Eclipse Photography Guide
Tips and techniques for safely photographing the Total Solar Eclipse

Capturing The Eclipse Sequence

What’s Your Plan?
Whether your goal is widefields on a tripod, keeping the sun centered for a mid-telephoto sequence, or high res imaging in the 400-600mm sweet spot, a plan is a must and practice is required.

Time Is Not On Your Side
Time commitment increases with focal length. If your goal is to capture all stages of totality, you will need to manually change settings quickly. 2 minutes & 40 seconds flies by!

Exposures are Suggestions & assume ideal conditions
Clouds, haze, smoke and what not can change the brightness at your location. Assess conditions and adjust settings accordingly.

Good Focus is Critical
* Turn auto-focus off - always focus manually
* Do not trust the infinity focus on a lens - test it and mark it
* Filter on / Filter off - focus does not change from partial to total
* Use Live View to focus on sun or moon limb during partial - Leave It Be!

Go Manual
* Shoot RAW
* Use low ISO (100-200), keep noise under control
* Step through exposures manually, don’t use burst exposures or bracket photos
* Use daylight White Balance, turn noise reduction off
* Allow vibrations to die down

Eclipse Sequence:
It is important to understand the sequence of events in order to plan your eclipse photos. As totality nears filters come off and exposures need to change quickly to catch each stage.

Partial Eclipse ~ 90 min
Total Eclipse 2 min 40 sec
Partial Eclipse ~ 90 min

Start of Totality
Filter Off!

End of Totality
Filter On!

Bailey’s Beads
Diamond Ring
Inner Corona
Middle Corona
Outer Corona
Diamond Ring
Bailey’s Beads

The transition from partial to total and the timing of removing the solar filter from your lens or telescope is critical.

30 Seconds
Time before & after totality for filter on/off. Bailey’s Beads & Diamond Rings require unfiltered / fast exposures. Use Live View, will not damage camera.

Exposure guide is derived from Alan Dyer’s e-book, see it for details and complete information. All pictures are © 2006, Fred Espenak
Exposures are target values using my primary imaging setup for the eclipse. With this rig my goal is to capture a series of quality stills encompassing the entire sequence.

**Astro-Tech 65Q**
- Apochromatic Refractor
- Focal Length 400mm
- Focal Ratio f/6.5

**Canon 450D XSi**
- 12.2 megapixel (4272 x 2848) DSLR
- APS Sensor 22.2 x 14.8mm

*To scale image taken with AT65 / Canon XSi*
- 1/800 sec
- ISO 200
- f/6.5

**Partial Eclipse**
- Auto-Exposure / Aperture Priority
  - * Works fine with partial
  - * Scope f/6.5, set ISO to 200
  - * Camera selects exposure
  - * Set to manual before totality!

**Total Eclipse**
- To capture the complete series of totality, manually step through exposures at 1 f/stop intervals (1/8000, 1/4000, 1/2000, etc.); if your camera is set to 1/2 f/stop increments, each interval is two clicks

1. **T-30 Sec**
   - Remove solar filter & set camera to manual; set ISO and fast exposures for Bailey's Beads/Diamond Ring.

2. **T-20 Sec**
   - Bailey's Beads / Diamond Ring

**Exposure Sequence**

**Totality - Corona**
- The sun's corona gets larger with more detail as exposures length increases. The outer corona requires 1-2 second exposures.

3. **T-30 Sec**
   - ISO 100
   - 1/8000
   - 1/4000
   - 1/2000
   - 1/1000
   - 1/500

4. **Totality - Xtras**
   - Longer exposures are required to bag these Xtras
   - Inner Corona
   - Middle Corona
   - Outer Corona

**Blur Alert**
- The most common mistake is ending up with a bunch of blurry photos because you didn’t allow time between exposures for vibrations to die down. Allow 1-2 seconds between shots to avoid. test your setup to be sure.

**Get Back Alert**
- At the end of your sequence, you must get back to the shortest exposure to image Bailey’s Beads & the Diamond Ring at the end of the eclipse. You can cycle back through the exposures from longest to shortest, OR you can go directly back to 1/4000, sit back, and enjoy the eclipse while you can.