

## **Non-contact forces**

**Dr George Dransfield:** Non-contact forces.

Are they magic?

Of course not.

But sometimes, they seem like they are.

As these magnetic trains move towards each other, they repel.

That's because non-contact forces act on objects without the objects having to touch.

These forces can act over a distance when one object is in the field of another.

Objects experience a non-contact force when they enter a Magnetic, Gravitational or Electrostatic field.

The magnetic field around a magnet creates a magnetic force, which acts on a magnet or a magnetic material, (like iron or nickel) if it enters the magnetic field.

The force attracts magnetic materials to the magnet, but the force between two magnets can repel or attract.

Gravitational force is the attraction that exists between any objects with mass.

Gravitational force can only ever attract.

The gravitational force on this apple causes it to accelerate towards the Earth.

The gravitational force on this satellite keeps it in orbit.

It also keeps the Earth and the other planets in our solar system orbiting the Sun.

Electrostatic force occurs between electrically charged particles.

Opposite charges attract and like charges repel.

Rubbing the balloon on my hair causes electrons to move to it from my hair.

Now the balloon is negatively charged and my hair is positively charged.

So, my positively charged hairs repel each other but are attracted to the negatively charged balloon.

Magnetic, gravitational and electrostatic forces decrease as the distance between the objects increases.

Remember that non-contact forces, magnetic, gravitational and electrostatic forces can act over a distance via a field.