

Prices

Worth over 1500 Euro.

1st Price: Over the rainbow...

You and your Team in a plane

2nd Price: A cinema just for you...

and 9 friends. VIP Show

3rd Price: Up up and away...

Two hours climbing course

4th Price: Slide over the water...

Standup paddling trial course for your team

All submissions will receive an ice cream voucher



Future Space

Wilhelmsstraße 2
34117 Kassel

Opening hours

Mo - Fr: 10:00 Uhr - 18:00 Uhr

Sa - So: 14:00 Uhr - 18:00 Uhr

www.futurespace.org

Who can take part?

Young people aged 13 and over with a migrant and refugee background, but also international teams with German young people.

When?

Start: Immediately. Work at Future Space during the opening hours.

Registration: mail at wettbewerb@futurespace.org until May 1st, 2024:

What and how?

Explore one of 15 everyday phenomena for which no solution is known, even in the scientific literature. Summarize the results of the investigation in a 12-minute lecture, a poster presentation, a 6-minute video or a 5-page text.

Delivery:

Wednesday, June 26, 2024

wettbewerb@futurespace.org

Award ceremony:

July 3, 2024, 2:00 p.m. - 4:00 p.m. at SFN

Topic:

15 exciting topics from the field of physics or your own idea.

Submission possible in German and English!



STEM is

Science
Technology
Engineering
Mathematics

STEM is also

Spirit
Teamwork
Enthusiasm
Mettle

STEAMWORK

The STEM-Competition of FutureSpace



wintershall dea

STIFTUNG FÜR

Demokratie
und Vielfalt

You can find the tasks here:

Problem 1: Shooting Rubber Band

A rubber band may fly a longer distance if it is non-uniformly stretched when shot, giving it spin. Optimise the distance that a rubber band with spin can reach.

Problem 2: Falling Tower

Identical discs are stacked one on top of another to form a freestanding tower. The bottom disc can be removed by applying a sudden horizontal force such that the rest of the tower will drop down onto the surface and the tower remains standing. Investigate the phenomenon and determine the conditions that allow the tower to remain standing.

Problem 3: Sci-Fi Sound

Tapping a helical spring can make a sound like a “laser shot” in a science-fiction movie. Investigate and explain this phenomenon.

Problem 4: Droplet Microscope

By looking through a single water droplet placed on a glass surface, one can observe that the droplet acts as an imaging system. Investigate the magnification and resolution of such a lens.

Problem 5: Rigid Ramp Walker

Construct a rigid ramp walker with four legs (e.g. in the form of a ladder). The construction may begin to ‘walk’ down a rough ramp. Investigate how the geometry of the walker and relevant parameters affect its terminal velocity of walking.

Problem 6: Ruler Trick

Place a ruler on the edge of a table, and throw a ball at its free end. The ruler will fall. However, if you cover a part of the ruler with a piece of paper and repeat the throw, then the ruler will remain on the table while the ball will bounce off it. Explain this phenomenon, and investigate the relevant parameters.

Problem 7: Oscillating Screw

When placed on its side on a ramp and released, a screw may experience growing oscillations as it travels down the ramp. Investigate how the motion of the screw, as well as the growth of these oscillations depend on the relevant parameters.

Problem 8: Spin Drift

When a ring is set to roll in a parabolic bowl, interesting motion patterns may arise. Investigate this phenomenon.

Problem 9: Hand Helicopter

A simple hand helicopter can be made by attaching rotor blades to one end of a vertical stick. The helicopter moves upwards when the stick is twisted at a high enough speed and then let go. Investigate how the relevant parameters affect the lift-off and the maximum height.

Problem 10: Inconspicuous Bottle

Put a lit candle behind a bottle. If you blow on the bottle from the opposite side, the candle may go out, as if the bottle was not there at all. Explain the phenomenon.

Problem 11: Conducting Lines

A line drawn with a pencil on paper can be electrically conducting. Investigate the characteristics of the conducting line.

Problem 12: Undertone Sound

Allow a tuning fork or another simple oscillator to vibrate against a sheet of paper with a weak contact between them. The frequency of the resulting sound can have a lower frequency than the tuning fork’s fundamental frequency. Investigate this phenomenon.

Problem 13: Newton’s Cradle

The oscillations of a Newton’s cradle will gradually decay until the spheres come to rest. Investigate how the rate of decay of a Newton’s cradle depends on relevant parameters such as the number, material, and alignment of the spheres.

Problem 14: Tesla Valve

A Tesla valve is a fixed-geometry, passive, one-direction valve. A Tesla valve offers a resistance to flow that is much greater in one direction compared to the other. Create such a Tesla valve and investigate its relevant parameters.

Problem 15: Invent yourself

Think about a physics phenomenon you think is interesting and investigate its parameters.

...You probably have a lot of your own ideas too!