WHAT YOU CAN DO AT HOME TOGETHER

STARGAZING LIVE

FAMILY GUIDE

WHAT YOU CAN DO AT HOME TOGETHER
Did you know Australia is the best place in the world to look at the night sky? We can see 100 times more stars than the Northern Hemisphere, because we look directly into the vast heart of the Milky Way.

This April, renowned physicist Professor Brian Cox will inspire the Nation to look up in Stargazing Live. The three-part ABC series will be broadcast from Siding Spring Observatory – Australia’s premier observatory, a UNESCO certified Dark Field site, and a world leading facility in the search for planets orbiting distant stars.

It’s on ABC TV, 4,5,6 April 2017 8.30pm AEST & ABC iview, 8pm SA + NT, 8.30pm AWST and streamed live on both ABC TV Facebook and Youtube channels.

[abc.net.au/stargazing](http://abc.net.au/stargazing)

#StargazingABC and #StargazingQuestions
Some of the must-sees in our southern sky

Autumn officially begins on 20th March 2017 with the Vernal Equinox when the Sun rises due East and sets exactly in the West. In the Southern Hemisphere this is also known as the Autumn Equinox, and for the Northern half of Earth it’s the Spring Equinox. In Australia we will now have nights that are longer than the days, perfect for astronomy!

A must-see constellation in the night sky is the hunter Orion, visible in the West low on the horizon after sunset. Three stars in a line form a sword-belt between the brilliantly bright white star Rigel and the red star of Betelgeuse. It’s one of the most recognisable sights in the sky but only really resembles a hunter when seen from Greece, where the story originated. From Australia, the hunter is tilted sideways, and the sword-belt is described as the base of a Saucepan. The Yolngu people in Arnhem Land see a canoe with three brothers fishing, with Betelgeuse the bow of the canoe and Rigel the stern. There’s even a Kingfish still on the line as the delicately shimmering Orion Nebula behind the brothers up and away from the stern!

Now turn around with your back to Orion. Put your arm out in front like you’re giving the horizon a thumbs up. Stretch your little finger down so that it now looks like you’re giving the surfer symbol and with that little finger resting on the horizon your thumb should be touching the top of the Southern Cross. Just to the right should be two bright stars, the Pointers. In your minds eye draw a line along the main length of the cross continuing to the South until you see two faint clouds. These are in fact entire galaxies, caught by the Milky Way’s gravity - the Large and Small Magellanic Clouds.
How to make a simple telescope

There are many ways to see the night sky, from the naked eye to binoculars (highly recommended!) to an array of telescopes, some of which you can even access from your computer (try out Slooh or Telescope).

You can even make your own telescope at Home Science Tools, or using two magnifying glasses at wikiHow.

Now is a great time to look up! Here is a taste of what’s happening in the night sky

The Milky Way stretches across the night sky, hundreds of billions of stars crowding together to give a beautiful glow. The middle of the Milky Way appears dark, not because there are no stars there, but because there are clouds in the way. Giant accumulations of gas and dust lying between the stars that block that light. In the dark regions gas can cool and come together, eventually reaching high enough densities to form new stars, these are actually stellar nurseries. Five billion years ago our own Sun would have been born in a cloud just like these.

Before midnight, low on the horizon below the Milky Way to the North-East is a very bright golden star. This isn’t a star at all and is in fact the King of the Planets, Jupiter. Look closely and it shouldn’t be twinkling (that’s how you tell your planets from your stars) and with a reasonable telescope you can see the Great Red Spot on the surface, a storm raging for centuries that’s bigger than the entire Earth. With even a pair of binoculars you can see that around the planet are four bright points of light in a line, these are the largest moons of Jupiter, first seen by Galileo from which we derive their name; the Galilean moons.
Indigenous astronomy

“Aboriginal people in Australia have a rich astronomical tradition such as the “Emu in the Sky” constellation of dark clouds, and stories about the Sun, Moon, and stars, revealing a depth and complexity of pre-contact Aboriginal cultures which are not widely appreciated by outsiders. Not only did they know the sky intimately, but they were familiar with planetary motions, tides, and eclipses.

Their songs and stories show that Aboriginal Australians sought to understand their Universe in a similar way to modern science. They used this knowledge of the sky to construct calendars, songlines, and other navigational tools, enabling them to navigate across the country, trading artefacts and sacred stories.” Professor Ray Norris

See the Emu in the Sky

To the Ku-ring-gai in modern day New South Wales, the dark region of the galaxy is an Emu in the Sky. The Emu is outstretched with a large body and thin neck, ending in a particularly dark head sometimes called the Coalsack.

As seasons pass the Emu appears in different positions on the sky. Critically when the Emu in the Sky perfectly aligns with the rock engraving (a tracing of which is given in yellow below) of the Emu by the Ku-ring-gai, real emu’s are laying their eggs! This is a calendar and a dinner-bell tying together intimate knowledge of the regular patterns of the sky and knowledge of the land.

Credit Barnaby Norris
Some of the best free apps as chosen and used by astronomer Dr. Alan Duffy
(all available on Android and iPhone)

**SkyView Free** one of the best and easiest ways to explore the night sky with your smartphone.

**EarthNow** enjoy the most beautiful object in space, our very own Earth! Shows the latest NASA images of our planet from Carbon Dioxide maps to cloud cover.

**Fireballs in the Sky** help Australian astronomers uncover the history of our Solar System by tracking shooting stars to recover these ancient relics.

Astronomers use **Stellarium** on their computers to plan observations and explore the sky, free and well worth getting to grips with!

Contact your nearest astronomy group

The best and easiest way to get an introduction to astronomy is to contact your local amateur astronomical society, who will be more than willing to guide you on a tour of the night sky. They will most likely know about Stargazing Live and many have Junior sections.


Top tips when you look up and tune in to the universe

A good pair of binoculars is better than a similarly priced cheap telescope, so borrow some or even head to your local amateur astronomical group and try their equipment.

It might seem obvious but go somewhere dark if you can, the further away from city lights you are the more you’ll see, especially faint objects like the Large and Small Magellanic Clouds.

It takes your eyes 20 minutes to become dark adapted meaning you need to give yourself time away from lights before you can see all that the night sky has to offer.

Take a blanket and some hot chocolate, settle in for a comfortable observing run, no point being cold and hungry when out looking for stars!
Stargazing Live can be viewed across the ABC universe!

BtN’s Stargazing Special is on Wed April 5th @ 10:30am.

BtN looks to the outer reaches of the universe in this Stargazing Special. We start by telling you all about the first spacecraft to travel to Pluto and beyond, before marvelling at some of the awesome pictures taken by the Hubble Telescope. Then it’s back to Earth when we discover that a sacred Aboriginal site could be the oldest astronomical map ever found before amateur astronomer Joe shows us his incredible home-built telescope.

The Stargazing Live website

Tutorials, quizzes, beginners guides, indigenous astronomy, portraits of our solar system - there’s everything you need to tune in to the universe on the Stargazing Live website.