Static Balloons

Most people think all electricity is good for is turning on lights and tasering criminals. But did you know it also has sticking power? All you need to do is use your head and think positive (well, and negative).

The record must take place in a room with a plastered wall or ceiling. You can use as many balloons as you want, and they can be of any variety of shapes and sizes. All balloons must be inflated with lung power and may only contain air—no helium or other gases allowed.

At a given signal, you may pick up a balloon and rub it on your head or clothing to build up a static charge. It can then be transferred to the wall or ceiling.

The attempt ends when one of the balloons loses its static and slips or falls from the wall/ceiling to the floor.

As you rub the balloon against your head or your clothes, something is happening— or rather lots of little things are happening —at a subatomic level. As a result of friction, electrons from your hair/fabric move on to the surface of the balloon, giving it an overall negative charge. (Because your hair has lost some of its electrons, it becomes temporarily positively charged — this is why strands of your hair stick to the balloon.)

A surface such as a wall is normally neutral in terms of charge. However, placing the net-negative balloon against it causes the positively charged particles to gather at the surface. As we all know, opposites attract, and so the balloon "sticks" — until, at least, the electrons begin to dissipate, at which point the balloon falls. Sad times.

If you still want proof that static electricity is real (it’s not magic, we promise!), this trick is pretty neat. Start the same way by rubbing a balloon against your preferred surface (sweater, cloth, etc.) for a minute or two. You can use your hair to test that it has acquired a strong negative charge. Run a tap and slowly move the charged side of the balloon towards the stream. As it gets closer, you should see the water defy gravity and bend! This is the result of the balloon repelling the electrons in the water, giving the H2O in its immediate vicinity a slightly positive charge. Just as happens with the wall, opposites attract. Unlike the wall, the water is light enough to be manipulated and so is drawn towards the balloon.

For a truly hair-raising display of static electricity, you need a Van de Graaff generator. These machines pass a revolving rubber belt over rollers to create their differential in charge. The belt accumulates electrons (giving it a net negative charge), while the rollers (and the surrounding metal sphere) become positive. When enough static builds up, the sphere attempts to dispel the charge by firing out sparks at the nearest object — whether that’s another metal sphere or you! Invented by Dr Robert Van de Graaff (USA), the largest Van de Graaff generator (below) was demonstrated to the public on 28 Nov 1933. Each of its columns stands at 25 ft (7.6 m), topped by a 15-ft-wide (4.5-m) orb. Now housed at the Boston Museum of Science in Massachusetts, USA, it reportedly produced lightning-like discharges of up to 7 million volts.

For the Record

Any shaped party or modelling balloons will do

THE RECORD: Most balloons consecutively suspended by static electricity

THE CHALLENGE: Stick as many balloons as you can to a wall or ceiling with static electricity. How many can you make stick before one falls off?

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