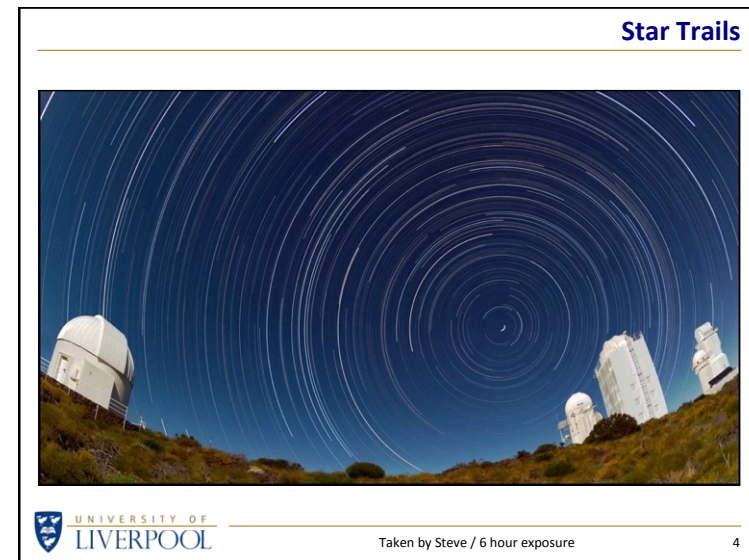
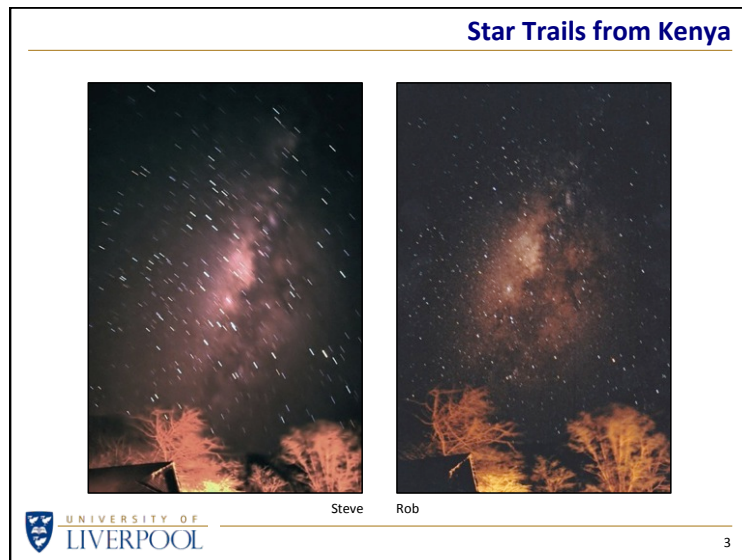
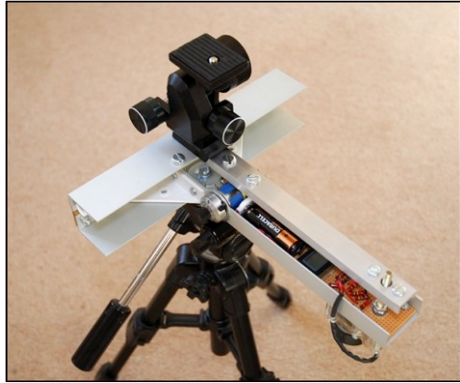


Astrophotography Without a Telescope



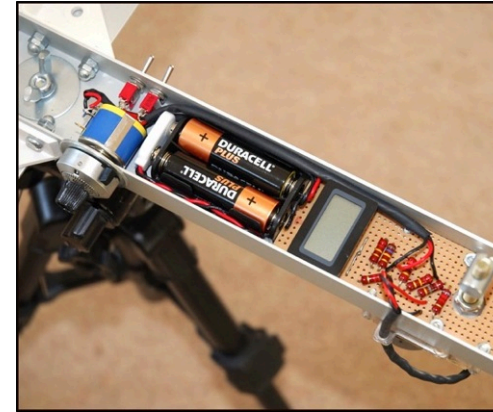
Astrophotography Without a Telescope

Early days of K2



K2 is a star tracker that I designed and built with simplicity and cheapness in mind.

K2 Construction



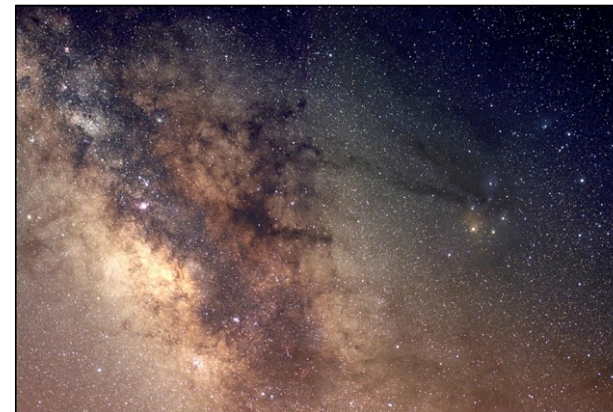
K2 – Off and On



With K2 switched off the stars trail after just a few seconds.

With K2 switched on the stars are imaged as pinpoints.

Milky Way from Teide Observatory



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iOptron SkyTracker

An alternative is a commercial product like the iOptron SkyTracker™.

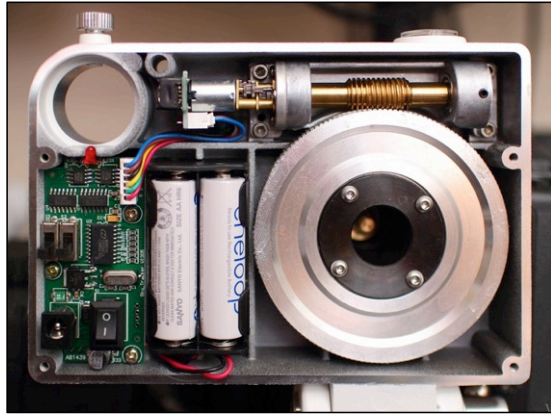


The image shows a white iOptron SkyTracker mount with a black telescope tube attached. The device is compact and designed for tracking celestial objects during long-exposure photography.

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Inside the SkyTracker



A photograph showing the internal components of the SkyTracker. It features a green printed circuit board (PCB) with various electronic components, two AA batteries, and a large silver metal gear mechanism for tracking.

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Polar Alignment



The image displays the iOptron SkyTracker next to a red alignment chart. The chart is a circular scale used for polar alignment, showing declination lines and a green dot indicating the current alignment point.

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Attaching a Camera




Three photographs showing the SkyTracker with a camera attached. The top-left photo shows a red camera on a tripod. The bottom-center photo shows a black camera on a tripod. The right photo shows a black camera with a large lens attached to the SkyTracker.

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Milky Way with 10mm lens

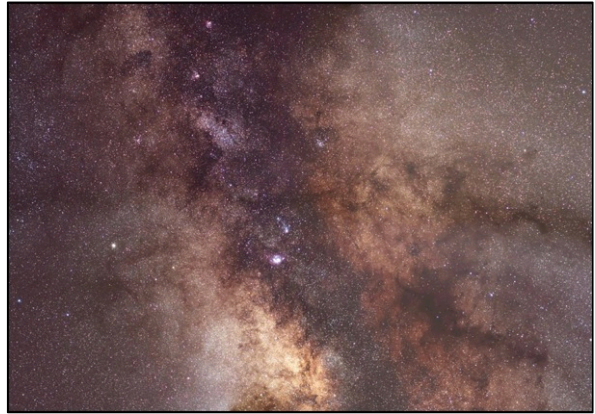


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Taken by Steve / Nikon D7100 + 10mm lens / 6 x 240s 13

This image shows a wide-field view of the Milky Way galaxy, appearing as a bright, diagonal band of light and dust against a dark, star-filled sky. The band is composed of numerous individual stars and interstellar clouds, though they are not clearly resolved due to the short focal length of the lens.

Milky Way with 85mm lens




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Taken by Steve / Nikon D7100 + 85mm lens / 10 x 120s 14

This image shows the Milky Way with more detail than the 10mm lens image. The dust lanes and star clusters are more prominent, and the overall structure of the galaxy is more clearly visible. The stars appear as distinct points of light.

Antares and Rho Ophiuchi



60 x 120s

Antares and the Rho Ophiuchi Molecular Cloud Complex

Taken from Teide Observatory in Tenerife
60 x 120s exposures taken with a Nikon D7500 and 5.55mm f/2 lens
© Steve Barrett 2018

With a 135 mm telephoto lens more detail can be captured in the region north of Antares, including the nebulosity around Rho Ophiuchi.

Longer focal length lenses may show some trailing unless the polar alignment of the tracker is set carefully.

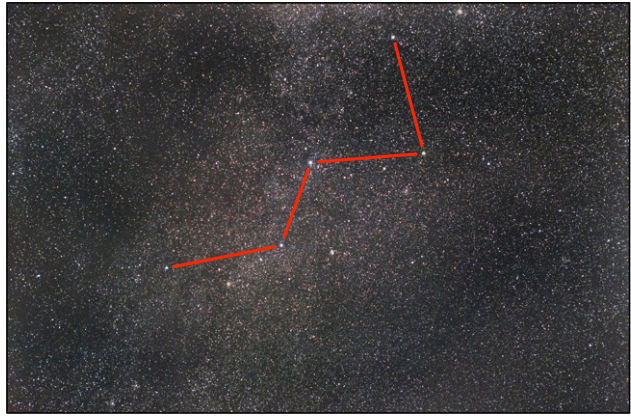
Shorter exposures usually gets around that problem.

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This image shows a close-up view of the Antares and Rho Ophiuchi region. The stars are much larger and more detailed, and the surrounding nebulosity is clearly visible. The text explains that longer focal length lenses can capture more detail but may show trailing unless the polar alignment is set carefully. Shorter exposures usually get around that problem.

Milky Way from UK

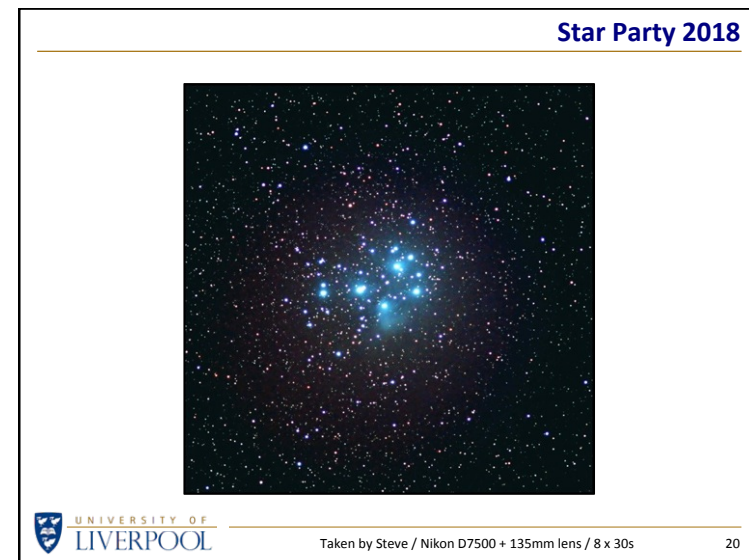
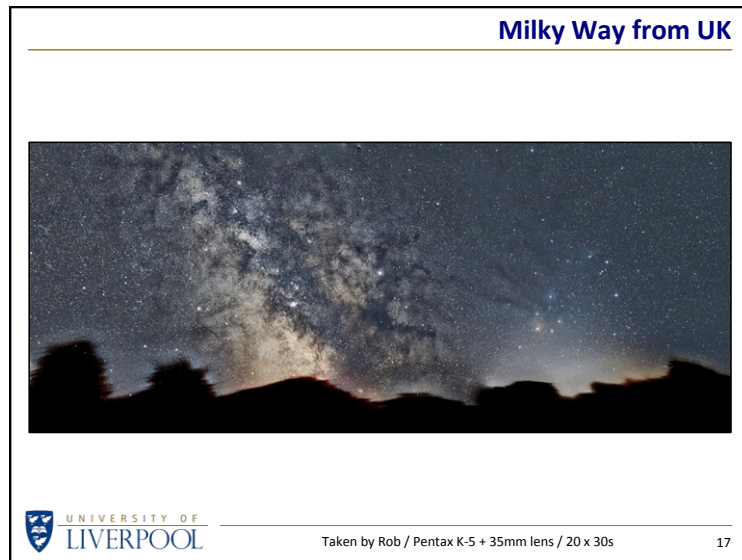


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Taken by Rob / Nikon D7500 + 50mm lens / 20 x 30s 16

This image shows the Milky Way from the UK. The stars are arranged in a pattern that forms the constellation of Orion, which is visible in the foreground. The Milky Way is visible in the background, appearing as a faint, diffuse band of light. The text explains that this image was taken with a 50mm lens and 20 x 30s exposures.

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Aligning Using Polaris

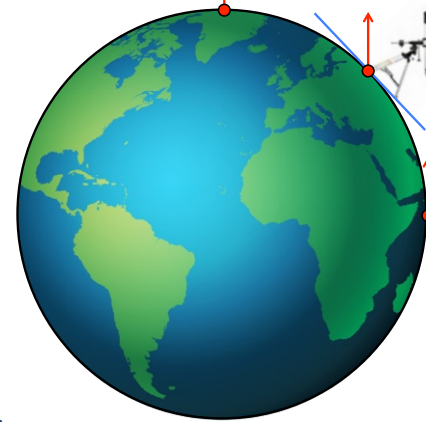
With Polaris visible, aligning a star tracker is easy in the UK, but ...



... when in Kenya, on the equator, things are more tricky.

Aligning Using Polaris

North Celestial Pole



In East Africa the NCP and Polaris are very close to the horizon, and hence are hidden behind elephants or distant hills.

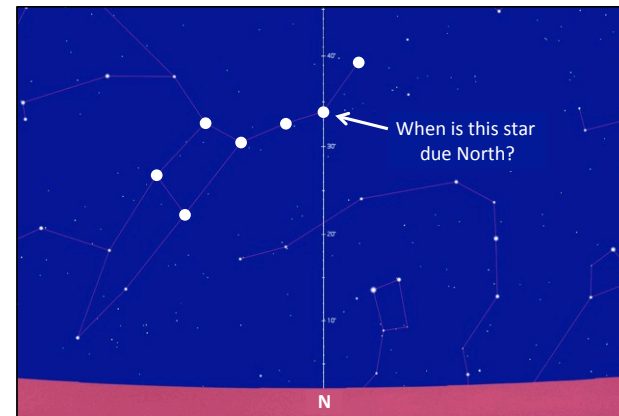
Alternative Ways To Align

To align a tracker with the North Celestial Pole, even if you can't see it, you can use a compass to find North and a spirit level to set the tracker's axis to the correct altitude (= your latitude on the Earth's surface).



But beware...
Magnetic North is not the same as True North, and a compass needle can be affected by nearby metal and motors found in, for instance, a motorised star tracker!

Alternative Ways To Align



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