

RADIO STAR

This year sees the implementation of a brand new 3m diameter radio telescope, representing an investment of around £20k, for the purpose of allowing our undergraduate students to investigate some of the most interesting regions of our Milky Way galaxy. Radio astronomy is all about using the light we can't see to measure the Universe. Radio waves are an extension of the electromagnetic spectrum. The light that we see has a wavelength of about one thousandth the diameter of a hair, but radio waves are centimeters to tens of meters long.

Radio Astronomy is very important due to the transparency of interstellar dust to radio waves, which allow us to study some of the most incredible regions and phenomena in space. Be that inferring the presence of dark matter by measuring the rotation of the galaxy, or mapping mysterious massive star-forming regions such as Cygnus X.

The new telescope, much like its twin already present at the Astrocampus, has two antennae sensitive to different frequencies of radiation; a 1420 MHz receiver capable of detecting the Hydrogen 21cm line, as well as a 6.67 GHz receiver used to observe methanol. The design of this new radio telescope improves upon that of the Classic Telescope by allowing for much more precise control over the direction the dish is facing. In addition, the new telescope comes with a much more sophisticated user interface software. This will make tasks such as mapping a selected region much easier for users to undertake.

It is hoped that the new and classic radio telescopes might be capable of being coupled together to construct an interferometer. This basically means that the two signals from each antenna can be combined to create a telescope equal in size to the distance between the two dishes (approximately 20 metres).



Installation of the new 3m diameter radio telescope on Astrocampus

This would vastly increase the angular resolution of observations, thus improving their quality. Another planned project is to use the mapping feature within the new software to produce an all-sky-survey of the Hydrogen 21cm line visible from York, which will then be placed on public display

Matt Williams
PhD Student

TWINKLE TWINKLE

It is lovely to see the lights come out for the holiday season. Of course the long winter nights are also a great time to see the natural lights in the sky as well! The festive lights may twinkle from their electrical supply but starlight twinkles come from our own atmosphere. If we were in space we would see the stars shining brightly and constantly, but when that light passes through the atmosphere of the Earth it is distorted. Imagine lots of bubbles of air changing the light just a little bit as it passes through. Move the bubbles around as the atmosphere moves and we get the twinkling of starlight. It puts a bit of a different twist on the nursery rhyme!

Astrocampus welcomes another telescope to the site this month. A Meade lightswitch telescope! This is a smaller optical telescope with an 8" sized mirror. So why this one? Well it is all in the name! A lightswitch telescope is nearly completely autonomous - turn it on, like a lightswitch, and it goes! This means that it will automatically work out its location using GPS then stare at the stars until it orients itself. A few seconds later and it is ready to guide you around the night sky.

We hope that this telescope will make some of the observing easier for our first year students and also provide more viewing opportunities for visitors - including disabled guests who may not have had access to the upstairs observatory.

With darkness falling much earlier in the winter we look forward to more weekly openings to see stars, planets and more. See you at Astrocampus soon!



The new lightswitch telescope.

Best Wishes and Clear Skies!

Dr. Emily Brunsten
Director of Astrocampus



EVENTS

November	6	Astrocampus Opening
	20	The Problem with Planets & Opening http://ow.ly/DpCc7
	27	Astrocampus Opening
December	4	Astrocampus Opening
	11	Astrocampus Opening
	13-14	Geminids Meteor Shower
	18	Astrocampus Opening

For details on our open nights and to make a booking, please go to www.astrocampus.org.uk

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UPDATE

This autumn, the Astrocampus has been busier than ever with school groups, Brownies, and Cub Scouts visiting, in addition to our weekly public openings. We're also delighted to be working with the UK Space Agency's Education arm (ESERO-UK) on a project to engage Primary School children with Space Science. St. Wilfrid's RC School is one of the schools involved. Their year 5/6 classes spent an exciting day at the Astrocampus seeing the telescopes, making landing crafts, and finding out more about the conditions in space. This was followed by a visit from our inflatable planetarium: the Cosmodome. Classes found out about what to look for in the night sky, and where we might find aliens!



Katherine Leech
Outreach Officer
Department of Physics



Astrocampus activities, including liquid nitrogen demonstrations.

