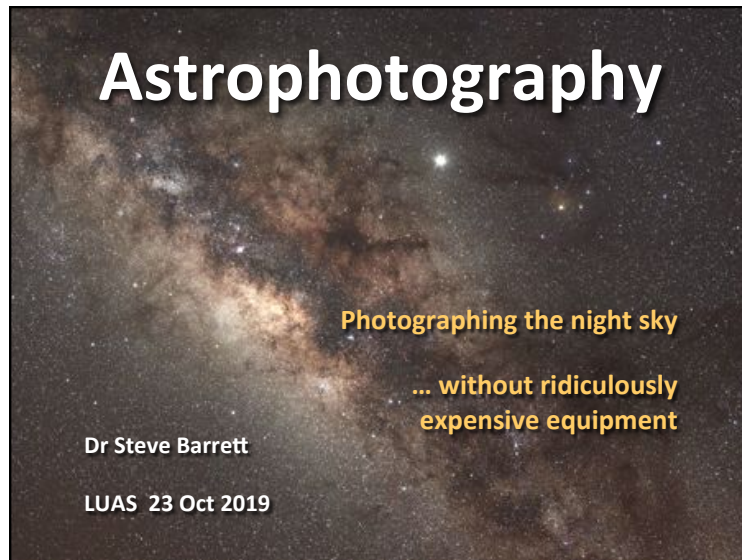


# Astrophotography



**Astrophotography**

What can be done with a camera and ...

- ... nothing else?
- ... a DIY star tracker?
- ... an amateur telescope?

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2

**Star Trails**

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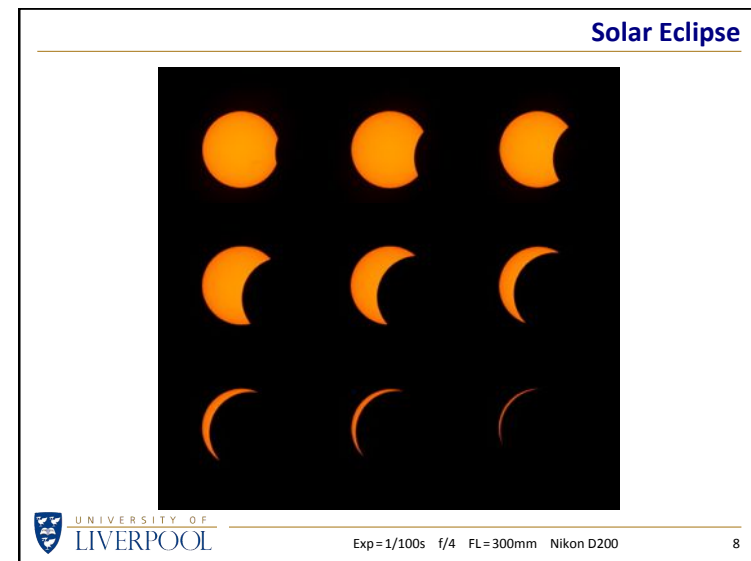
Exp=360 x 1m f/5.6 FL=10mm Nikon D7100

3

**Star Trails**

Exp=5m f/2.8 FL=24mm Fujichrome ISO 200

# Astrophotography



# Astrophotography



## Star Trails



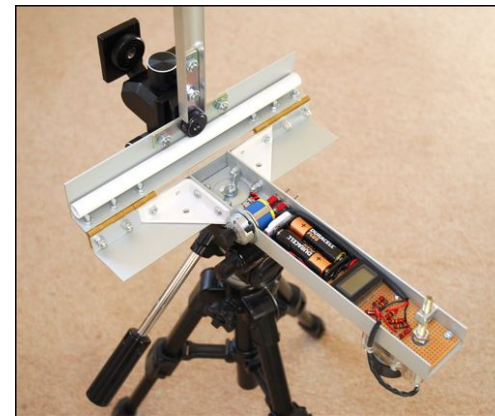
## Tracking the Stars

How can the sky be photographed without the stars trailing?  
Build a device to compensate for the Earth's rotation – a star tracker.

### Ideally... For K2 this means...

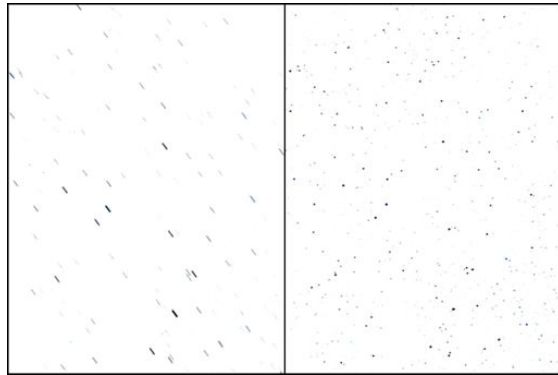
Compact	Footprint no larger than A4
Light	Less than 1 kg
Strong	Able to support a digital SLR
Accurate	Exposures of up to 15 minutes
Battery operated	AA batteries
Low power	Run for ~6 hours
Cheap	Cost < £50 for all components
Easy to construct	Manual tools (no workshop)

## K2 Star Tracker



# Astrophotography

K2 Star Tracker



K2 off

K2 on



Exp=30s FL=100mm

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Milky Way from Teide Observatory



Exp=20 x 1m f/1.8 FL=35mm Nikon D200

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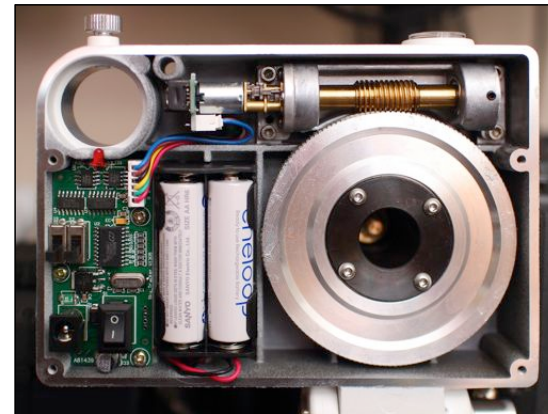
iOptron SkyTracker

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



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Inside the SkyTracker

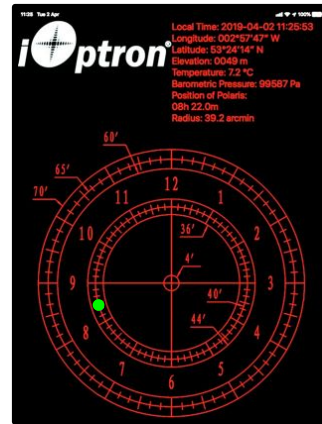


16



# Astrophotography

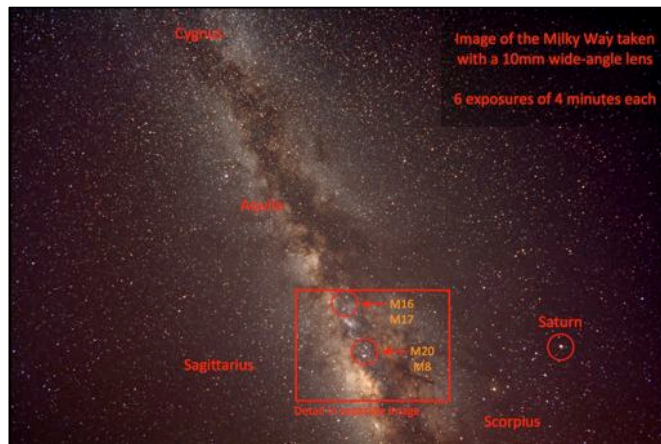
## Polar Alignment



## Attaching a Camera



## Milky Way



## Milky Way



# Astrophotography

## Antares and Rho Ophiuchi



Antares and the Rho Ophiuchi Molecular Cloud Complex

Taken from Teide Observatory in Tenerife  
60 x 120s exposures taken with a Nikon D7500 and 135mm 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 get around that problem.

## Milky Way from Kenya



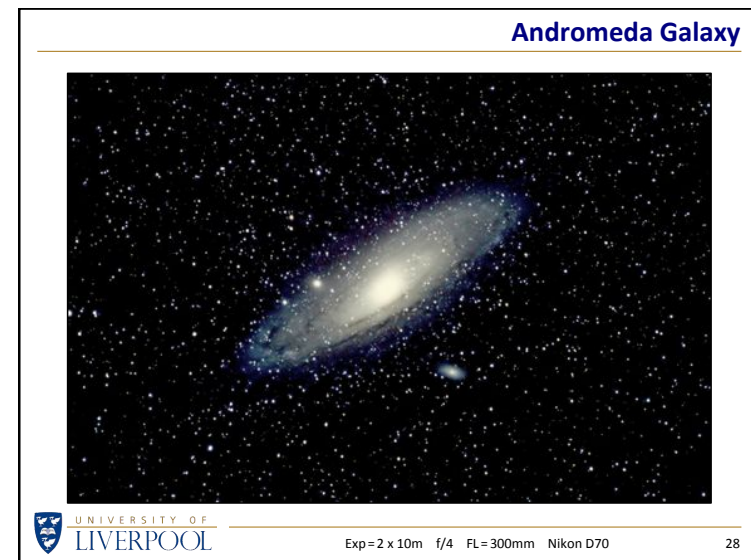
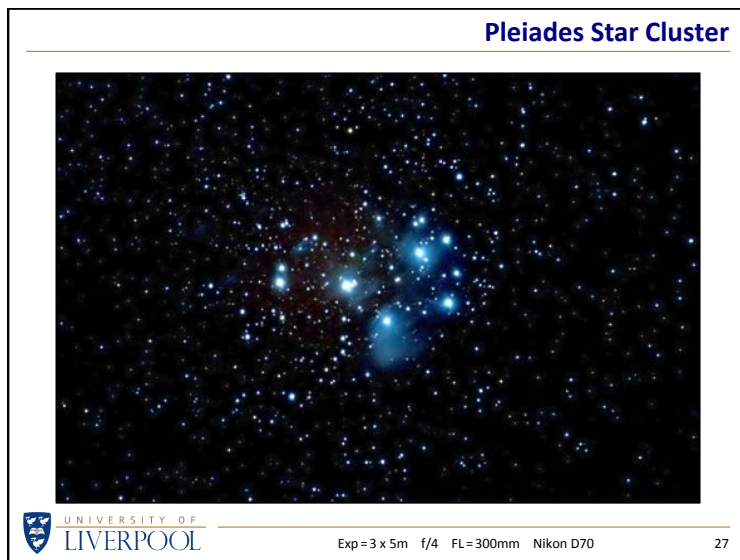
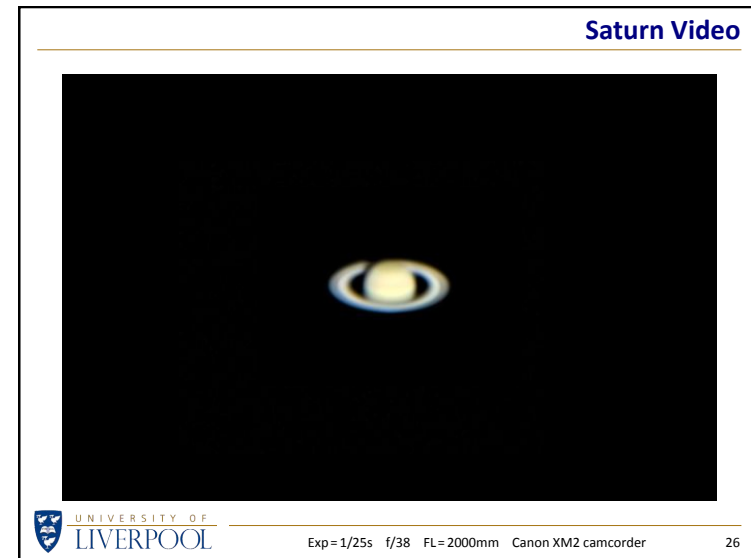
## Milky Way from Kenya



## Telescopes

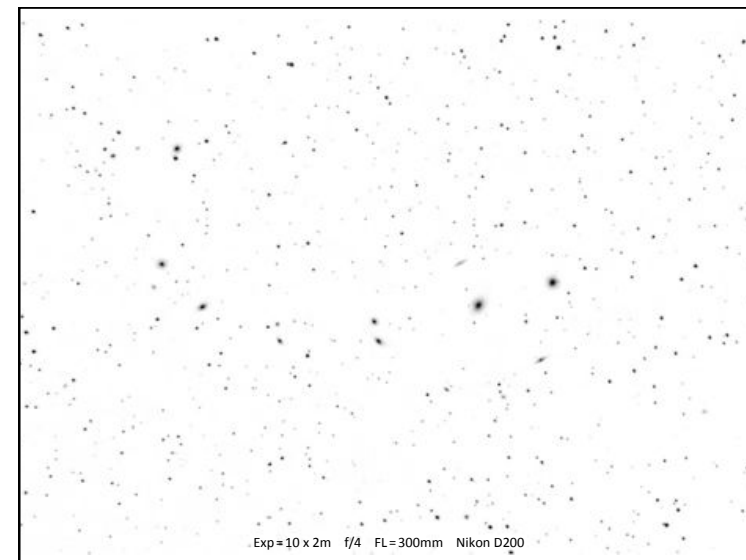
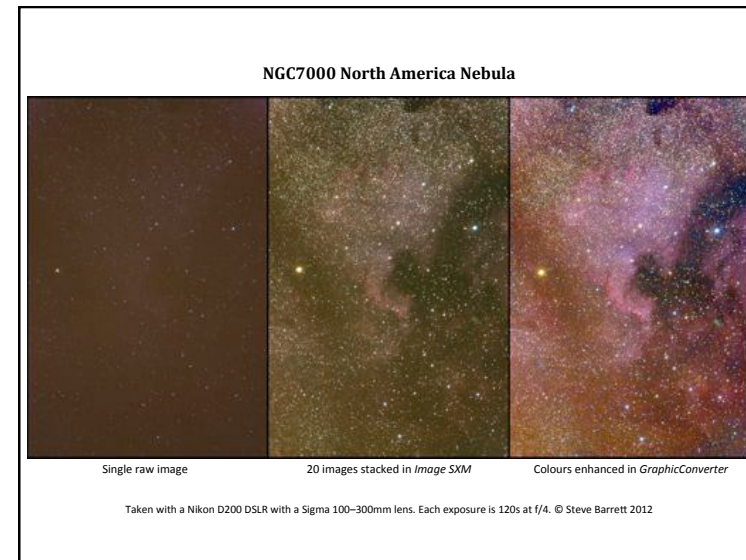
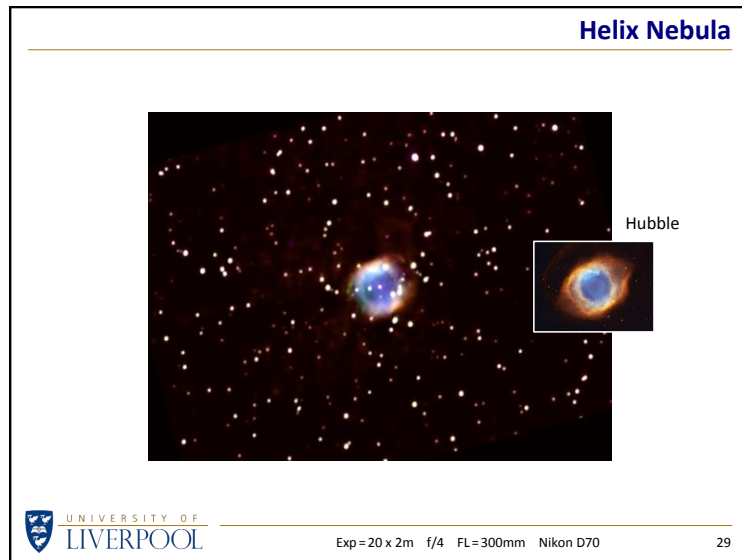


# Astrophotography





# Astrophotography





# Astrophotography

