

Tape Electroscope, Short

What sign is it?

Introduction

Two short pieces of Scotch Brand magic tape can be stuck together then pulled apart and used as an electroscope to find the sign of the charge on an unknown charged object.

Material

- Scotch Magic Tape, 3/4" wide. Make no substitutions.
- a plastic or rubber comb
- a piece of wool or human hair
- a table

Assembly

Cut off two pieces of tape about 10 cm long, as long as your fist is wide.

Stick one piece of tape on top of, i.e. against the non-sticky side of the other piece of tape. The resulting tape sandwich will have one smooth side and one sticky side.

To Do and Notice

Get your unknown charged object.

Pull the tapes apart quickly. Notice that they grab your hand.

Hang them straight down from the edge of a table.

Rub the comb with wool or hair.

Hold the comb next to one of the tapes and then the other.

Notice that the comb repels one tape and attracts the other.

Mark the tape repelled by the comb -, mark the other tape +.

Bring the unknown charged object next to one tape and then the other.

- If the unknown repels the - tape then it is negatively charged.
- If the unknown repels the + tape, then it is positively charged.
- If the unknown attracts both tapes then it has no charge or is weakly charged.
- The unknown should never repel both tapes.

What's Going On?

Like charges repel.

So that the unknown if it is charged will repel the tape with the same charge.

Charged things attract uncharged things.

So if the unknown is uncharged then both of the charged tapes will attract it.

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