

Transcript

Discover Mercury: Safety advice for the Transit of Mercury

David Rothery:

So Laura, we have a couple of transits of Mercury across the sun coming up, 9th of May 2016, 11th of November 2019. I'm keen for as many people as possible to watch these. But you've got to be very careful looking at the sun. So tell us, please, what do we have to avoid?

Laura Brooker:

Well, the important thing is to make sure you don't look at the sun directly with the naked eye, because that will really damage your eyesight. In fact, it will probably blind you. Then, don't make the mistake of thinking that because it's cloudy or foggy, that you can then look at the sun. Again, that's a dangerous thing to do, because the clouds could move out of the way. And it's not actually blocking all of the sunlight, so that's still damaging to your eye.

Then, don't make the mistake of thinking you can use sunglasses or a welder's mask to look at the sun, because that's actually not blocking the harmful infrared radiation and UV radiation, and this will burn your retina. Then the big do-not, do not make the mistake of using your phone to look at the sun.

David Rothery:

Really?

Laura Brooker:

Yeah, because it actually will damage your phone, for starters. It can burn your phone out. And then if you accidentally moved it out of the way, it's actually going to damage your eyes again. So, don't use your phone to look at the sun. That's a really dangerous thing to do.

David Rothery:

OK. Well, Mercury is too small to see without magnification anyway. So you're wasting your time using sunglasses or an eclipse filter.

Laura Brooker:

Yes.

David Rothery:

So you've got to have it magnified. So how can we look at the sun safely to see Mercury passing in front of it?

Laura Brooker:

Well, one of the best ways to do it is to use a telescope. But you can't use a telescope just by itself, and you also can't use a telescope with something like eclipse glasses, for instance. Because that's still going to burn through those filters. So you need to use a proper solar filter attached to a telescope to get a nice, clear image.

George Pagomenos:

Oh, yeah. So what exactly is this?

Laura Brooker:

This is actually a solar filter to fit onto this telescope here. And if you just hold it up-- obviously, don't try this at home. If you hold it up round to face the sun, you'll be able to see it kind of cuts out most of the light, pretty much all the light. And it also stops the harmful UV radiation, which is the most damaging part to the eye.

And actually, if you have a look through, you can see it's a mirror. So you can see yourself, but you can also see a red circle. And that's actually the sun. And what it's doing is cutting out most of the light, and it's also stopping this UV radiation from getting through which is really dangerous to your eyes.

So next stage is to take off your lens cap, and you want to place on your solar filter, making sure there's no scratches or any kind of smashed bits on it, because you don't want to blind yourself. So make sure it's nice and tight to the telescope. So you can see here, yep, it's nice and secure. And you've not got any leakages around the edges, and that you've actually screwed this on, as well.

Laura Brooker:

Not everyone, obviously, has a telescope or has a solar filter. So you can look up, for instance, local events that are going to be going on for the transit, where you'll have the opportunity to be able to use things like a solar telescope. But on top of that, we also do have things like cardboard solar viewers that you can get quite cheaply. And you can use those at home, in your back gardens, for instance, to look at the sun safely.

Laura Brooker:

Well, this is actually a cardboard solar viewer. And this is a really good way to view the sun. Because you'll be able to see the sun as a nice clear image, and you'll be able to find Mercury transiting across the front of it.

You've got a lens here, and you get the sunlight coming through this lens. And it bounces off of this little mirror, and you'll see an image of the sun on the cardboard at the back. So the way that I do this is I just look inside this cardboard solar viewer. And if you move it about a little bit, you'll see a dot.

David Rothery:

I've got to find the sun.

Laura Brooker:

Yes. So yep, you can see, there we are. And then if you just move it across and get it nice and central to the mirror, lo and behold, there you go. Nice image of the sun.

David Rothery:

And it's coming down the tube onto the mirror and back onto here. And there's no way I can get my eye to look up that tube and hurt myself, because the mirror is in the way.

Laura Brooker:

Exactly. It's a nice and safe way to view the sun.

David Rothery:

But that's blurred.

Laura Brooker:

Yes, it is a little bit. So the way you bring it into focus is you can use the lens that I mentioned earlier. So if you just move that in and out.

David Rothery:

I'm making it worse.

Laura Brooker:

Yeah. So you can see it'll get fuzzy one way, and it'll get nice and into focus the other way. And then you can do a fine adjustment using this little mirror, because it has a screw that you just twist. And you can get a nice, clear image.

David Rothery:

OK. Now I can see all kinds of little dots. Now, some are because the cardboard is dirty. But I think there's some features on the sun as well.

Laura Brooker:

Yes. You can actually see there's some solar spots on the sun today. And you can see those nice and clear.

David Rothery:

So they're the ones that will stay with the sun rather than stay stationary on the cardboard as I jiggle this around a bit.

Laura Brooker:

Exactly.

David Rothery:

So there's something on the sun up there. Brilliant. Sunspots.

Laura Brooker:

Yep.

David Rothery:

And if that was Mercury transiting the sun, would it be bigger than that or smaller than that?

Laura Brooker:

Well, it'd actually be quite small on the surface of the sun. It'd be a millimetre, few millimetres across. So maybe about the same size as the sunspots that we're seeing today.

David Rothery:

We've got to have a good focus to catch Mercury.

Laura Brooker:

Yes. Yes, definitely.

Do make sure, when you're using these solar viewers, that you're supervising any children. Because you don't want them to damage their eyesight.