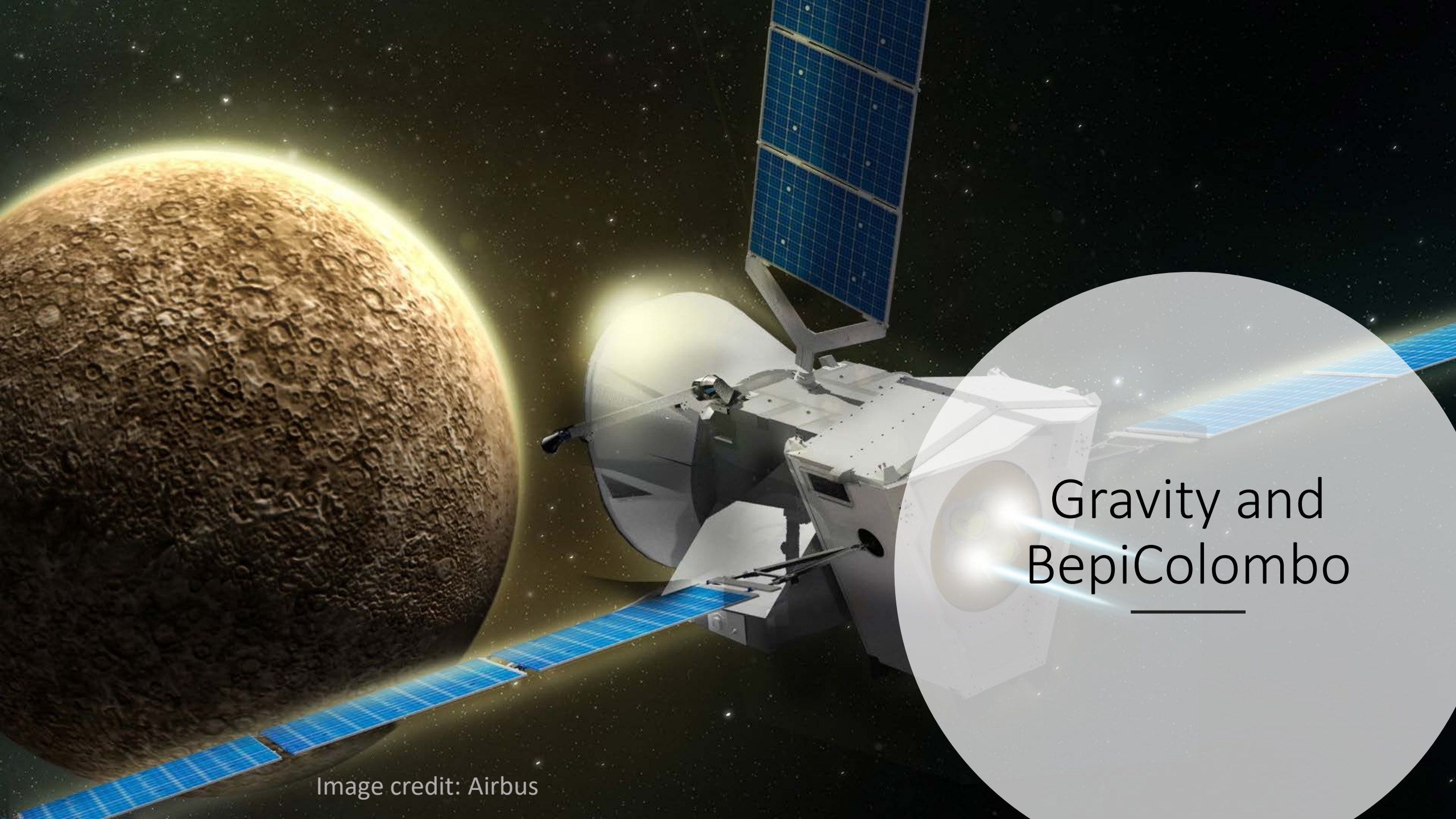
UNIVERSITY OF LEICESTER

KS4: GRAVITY AND BEPICOLOMBO

MATERIAL PROVIDED BY THE SCHOOL OF PHYSICS AND ASTRONOMY
FOR MORE INFORMATION VISIT: HTTPS://LE.AC.UK/BEPICOLOMBO

UK SPACE AGENCY

Science & Technology Facilities Council



Gravity and BepiColombo

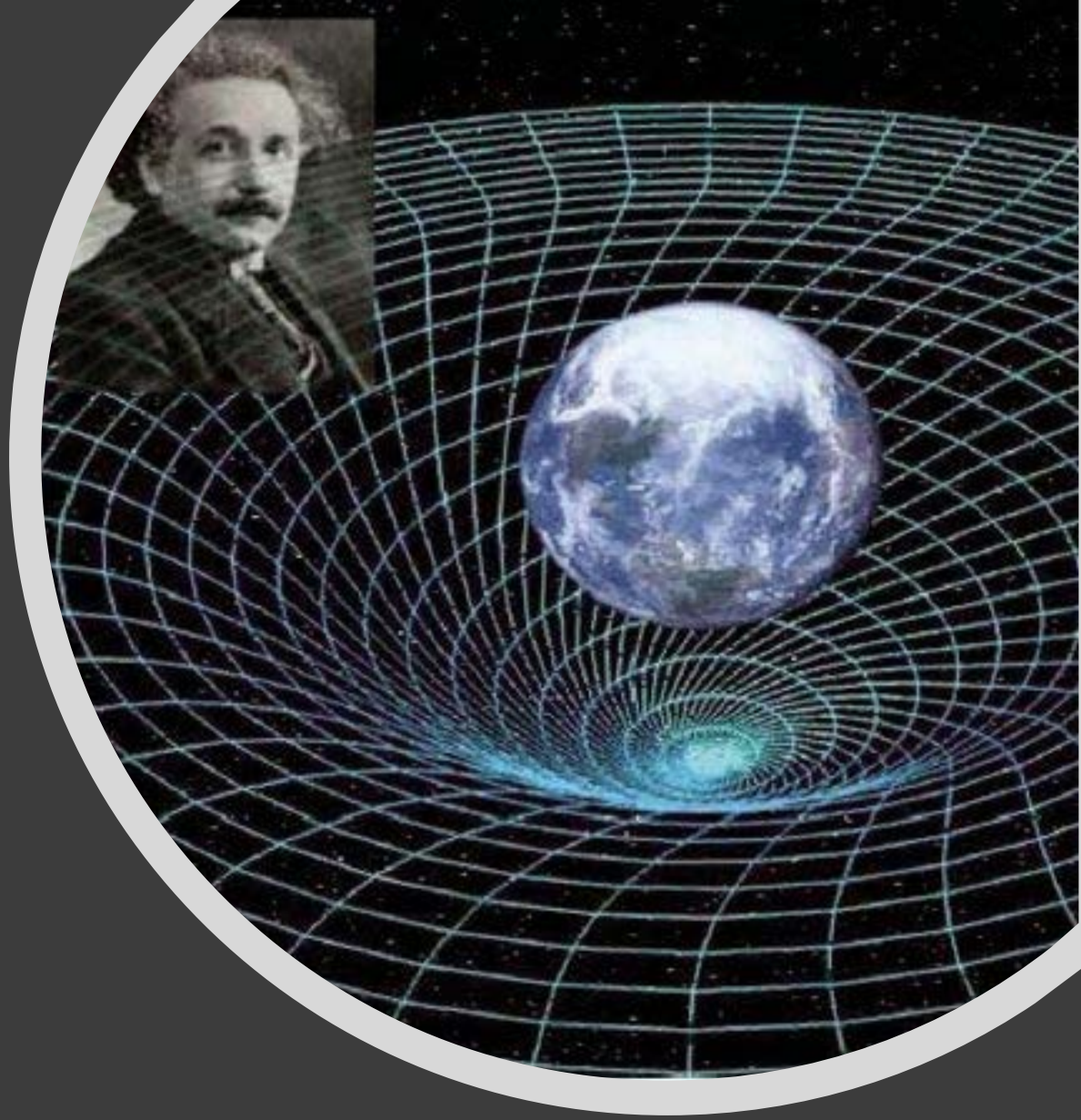
Image credit: Airbus

Gravity

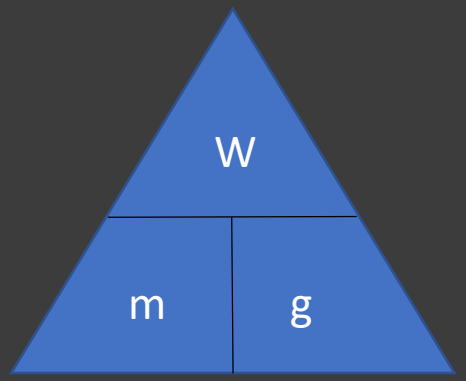
- What is the gravitational force?
- What are the relationships between mass and weight?
- How are gravitational potential energy and height related?
- Newton's first law
- BepiColombo

Acting at a distance

- Two objects can feel gravitational attraction so long as they both have mass (momentum and energy)
- They do not need to touch
- Gravitational field strength gets stronger the closer to the mass you get



Weight

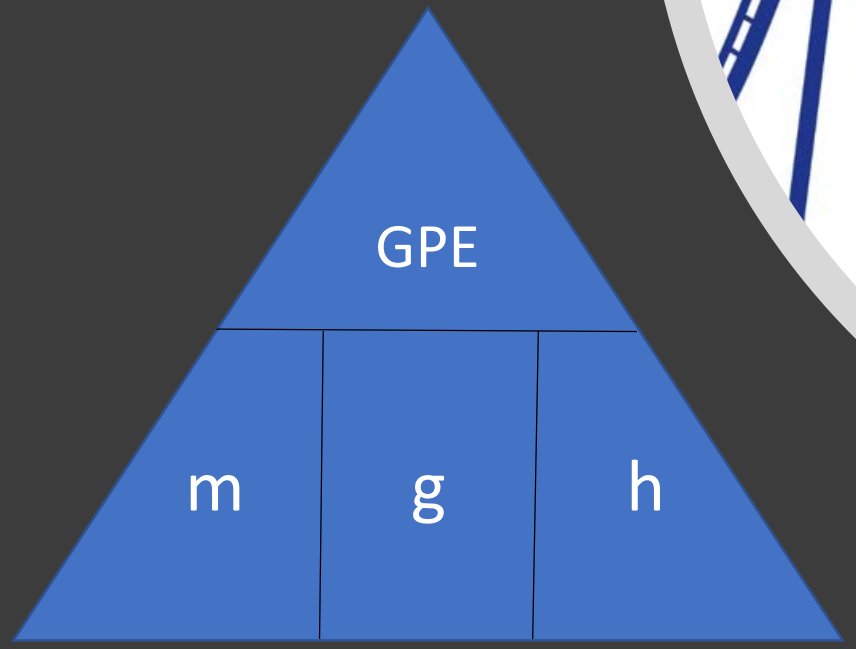


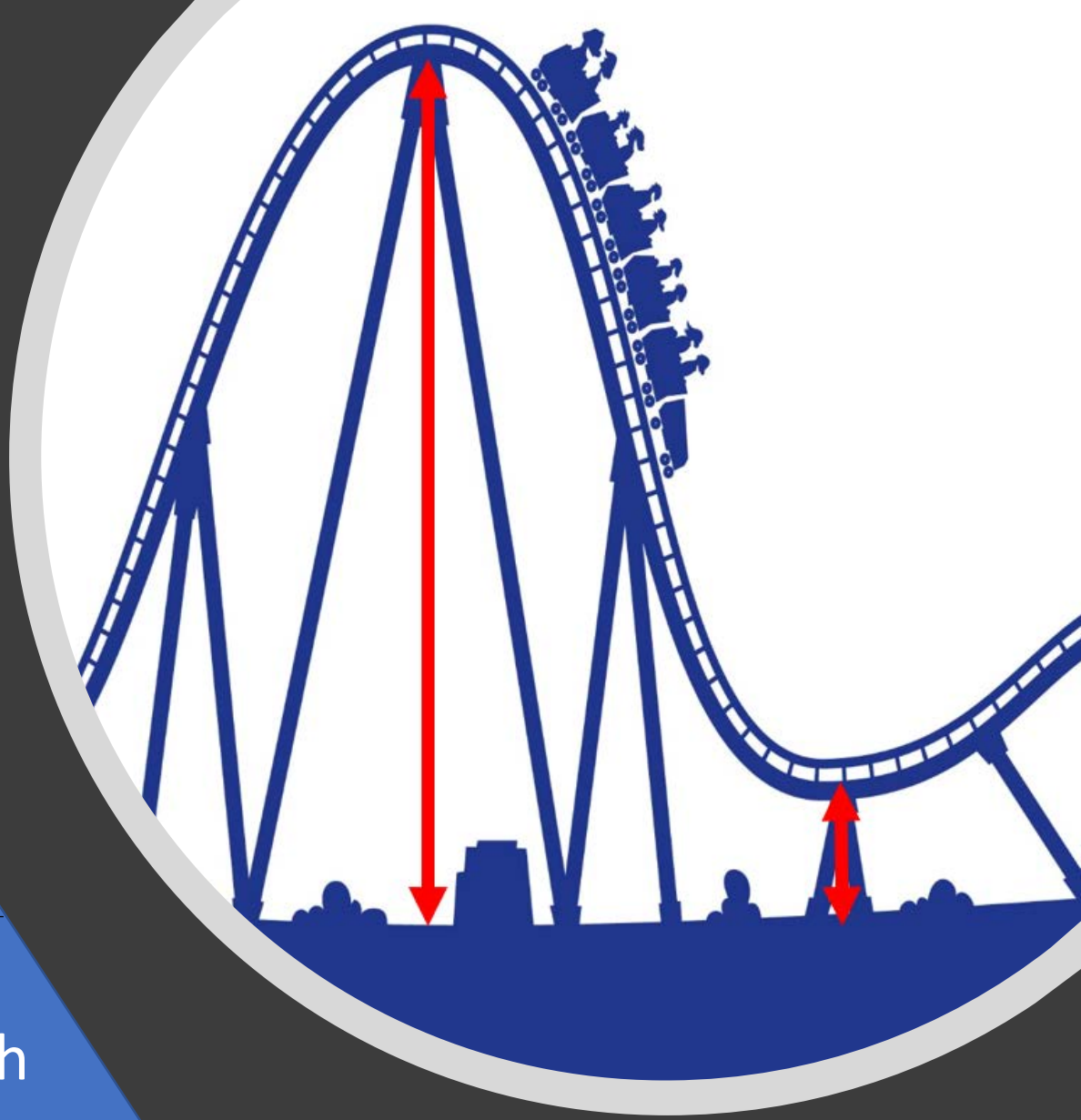
- Weight is a force
- A bag of sugar has a mass of 1 kg, but weighs 9.81 N
- Weight=Mass x Gravitational field strength

Gravitational Potential Energy

The higher an object is the more Gravitational Potential Energy (GPE) it has

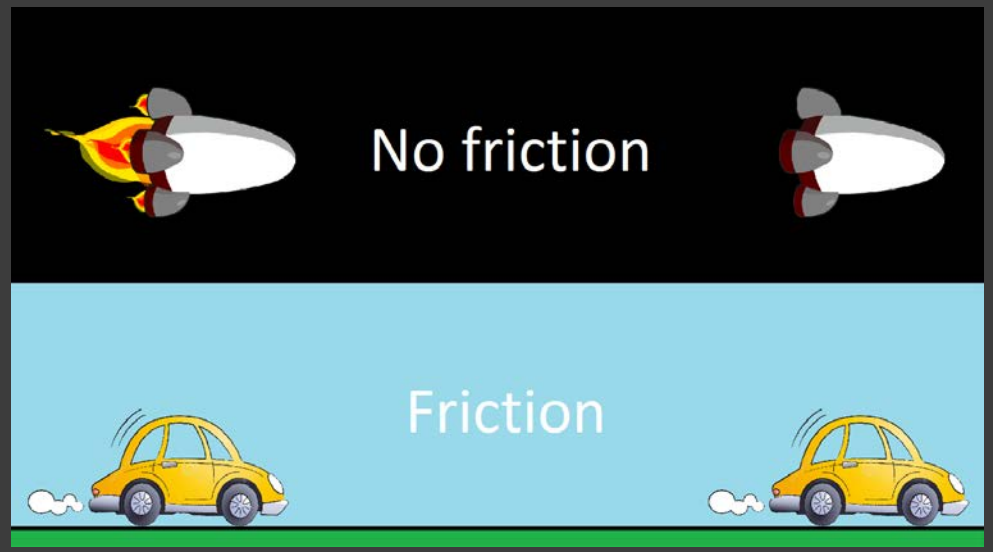
GPE = m x g x h





Newton's First Law

An object in motion will stay in motion until it is acted upon by an external force

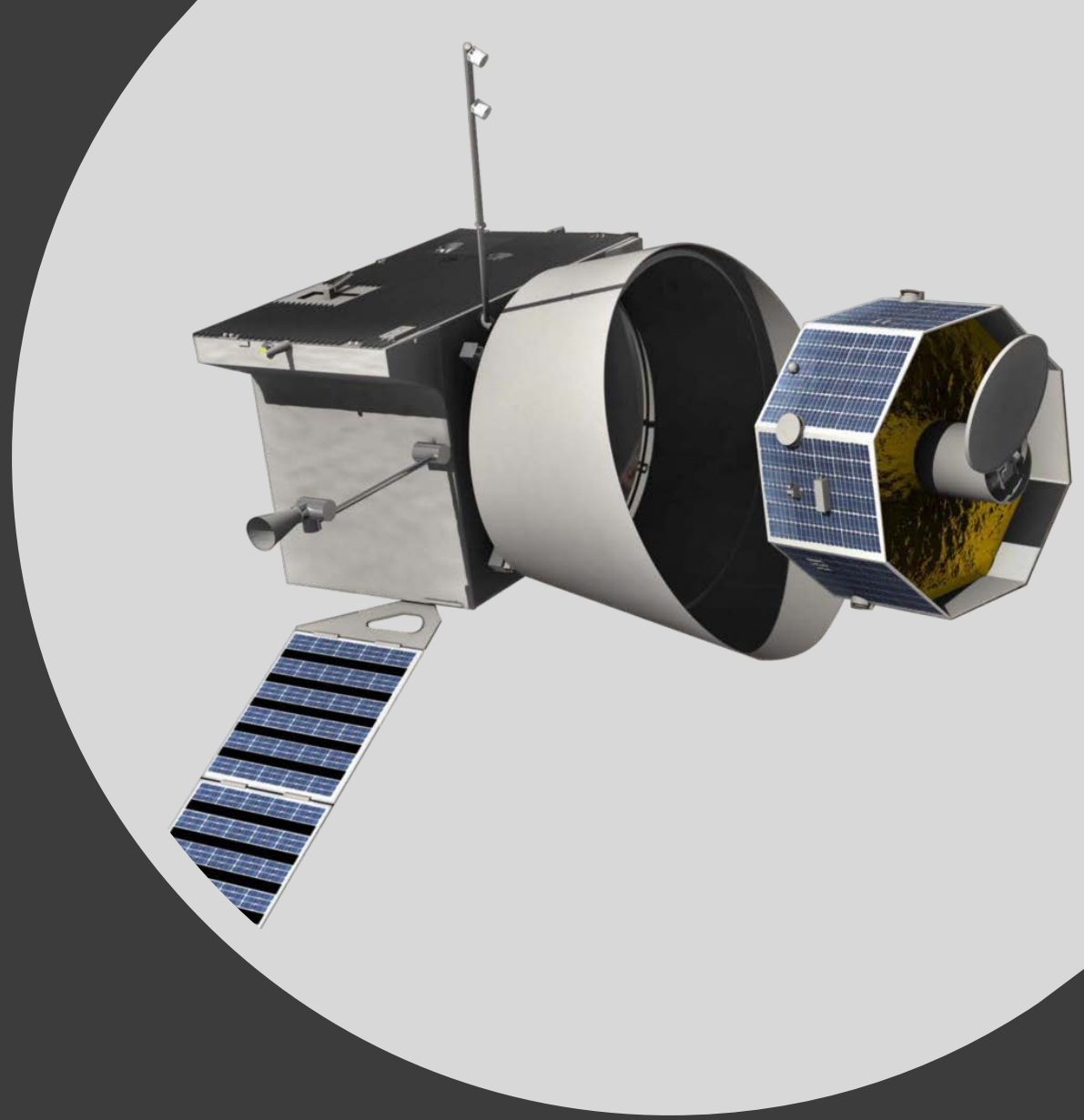


BepiColombo

BepiColombo is Europe's first mission to Mercury.

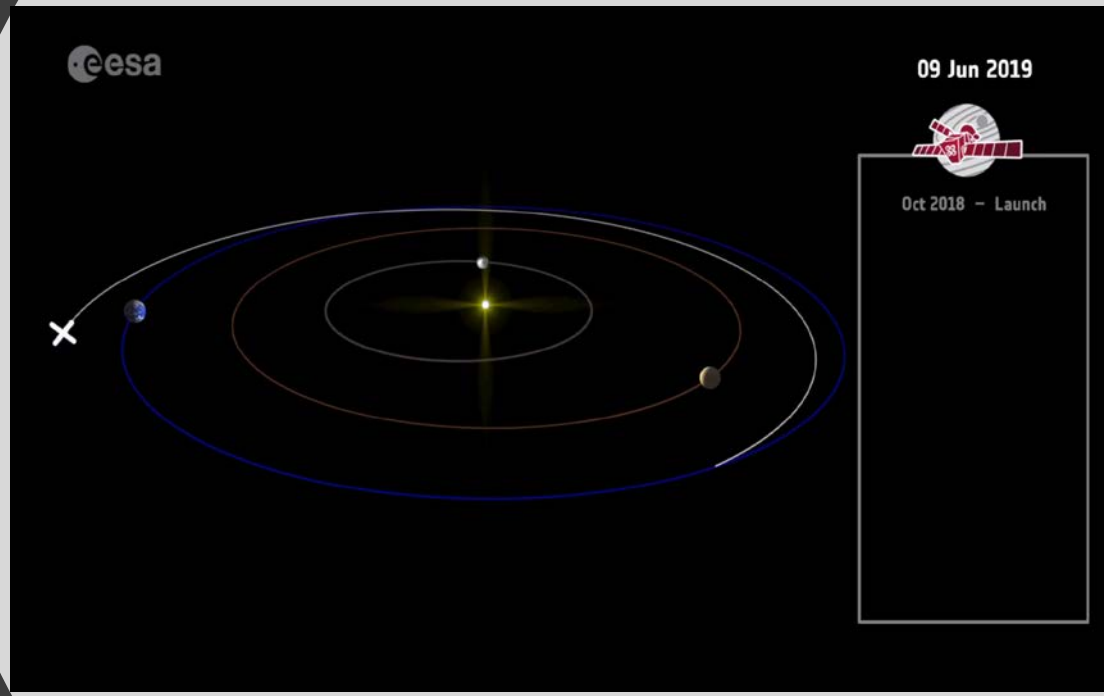
It takes 7 years for BepiColombo to reach its final orbit around Mercury.

Why do you think it is so difficult to get there?



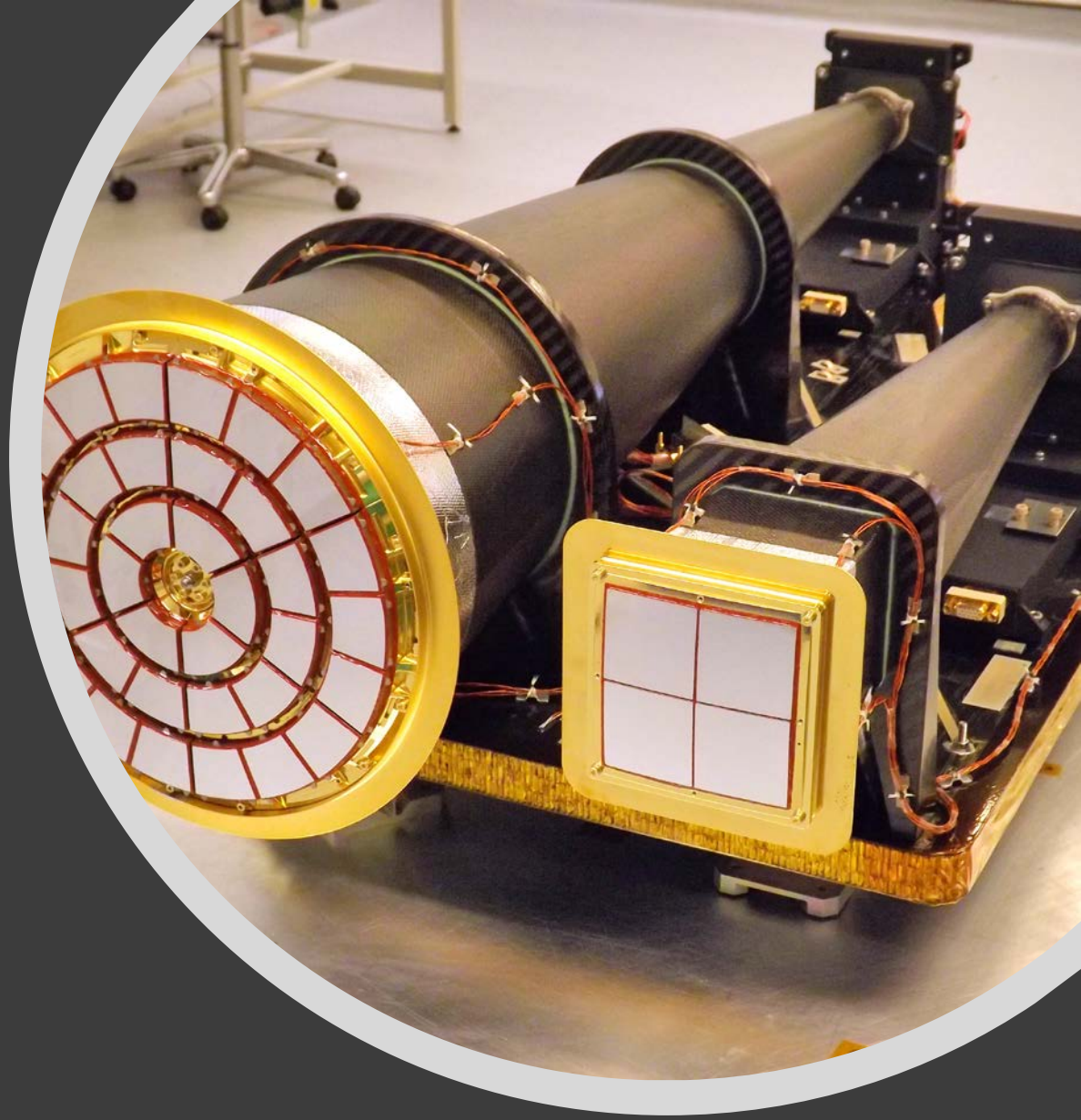
BepiColombo's journey

- BepiColombo needs to slow down due to Sun's gravity
- Uses Newton's First Law
- Gravitational field strength gets stronger the closer to the mass you get



MIXS

- MIXS stands for Mercury X-ray Imaging Spectrometer
- It is the only UK instrument on BepiColombo
- It was developed at the University of Leicester
- It uses X-rays from the Sun to look at Mercury
- It will tell us what Mercury is made from



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