



# Try This at Home Science: Anti-Gravity Chamber

## Activity Overview:

Construct a device that makes it seem like paperclips are defying gravity.

## Materials:

- Paperclips
- Cardboard
- Scissors
- 6 soda cans (make sure you wash them)
- Tape
- Magnets
- Black string or fishing wire (for floating illusion)
- (Optional) hot glue

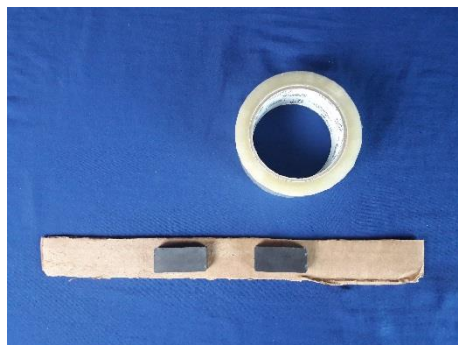


## Try this!

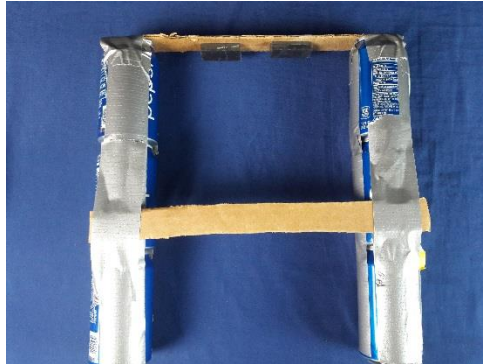
1. Stack 2 columns of 3 cans and tape them together



2. Cut out 2 long pieces of cardboard. 12 by 1-inch pieces are suggested.
3. On one of the cardboard pieces, tape or hot glue your magnets about one inch apart from each other.



4. Tape across the top of the can stacks.
5. Tape the other piece of cardboard across the stacks, about 7 inches away from the top piece of cardboard.



6. Tie some string to your paper clips. Make sure your string is long enough to reach the magnets when taped to the lower piece of cardboard.
7. Adjust the proximity of the paper clips and the magnet to where the paperclips are attracted to the magnetic field but not touching the magnets so that they appear to "float".

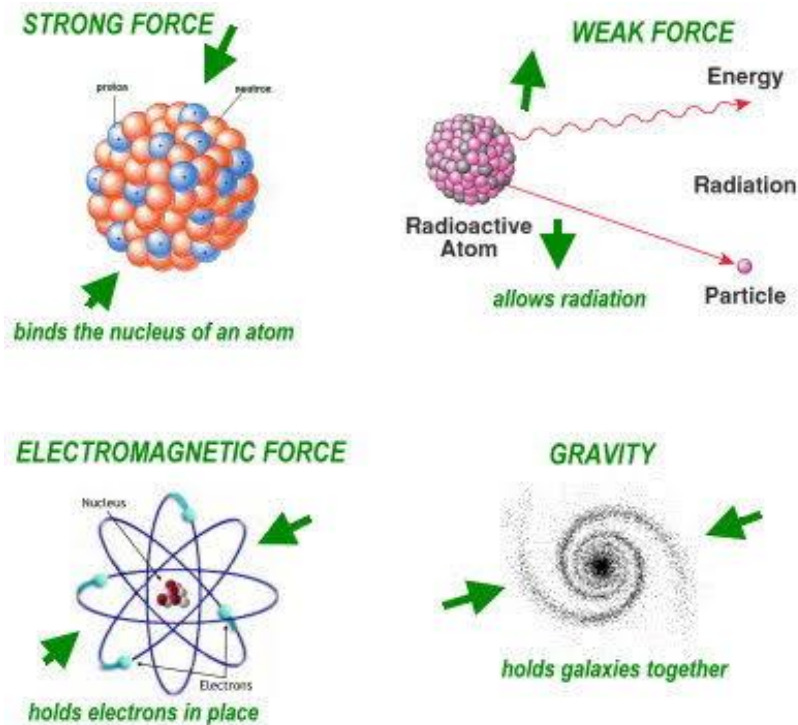


8. Once adjusted, tape the strings down to the lower piece of cardboard. Cut off any excess string. Your gravity defying device is finished!



## What's happening?

In modern physics, there are 4 fundamental interactions that dictate how particles interact: Strong force: which bonds atomic nuclei, Weak force: which allows for radiation, Electromagnetism: which binds atoms, and Gravitation: which binds solar systems, galaxies, etc. Gravity is the weakest of these four interactions.



Magnetism is stronger than gravity, therefore when the paperclips are in proximity to the magnetic field, it has a stronger attraction effect on the paperclips than gravity does.

## Now try this...

- As a challenge, try stacking paper clips one at a time to the one suspended by the magnetic field. At what point does the weight of paper clips become stronger than the magnetic field?
- Try using different types of magnets, how does this affect the attraction? Can it hold more or less paper clips?