



How can I observe the eclipse in full safety without buying any commercial product?

Build with your children a “CAMERA OBSCURA” (a lensless camera)

1. Cut a rough rectangle in the format ca 40cm x 40cm (~ 16" x 16") from a cardboard (e.g. part of a shipping box) – accuracy is NOT required
2. Approximately in the middle of the cardboard (or the carton piece) cut a hole with roughly 10cm x 10cm (~ 4" x 4") edge length
3. Place a layer of wrapping film made of sturdy aluminum (kitchen roll aluminum foil) over the hole with adhesive tape along the four sides of the hole. The aluminum foil should have at least 15cm x 15cm (~ 6" x 6") edge length so that it is significantly larger than the rectangular hole cut into the carton. **Care is not necessary – no one looks directly into the sun with this arrangement!**
4. Into this sturdy aluminum foil pinch 50 to 100 holes with a sharp needle within the 10 x 10 cm cutout – the holes can be randomly distributed
5. Next(while outside in the sun) hold the cardboard with the aluminum foil over a white A4 (Letter) cardboard – with the aluminum foil in about 30 to 40 centimeters distance to the white paper. Shade the sun with the 40 x 40 cm cardboard so that the light of the sun falls from the sky – through the punched holes in the aluminum foil – onto the white cardboard. Try to hold the white cardboard so that the cardboard box with the “perforated” aluminum foil and the white paper are arranged parallel to each other. This is all “free hand”. The distance between your DIY projection apparatus and the white cardboard is relatively free. The longer the distance the larger the projected image of the eclipsed sun.
6. What you see projected onto the white background are up to a hundred “tiny little suns” – projected images of the sun with a diameter of only 5 to 7 millimeters. These appear perfectly round – just like a mini-sun. No one looks towards the sun!
7. If then you continue using this self-made “emergency device for solar observation” during the eclipse as described above under 6, then any child looking only at the white paper can see the many “suns” during the duration of the eclipse look always “bitten off” in a different way! There are then no round suns anymore but a hundred small “sickles”. This is a completely cost-free natural experience, which we have already explained several times during past eclipses, in order to allow teachers and parents to show the phenomenon even without handing out a viewer to everyone.



It is correct – this emergency device can not completely replace the direct view. However, it is ABSOLUTELY SAFE and FREE – no human being looks directly into the sun – or even comes into the temptation to do so. The attention is completely fixed on the ongoing scenery projected onto the white cardboard! Every 10 minutes these up to hundred little sickles look different.

FYI – viewing the sun like this has been common educational practice in the US before solar safety films became available – to avoid observing the sun through insecure soot-covered glass plates. Please read:

[How to Watch the Solar Eclipse like a 1960s School Kid](http://www.time.com/3737424/solar-eclipse) (www.time.com/3737424/solar-eclipse)

Baader Planetarium – producing products for safe solar observation for **more than 25 years:**

