BBC

How to build your own eclipse projector using binoculars.

By solar scientist and presenter Dr Lucie Green.

Using binoculars to project an image of a solar eclipse means the spectacle can be big enough for everyone to watch together – like this one, created by a BBC Stargazing Live fan.

Firstly, gather all the things you'll need. I'm going to use binoculars today, but a telescope works just as well.

Lay a large piece of cardboard flat on a table and stand your binoculars on it – lens facing down.

Use a pencil to draw a ring around both lenses and carefully cut them out using scissors or a craft knife.

You now have a Sun shield for your projector.

Put the binoculars on a tripod and use duct tape or gaffer tape to make sure they're securely fixed. Be generous – you don't want them to fall off half way through the eclipse.

Slot your cardboard Sun shield onto your binoculars so the lenses stick out.

You might want to put a cap over one of the lenses, as you really only need one open to create the projection.

Now use duct tape or sticky tack to seal any holes that could leak light past the cardboard.

When you're ready to try out your new projector, take it outside and place it on even ground.

Direct the binoculars towards the Sun but make sure that you never ever look at the Sun directly or through the binoculars, as this could permanently damage your eyes.

Now place a piece of white paper or cardboard or paper behind the eye piece.

You may have to move the tripod slightly to find the projected image of the Sun.

Be careful not to put your hand or anything flammable too close to the eyepiece as the concentrated sunlight will be hot.

Once you find your projected image, focus the binoculars to make it sharper.

Now you're ready to watch a beautiful, bright, magnified image of a solar eclipse.