

## Electroscope

On SCOPE's Aluminium episode, Phoebe made an electroscope to check out static electricity through aluminium foil. Here's how you can try it at home!



### What you need:

- Alfoil
- Foam cups
- Drinking straws
- Scissors
- Sticky Tape
- String
- Balloons



### What to do:

1. Cut a square of al-foil that is 15 centimetres across.
2. Fold up one side by about one centimetre, and stand it up so that you have an edge.
3. Turn a foam cup upside down and tape it to the middle of the alfoil.
4. Tape a straw to the top of the foam cup so it reaches over the folded up al foil edge.
5. Cut a piece of string about 20 centimetres long.
6. Tape the string to the straw so that it hangs down next to the al-foil edge.
7. Take a smaller square of al-foil, about two centimetres across, and shape it into a ball around the end of the string. The ball doesn't have to be squashed too firmly, but you need to make sure it won't fall off the string
8. Adjust the string until your al-foil ball sits right next to the al-foil edge
9. Test the electroscope by building up some static electricity on another foam cup by rubbing it against a balloon.
10. Place the electroscope on top of the charged cup, being careful not to touch the al-foil. What happens?
11. Take this a step further by placing your finger very close to the al-foil ball. What happens this time?

## What's happening:

The al-foil ball is repelled away from the al-foil edge. Rubbing the balloon on the foam gives it extra electrons, which are negatively charged. Because the foam isn't conductive, the electrons sit on the surface. When they come into contact with the alfoil, they cause a negative charge to flow through it all the way to the al-foil ball. Because two similar charges repel each other, the ball is pushed away from the rest of the aluminium

When you place your finger very close to the al-foil ball, it starts to move towards you. The negatively-charged alfoil is attracted by the positive charge in your hand. And if you get close enough, the ball will start jumping between you and the alfoil! When the ball hits your hand, it gives away its negatively charged electrons and becomes positively charged – but then it is attracted by the negative charge of the alfoil edge and bounces back!

