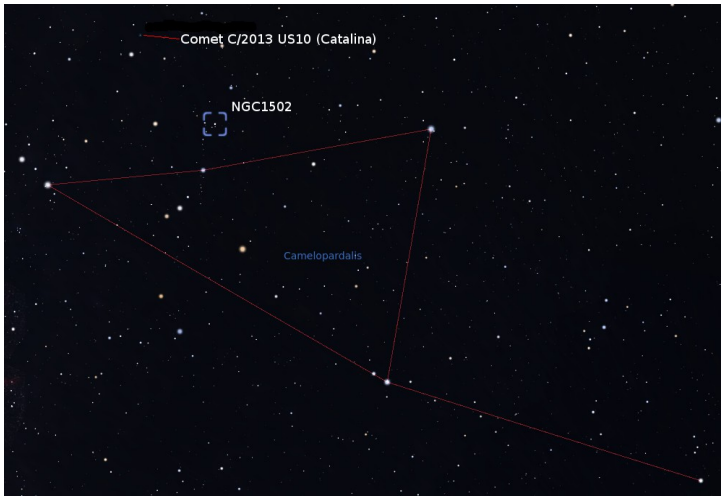
Close up of Camelopardalis, Ursa Minor & Cassiopeia

Kemble's Cascade is located in the constellation **Camelopardalis**, meaning (*camel or giraffe*). This is not an easy constellation to find as it has no distinguishing bright stars to guide you, but it sits between the star **Polaris** in the constellation **Ursa Minor** and the star **Capella** in the constellation **Auriga**, see the looking north-west picture above.

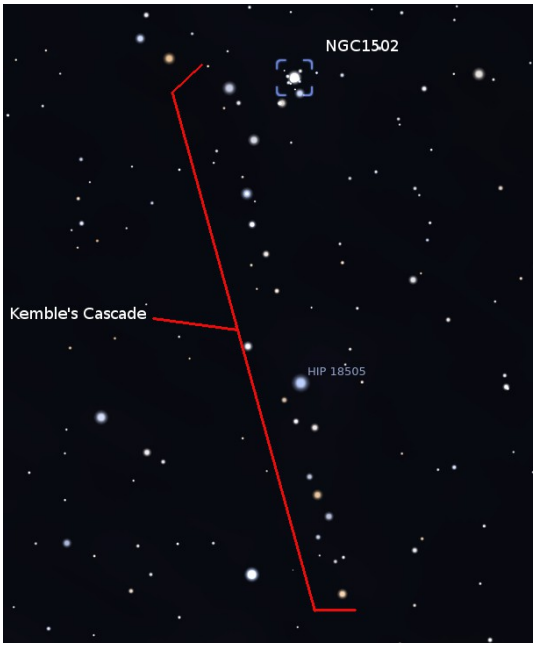
What's in the sky this month

Late February Early March

To find the Kemble's Cascade look for the constellation Cassiopeia, then draw a line from the star Caph through the star Segin, continue for just over the same distance again and you arrive at NGC1502 an open star cluster. See the two close up pictures of Camelopardalis above and below.



Close up of Camelopardalis, showing NGC1502 & Comet C/2013 US10



Close up of Kemble's Cascade & NGC1502

You have now reached NGC1502 right at the end of Kemble's Cascade. Depending on the power of your binoculars, it's possible to see between 15 and 20 multi-coloured stars stretched out in a long line from NGC1502.

Comet (C/2013 US10 (Catalina))

You may even be able to see comet C/2013 US10 (Catalina) if you have a reasonably powerful pair of binoculars. Its position is just above and to the left of NGC1502 as illustrated in the second Close up of Camelopardalis picture above.

If you would like any help with seeing the objects illustrated in this article, or astronomy in general, we would be happy to help you.

George Ward / Danny

Member's Page

About Thanet Astronomy Group

We first became aware of Thanet Astronomy Group a couple of years ago when a family member, with a keen interest in astronomy, decided to join. She soon became an integral part of the group, both as an active member and also it became a source of strong friendships and socialising for her.

S's interest and knowledge increased and deepened with the support of the group. Their knowledge and support knows no bounds. This broadened her interests into other dimensions e.g. photography.

Summer Saturday Meeting 2015

Last summer we were invited to the club at West Bay, Westgate-on-sea, in order to meet the members and see exactly what goes on. After travelling 70 miles to the venue, we saw a number of group members, with their telescopes, in the designated area along the seafront. The public are invited to talk to the members who explain the planets and supernovas that can be seen using their telescopes. As a result of this, it is hoped that more people will become inspired by astronomy (and they may wish to join Thanet Astronomy Group).

The club is attached to a lovely cafe (West Bay Cafe) and the two work in tandem, both enjoying and benefiting from the strong association. After spending time with the club members, there is nothing better than popping into the cafe and having lunch and relaxing. We were extremely impressed by the friendliness of the members, who made us feel very welcome. The cafe has a lovely vibe, the staff are efficient and the refreshments are excellent (and plentiful!)

We were invited to join the club for their Christmas Dinner at the cafe last December. It was a lovely evening, the company, the food and the entertainment were brilliant.

Every time we visit S we always pop along to Thanet Astronomy Group as it has now become an essential part of our trips to see family in Thanet.

We look forward to plenty more visits, especially with the long, clear, summer evenings on their way, hopefully!!

Christmas Dinner 2015

Jane / Sheila.

Did You Know ?

What are Black Holes

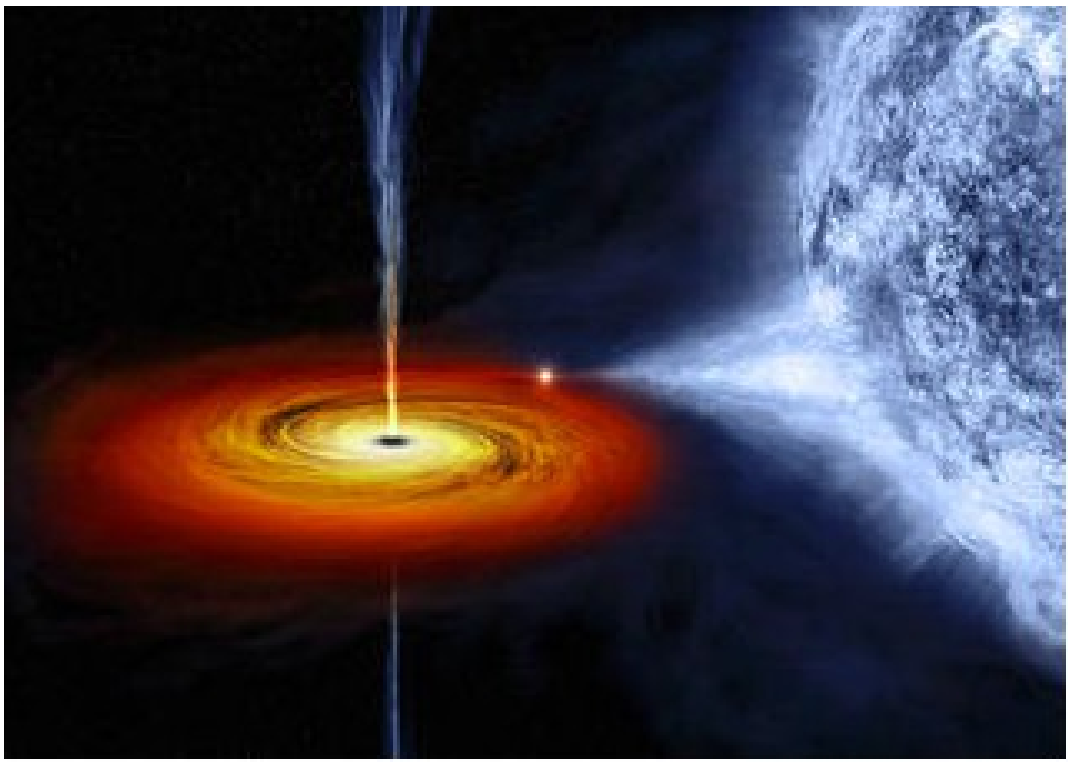
How long have we known about Black Holes ?

Although black holes are considered to be a relatively new discovery, they were actually first proposed to exist in 1783 by John Michell. However it was not until the second half of the twentieth century that we began to understand them.

Black Holes are not a hole !

The first thing you need to know about Black Holes is that they are NOT Holes ! In fact they are the opposite of a hole. A hole is an area with not much in it. A Black Hole is an an area with so much matter in it that its gravity crushes it almost out of existence.

The gravity is so strong that nothing (not even light travelling at 186,000 miles per second) can escape a Black Hole. A Black Holes gravity can 'suck' in stars and even whole solar systems and crush them down to a tiny point.



An artist's impression of Cygnus X-1.

This Black Hole formed when a large star collapsed at the end of its life. This black hole is pulling matter in from the blue star beside it. Credits: NASA/CXC/M.Weiss

Did You Know ?

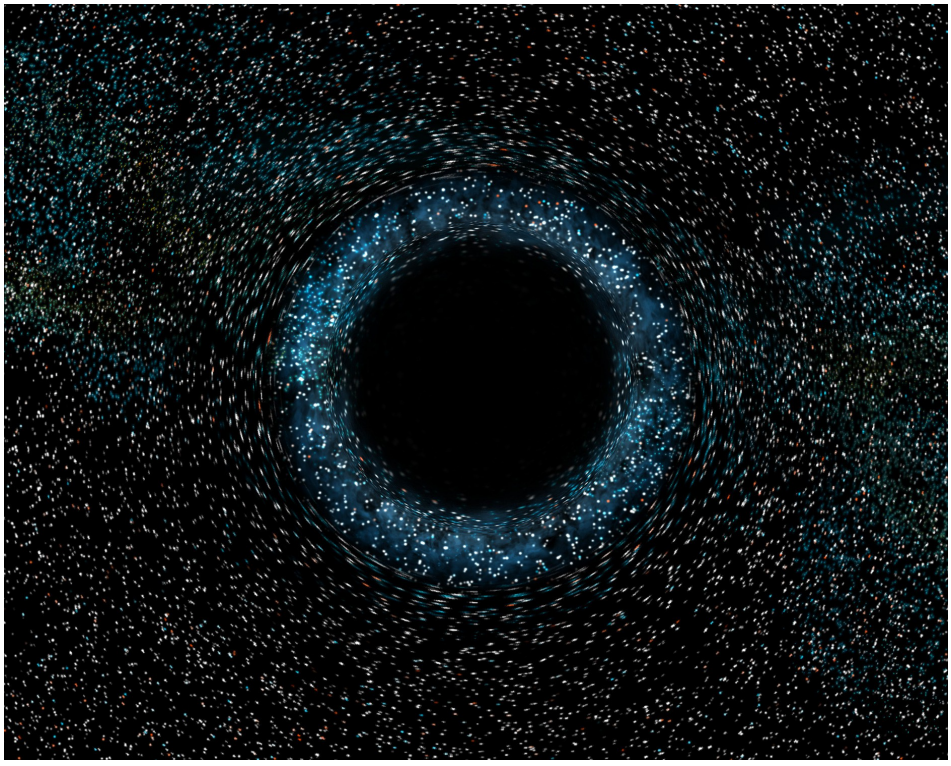
What are Black Holes

Why are Black Holes black ?

To understand why a black hole is black you first need to know why other objects **'*can*'** be seen.

We all know we need Light to see anything. If it is dark (really dark) we see nothing. So what is 'Light' and how does it allow us to see?

We know that light is created by many things, the Sun, Light Bulbs, Fire, etc. All of these things are creating 'Photons' (the particles that are Light). These particles or Photons travel away from where they are created at the speed of light in all directions.



A real Black Hole picture credit NASA Huble

When photons hit something they bounce off the object in all directions. Some of them end up travelling through the pupil of your eye and hitting the retina at the back of your eye. The retina then converts the energy in the impact into a tiny electric signal that is sent to your brain, via the optic nerve, and then you 'see' the object that the photons bounced of off.

Therefore because all light or photons that get anywhere near a Black Hole gets sucked into the black hole and can never escape. No photons ever bounce off and there is nothing to reach our eyes. So all we see when looking towards a Black Hole is " A Black Hole" i.e. Blackness, Nothing, No Photons.

Danny.

JAC and Gill's

This month our Junior Astronomers have been following the adventures of our national hero Major Tim Peake, in his intrepid journey on board the International Space Station.

The children decided to ask their own questions to try to find out more about Tim...then we Googled the information!

Q. How old is Tim?

A. We found out that his birthday is on the 7th April 1972, so he will be 44 this year.

Q. What job did Tim do before he became an astronaut?

A. Tim graduated from Royal Military Academy, Sandhurst in 1992 then served as a platoon Commander with the Royal Green Jackets. He became a helicopter pilot in 1994 and a flight instructor in 1998. Tim studied for a BSc (Hons) in Flight Dynamics at the University of Portsmouth in 2006 and finally became a Test Pilot with Augusta Westland in 2009.

Q. How did Tim become an astronaut?

A. He beat over 8000 people who applied for one of the six places on the European Space Agency's astronaut training programme. He had to do lots of academic tests, fitness assessments and interviews before he was chosen.

Q. What are the names of the other 5 astronauts who were chosen to go with Tim?

Tim Kopra (American)

Yuri Malenchenko (Russian)

- who went up with Tim Peake on Expedition 46.

Aleksey Ovchinin (Russian)

Oleg Skripochka (Russian)

Jeffrey Williams (American)

- who will be joining them for Expedition 47.

Expedition 46-47 crew Credit Nasa.gov
Tim Peake, Yuri Malenchenko, Tim Kopra

Junior Astronomers Club (JAC & Gill)

JAC and Gill's

Q. When did Tim fly out to join the International Space Station?

A. Tim and his crew joined the ISS on 15th December 2015 and met up with Commander Scott Kelly, Sergey Volkov and Mikhail Kornienko who were already on Expedition 45. Tim will stay on the ISS for 6 months.

Tim Peake prepares for space walk

Q. When did Tim go on his first Space Walk?

A. Friday 15th January 2016 for nearly five hours.

Q. Why is he lying down if he is going for a space "walk"?

A. In space, there is no gravity so Tim is floating because he is weightless!!!

Can you think of any other questions about Tim and the ISS that you would like to find out about?

Watch this "Space" for more fascinating information next month!

Reach for the stars, Junior Astronomers!

Gill Palmer.

Adult Word Search

ASTRONOMY	EQUATORIAL	FOCUSER
LENS	MIRROR	NEBULA
REFLECTOR	REFRACTOR	SECONDARY
SPIDER	TELESCOPE	TUBE

W L I J N V M W M I O A N P C
Z R F R J O D N H O U V R T V
C Z E Y R A D N O C E S R B R
O V T Q V W G Y S M K U A S F
T B R P U T R E F L E C T O R
V R U T Z A S T R O N O M Y T
Q V E E B U T S E M E O I Z M
G C I D F K E O F S B E R M T
B Y Z P I J L Y R A U S R Y I
H G E T R P E B A I L N O U S
U K R V X M S J C W A E R I F
U N T G P I C Z T X R L V I H
V M D B U J O K O O O S W Q X
C F Q K D I P X R E F U M J Z
X I J T V O E D R E S U C O F

Danny.

Junior Word Search

EARTH	JUPITER	MARS
MERCURY	NEPTUNE	PLANETS
SATURN	URANUS	VENUS

M R H V E N U S M

A F E A D R G P W

R Q R T A U L M Z

S T D N I A H Y V

H Y U B N P H Y S

U S M E R C U R Y

Y I T S U V R J F

Y S A T U R N B K

Z H E N U T P E N

We hope that you find the Adult and Junior word searches interesting and that they inspire you to look up any of the words you don't know *Absolutely Everything About* :-)

If you like these please let us know and we will continue to produce them.

We are thinking of adding a crossword as well in future newsletters. If you like this idea please let us know.

Comments Please : you all know the email address !

Danny.

Members' For Sale and Wanted

This page is for members to place items for Sale and Wanted adverts.

Please let us know if you have anything you would like on this page.

Email us at : - thanetastronomygroup@gmail.com
Or call Danny 01843 228904 or George 01843 292640

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