





# Star Trail Photography

- A **star trail** is a type of photograph that uses long exposure times, or multiple exposures, to capture the apparent motion of **stars** in the night sky due to Earth's rotation. A **star-trail** photograph shows individual **stars** as streaks across the image, with longer exposures or more multiple exposures, yielding longer arcs.

# Why are Star Trails Circular?

- **Star trails** occur because **stars** "move" across the sky as the Earth rotates, and so when a camera keeps its' shutter open for an extended period of time, it will absorb this moving light as light **trails**. The **circular** pattern occurs due to the fact that the Earth is rotating.

# Where Should I Go?

- Look for locations that have some foreground interest. It may be an abandoned building, large infrastructure like a radio tower or a bridge, or some natural features like rock formations or big trees.

# Where Should I Go?

- You may choose to add light to these features, with a flashlight, or keep them as silhouettes against the star-filled sky.

# Where Should I Go?

- Though it is possible to capture star trails in town, it is much easier if you try this far away from any city lights. City lights that are not even visible to the naked eye will show up over a long exposure.
- Light pollution from the Moon should also be avoided.

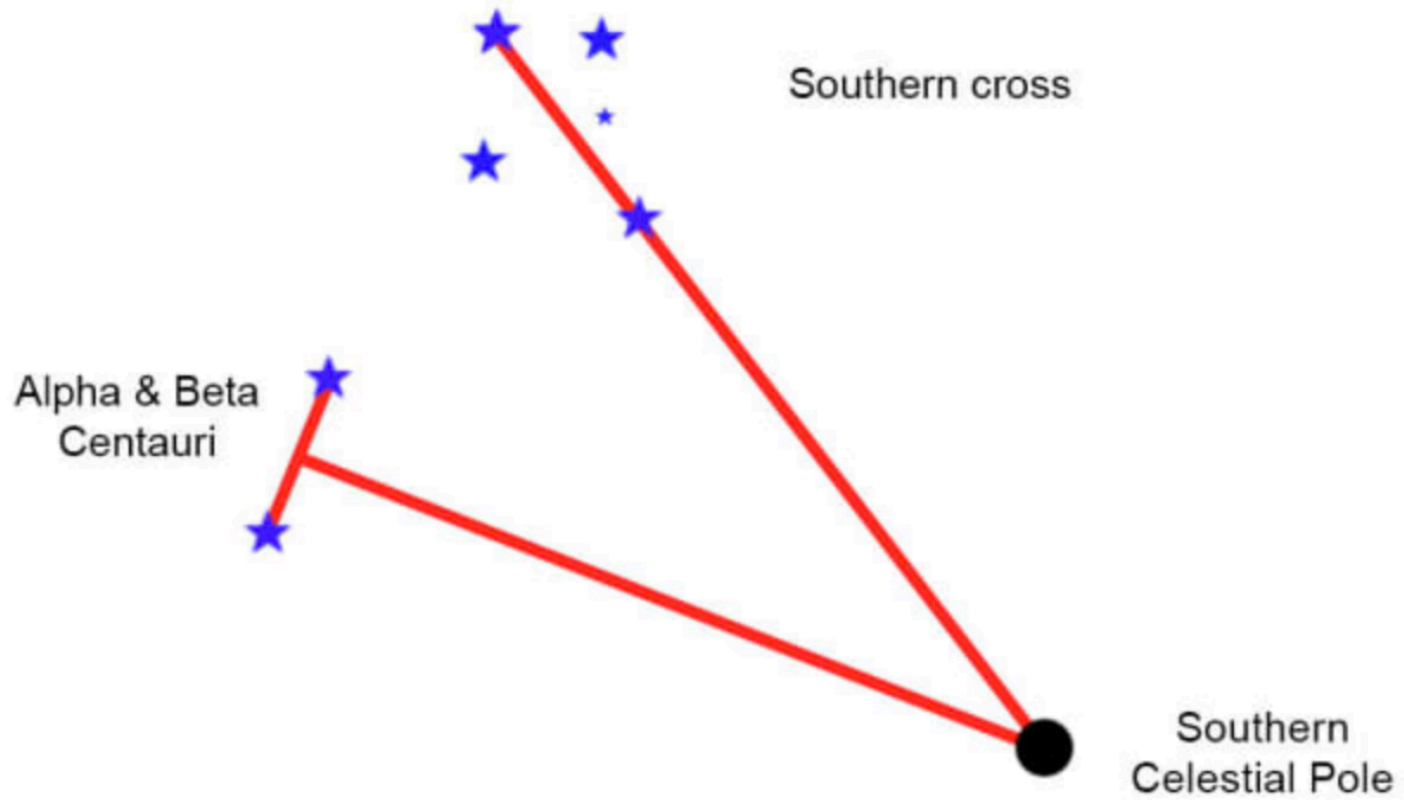
# Where Should I Go?

- It really pays off doing some research before embarking on a shoot, especially if you have never been to the location before.



# Where Should I Go?

- If you want to get the “spiral” effect, you must establish where the Celestial South Pole is located.
- There are many free APPS that will tell you where to point your camera to find the Celestial South Pole.
- I use the following method...



# Focusing

- In the dark, it is not easy to get the AF to lock on to anything, but do not worry .... there are several solutions to this.

# Focusing

- If you are including foreground objects, I suggest making sure that they are in focus. If you are using a wide angle lens, the foreground object and the stars will probably both be in focus even at a very wide aperture. I find that it is fairly safe to just set the focus to infinity if it is a wide angle or fisheye lens right from the start.

# Focusing

- Once you have achieved the state of “in focus”, be sure to set it to MF or manual focus before starting your exposure or it will start searching again when you start the exposure and you will lose your focus.

# Composition

- When composing the shot try not to include any direct light sources, like streetlights, in the shot.

# White Balance

- White balance could be a whole separate tutorial on its own. I always shoot in Raw with the White Balance set to Cloudy. Adjustments to the White Balance can be made later.

# Single Shot vs Stacking

- For shooting options, one could choose to do it all in one shot or shoot multiple shots and “stack” them later using computer software. I personally find that shooting multiple images and stacking them yields much nicer images than those done all in one shot.



# Single Shot vs Stacking

- If you are going to do it all in one shot then your biggest concern should be noise. I do not use the single shot but use the stacking method for this reason.

# Stacking

- As I said before, my preferred way of shooting is shooting multiple shots and “stacking” them later using computer software. Shooting short exposure pictures means less noise, so one can shoot with a wide aperture and a faster ISO that will pick up many more stars than the one shot method.

# Stacking Settings

- The settings I generally use are :
- ISO 200
- Aperture F2.8
- Shutter 25 sec
- Interval of say 30 sec between exposures
- Focus infinity

# Stacking Software

- StarStaX.
- This is the Software I use. Unlike other free programs, it runs on Mac as well as Windows. What I like about StarStaX is the incredible speed. It is much faster than using Photoshop.
- I use Lightroom and StarStaX which I will demonstrate later.

# Stacking Software

- Photoshop.
- This method gets the job done but is slow and ties up memory while stacking.
- There are Youtube videos showing the use of Adobe Bridge and Photoshop to stack star photos.

# Stacking Software

- Startrail.exe
- Good program but only available for Windows.

# Equipment Needed

- Camera
- Tripod
- Intervalometer
- Torch
- Some means of heating the lens to prevent dew forming



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# Lens Heater

- I use a DIY lens heater running off a 12 Volt battery pack which keeps the camera/lens at about 25 deg C.