

Bishop Challoner Science - Optional Project

Space is a fascinating topic that combines many different areas of Physics. Despite this, there is often not time during school to explore the many different discoveries and advancements that have helped us to better understand the Universe and our place within it.

Listed below are a selection of topics for you to research and create poster/information sheets about. You can do as many or as few as you like in any order and are of course welcome to choose something completely different if something in your research interests you! You may want to aim for up to a page for each topic but again, this is entirely up to you.

Please email any posters or questions to: m.sutton@bishopchalloner.bham.sch.uk

Telescopes and Observatories

The only way we can investigate space is by looking, collecting data and trying to explain what we see. At first, this simply meant looking into the sky with our eyes but now, complex and expensive equipment allows us to see much more and much further than ever before.



Keck Observatory, Hawaii

Topics

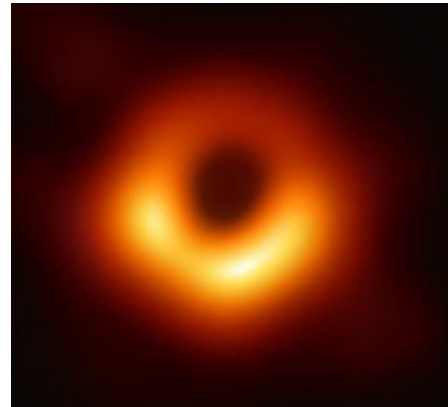
- **The development of the telescope through history**
- **The Voyager missions**
- **The Cassini Probe**
- **The Hubble Space Telescope**

Discoveries and Phenomena

As is very common in Science, observations made by astronomers have often raised more questions than they have answered. In some cases they have challenged our most basic theories and beliefs, a notable example being that the Sun orbited around the Earth (which we now know to be untrue). Most of the topic listed below are still not fully understood, even now!

Topics

- **The scale of the Universe**
 - **The size of objects in the Universe**
 - **The distances between objects in the Universe**
 - **Pulsars (“The most accurate clocks in the Universe”)**
 - **Black Holes**
 - {
 - **Gravitational lensing**
 - **Dark matter**
 - **Redshift**}
- (difficult topics)**



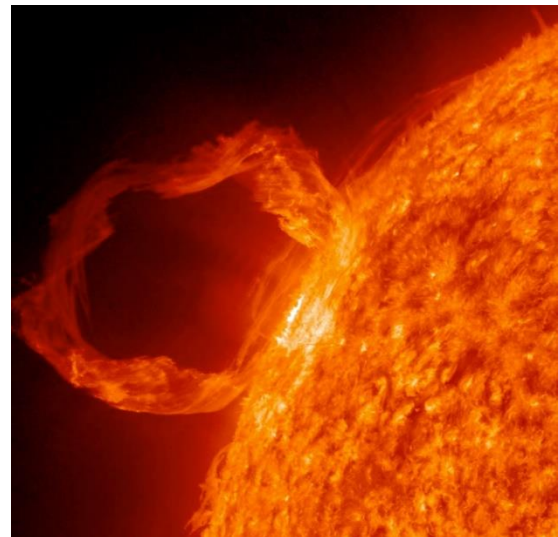
First ever image of a black hole (2019)

Dangers of Space

Inevitably, the exploration of Space has brought with it many dangers and hazards, particularly to the astronauts travelling beyond the safety of the atmosphere. It has also helped us to understand the risks we face here on the Earth’s surface and to guard against them.

Topics

- **Solar flares**
- **Meteor strikes**
- **Muscle atrophy in astronauts on the International Space Station**



Solar flare

Astronomers

What we know about space would not have been possible without the work of astronomers. This involves developing more powerful telescopes, analysing and interpreting discoveries but also, the biggest challenge for some astronomers has been simply proving their ideas to a skeptical scientific community!

Topics

- **Galileo Galilei**
- **Edwin Hubble**
- **Annie Jump Cannon**
- **Subrahmanyan Chandrasekhar**
- **Jocelyn Bell Burnell**
- **Katie Bouman**



Jocelyn Bell Burnell, Mullard Radio Astronomy Observatory, 1968