



# *Revision*

## **LAW OF ELECTRICAL CHARGE**

# *Experiment n 1: Let's get some ATTRACTION!!!*

What do you need?

- A balloon
  - Wool cloth (scarf, pullover ...)
  - Pieces of paper,
  - hair,
  - wall,
  - soap bubbles
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## What do you need to do?

- Blow up, tie and straighten the balloon.
- Rub the balloon with the wool cloth.
- Put the balloon close to the pieces of paper, to the hair to the wall and to the soap bubbles.

## *What do you notice?*

- The balloon attracts everything
- Only where it's rubbed the balloon is charged
- After a while the "charge effect" disappears



# *HOW does it happen?*

- Why does the balloon stick to the wall when you rub it? Why does it attract the soap bubbles?
- Let's see a simulation

[https://phet.colorado.edu/sims/html/balloons-and-static-electricity/latest/balloons-and-static-electricity\\_en.html](https://phet.colorado.edu/sims/html/balloons-and-static-electricity/latest/balloons-and-static-electricity_en.html)

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# *Benjamin Franklin*

- Benjamin Franklin did the same experiment with a glass tube and a silk cloth. With this experiment he discovered positive and negative charges.



## *Experiment n2 REPULSION!!!*

What do you need?

- A balloon
- Wool cloth (scarf, pullover ...)
- soap bubbles
- A plastic bag shaped like a jellyfish

## What do you need to do?

- Blow up, tie and straighten the balloon.
- Rub the balloon with the wool cloth (as we did in the previous experiment)
- Rub the jellyfish bag, throw it in the air and put underneath the balloon. See what happen.



## *What do you notice?*

- To charge the jellyfish bag you need to rub it with the wool cloth.
- The tentacles repel each other
- After a while the "charge effect" disappears.



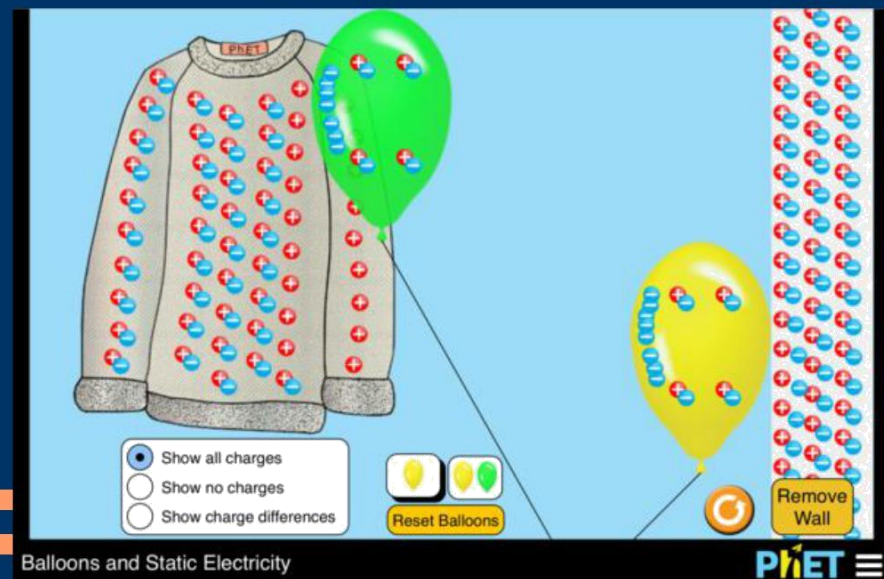
# *Why does the jellyfish bag float in the air?*

- Stephen Gray did this experiment with a feather. He discovered that **when the objects have the same charge they repel each other**. When they have opposite charges they attract each other.

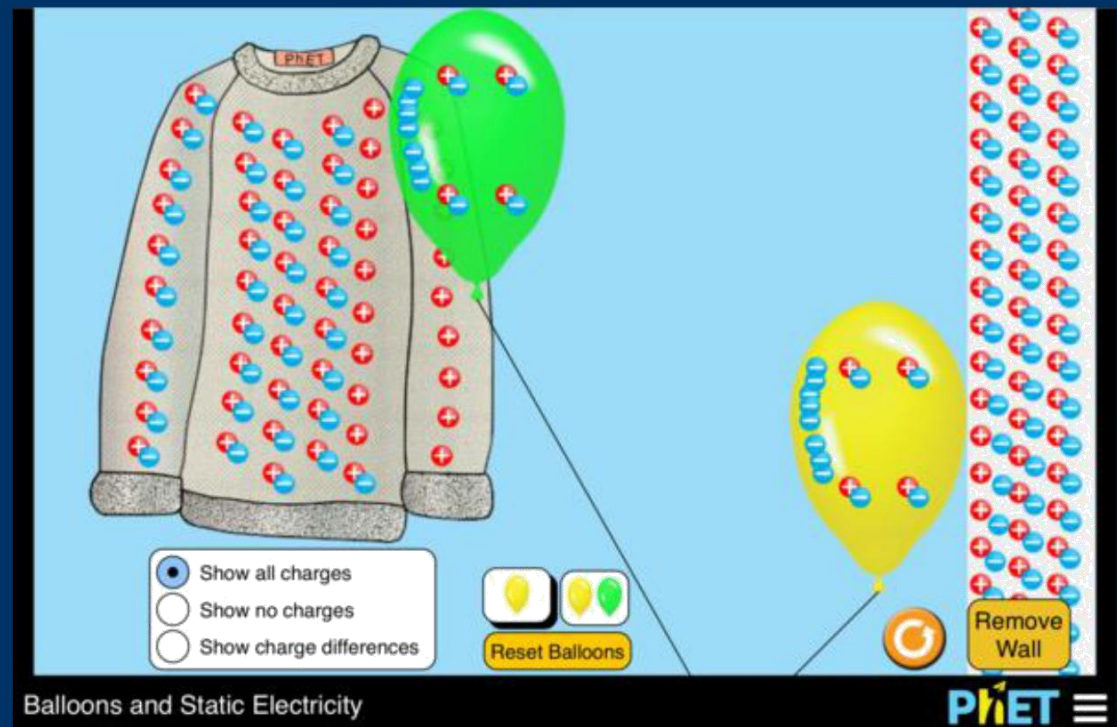


## Let's sum up.

- Everything is made of charges mixed together
- when we rub the balloon a certain number of negative charges (-) pass from the wool to the balloon, leaving the wool with an excess of positive (+) charges and the balloon with an excess of negative (-) charges.



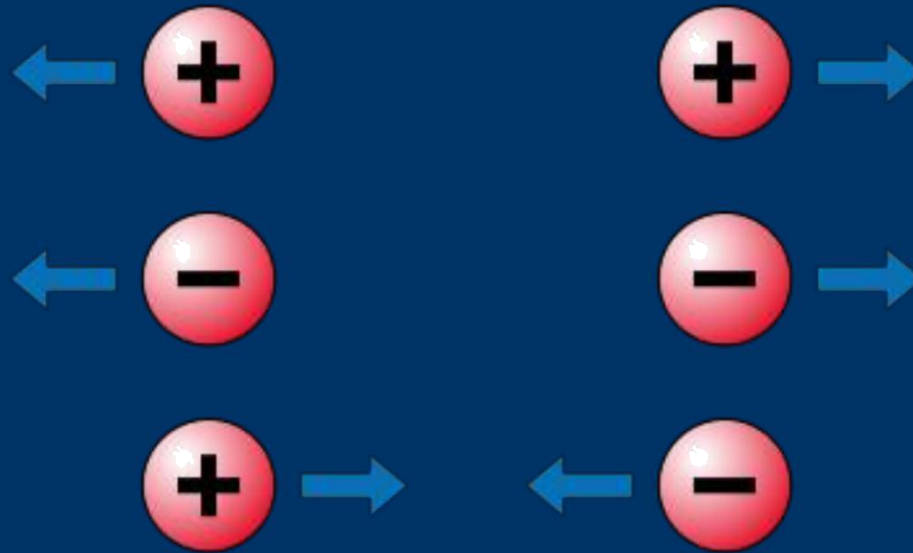
- So at the end, the wool will have more positive charges and the balloon will have more negative charges



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- Charges that have the **same** sign **repel** one another, charges have **different** sign **attract** one another



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