FUN PHYSICS

SMALL EXPERIMENTS BIG QUESTIONS



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1. INTRODUCTION

Our project was made to help young school children enjoy and understand physics. We wanted to show them that physics can be fun by doing easy experiments with everyday objects.

The main parts of our project were:

- → Finding and using simple tools from daily life for experiments
- → Thinking of easy experiments and finding the right materials
- → Explaining physics in a fun and simple way
- → Making children interested in science and technology

The goal was to help children understand basic physics through hands-on experiments. We wanted them to think about how everyday things work, ask questions like “why?” and “how?”, and feel free to be curious.
This year, we showed our project at the Days of Science and Technology in Pilsen, the Brain Week in Prague, and the Mini Maker Faire in Pilsen, ESI Abu Dhabi and ISIF Bali. People who came really liked it and gave us great feedback.

2. METHOD AND EXPERIMENTAL DETAILS

SAME MATERIALS REAL PHYSICS

We have prepared six fun and simple experiments for you. They are presented in the poster below.

3. RESULT AND DISCUSSION

From what we saw ourselves, it was clear that both students and adults reacted very positively to our project. We often got excited feedback from adult visitors. Many of them said that if their physics and chemistry lessons had been like this when they were in school, they would have enjoyed those subjects much more. In their experience, experiments were not often part of the lessons.
On a personal level, the project helped us grow. We learned how to share our knowledge and skills in front of people, how to explain our ideas, and how to speak clearly about our opinions.
One thing we should talk about is the risk of making small mistakes when explaining experiments - especially when we change the explanation depending on the age of the audience.

4. CONCLUSION

To sum up, we believe that making science more popular among students and the public is very valuable. For students, the biggest benefit is helping them get over their fear of science subjects. We hope that many of them will later decide to study science or technology.
For adults, we hope that through our “small-scale science” activities, people will see why it’s important to support science. Only through science can we move forward and grow in areas like physics, chemistry, medicine, technology, ICT, and more.

SCIENCE BRINGS US TOGETHER ♡



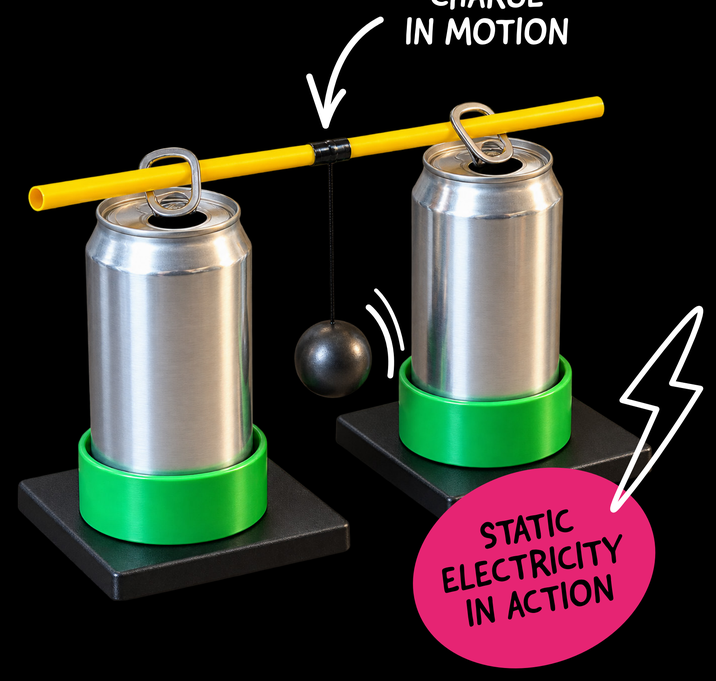
FUN PHYSICS

EVERYDAY OBJECTS
EXTRAORDINARY PHYSICS

EXPERIMENT 1
FRANKLIN BELLS

TOOLS
2 cans, 2 plastic cups, straw, thread, ping pong ball sprayed with graphite, source of electric charge (van De Graaf generator)

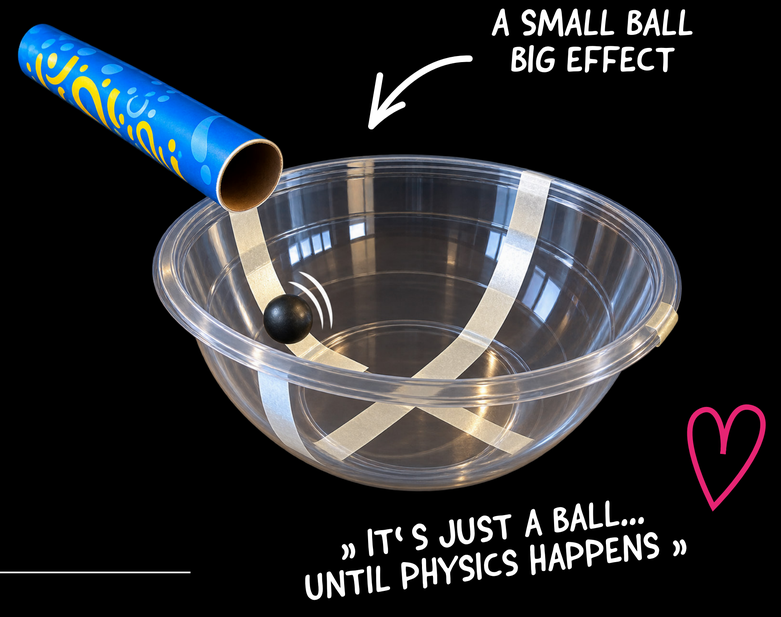
PROCEDURE AND EXPLANATION
One can is charged with static electricity (electric charge). A ball that is painted with conductive paint is drawn to one can. As soon as it touches it, it will be charged with the same charge and will repel away from that can and be attracted to the other can. There, it will give up its charge and the cycle repeats. Static electricity experiments were done by Benjamin Franklin.



EXPERIMENT 2
THE BALL IN A BOWL

TOOLS
polystyrene ball sprayed with graphite, plastic bowl, conductive tape, electric charge source (van De Graaf generator)

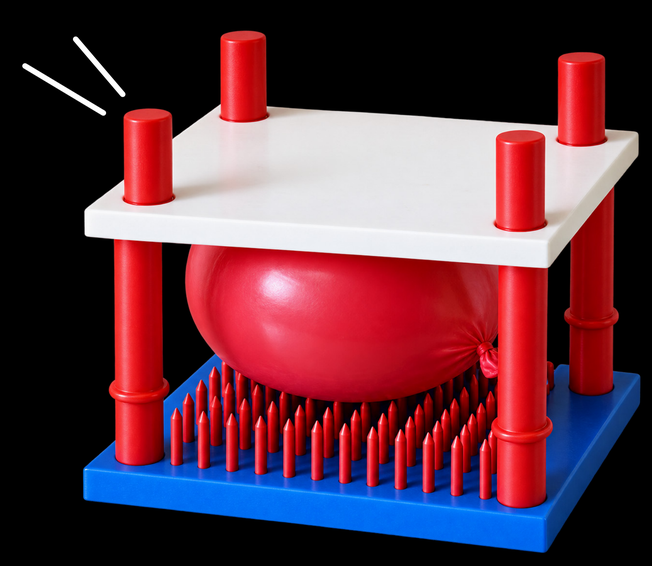
PROCEDURE AND EXPLANATION
The conductive ball touches the charged pole, charges in unison and begins to repel away from it. At the same time, it is attracted to the oppositely charged pole. A charge transfer occurs. It‘s an electrostatic motor. El. charge was studied by Ch. Coulomb.



EXPERIMENT 3
FAKIR‘S BED

TOOLS
3D model of a fakir‘s bed (can also be made from thumbtacks), inflatable balloon

EXPLANATION
The pressure force acting perpendicularly on the inflated balloon from above and below is the same. The spikes do not penetrate the balloon because the pressure force is spread over a larger area than if there was only one spike under the balloon – there is less pressure. Therefore, the balloon does not burst and the fakir can lie on the nails without harming himself.

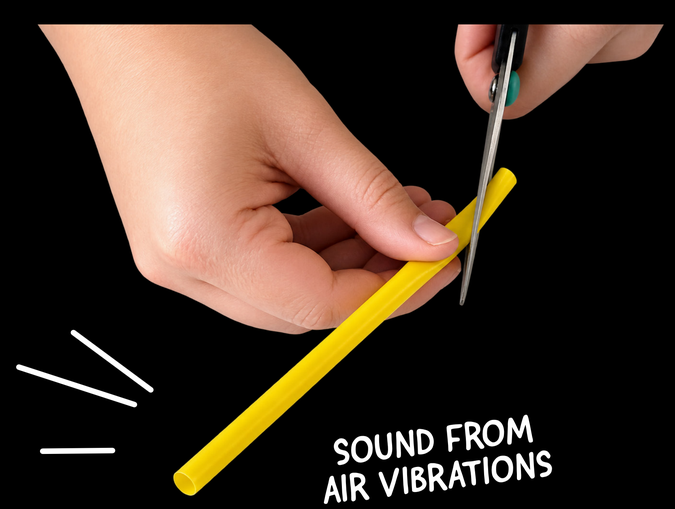


EXPERIMENT NUMBER 4
THE STRAW PIPE

TOOLS
1 straw, scissors

PROCEDURE
- The straw is cut into the shape of beak.
- We blow strongly into the cut end.
- The straw is shorted according to the low or high voices.

EXPLANATION
The flowing of the air causes the vibration of the end of the straw. We hear the noise. Higher voice occurs when the straw is shorter.



SIMPLE IDEAS
REAL DISCOVERIES

FUN PHYSICS

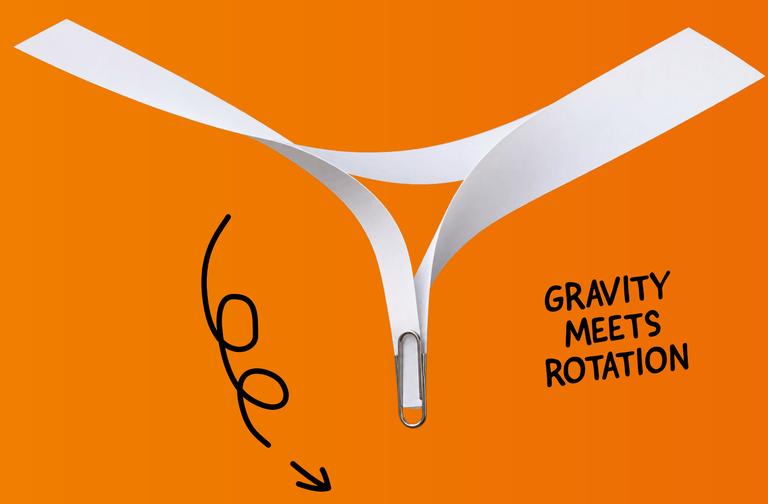
EXPERIMENT NUMBER 5

PROPELLER

TOOLS
scissors , propeller and paper clip

PROCEDURE
- Draw the propeller according to the dimensions on the diagram on the right. We can write or draw something in it.
- Cut the propeller in the middle – only by dashed lines.
- Connect the free ends of the tail to each other with a paper clip.
- Then drop the propeller from above and watch it fly.

EXPLANATION
The propeller falls to the ground because of its gravitational force. This movement is counteracted by air resistence. This resistive force presses on the inclined parts (blades) of the tail and rotates it.



EXPERIMENT NUMBER 6

MAGIC COCKTAIL STICKS

PROCEDURE
- There is one spot on the each cocktail stick from the one side.
- One cocktail stick has got three spots.
  The rest of the cocktail sticks are without the spots on the other side.
- We turn the cocktail stick in the hand quickly. We need a practice.

EXPLANATION
Our eye can notice the changes. It is seemed that the spots move from one cocktail stick to another.



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4. REFERENCES

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