A blue parallelogram and a light green parallelogram are positioned on the left side of the slide, overlapping each other and the dark blue background.

Are the flight mechanics on  
Earth applicable in microgravity  
conditions?

Adizas, J.V, Parel, J.G.M, and Sison, K.B.S



## Overview

- Items utilized
- Hypothesis and Theory
- Schematic Model
- References



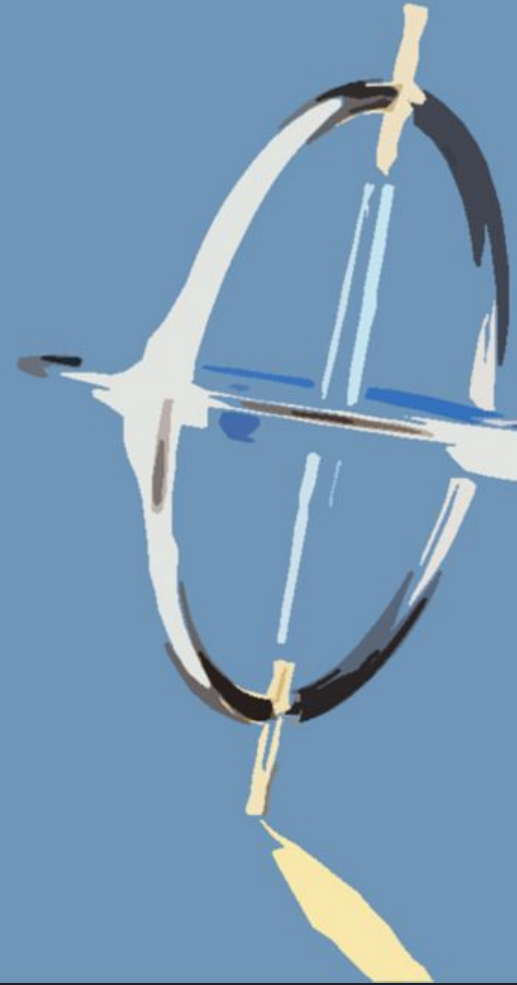
Items/Tools





# Gyroscope

It is a spinning disc used for maintaining orientation and angular velocity.





# Flapping Bird

It is an artificially made bird toy made to mimic the flight of a bird

# Hypothesis and Theory





# Hypothesis

The rigidity of the gyroscope would remain unaffected, but its precession and rotation would become disoriented. The bird would be able to move, though it would lose direction.





Procedure







# Procedure

- (1) Spin the gyroscope. (20 seconds)
- (2) Place the gyroscope on a solid surface(5 seconds)
- (3) Observe the gyroscope(30 seconds)
- (4) Crank the flapping bird(30 seconds)
- (5) Observe the flapping bird(30 seconds)

# Results and Discussion

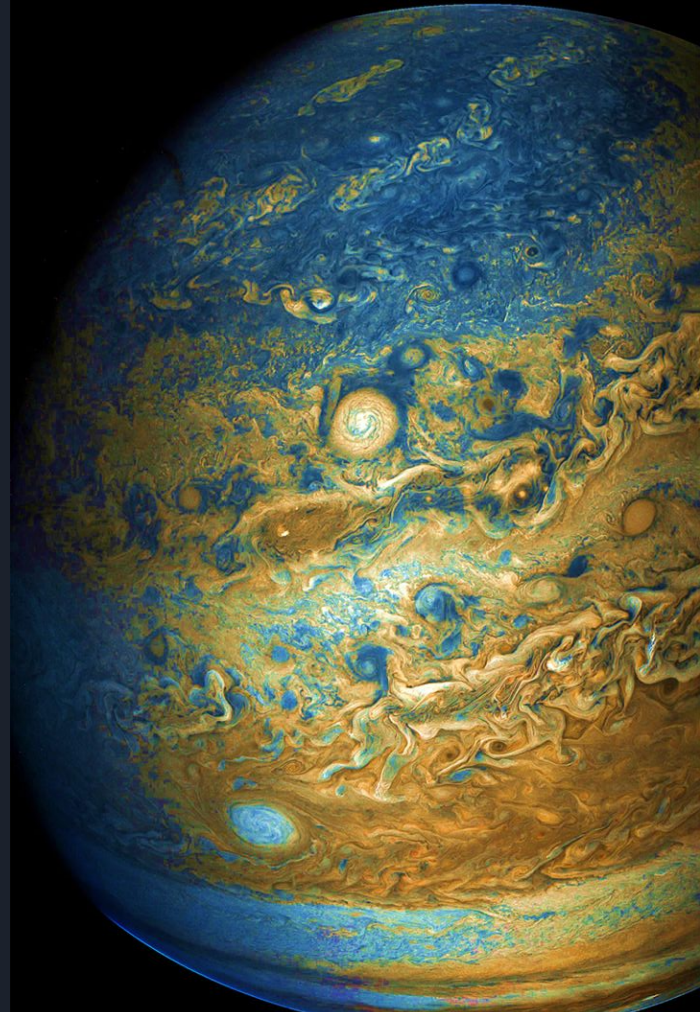


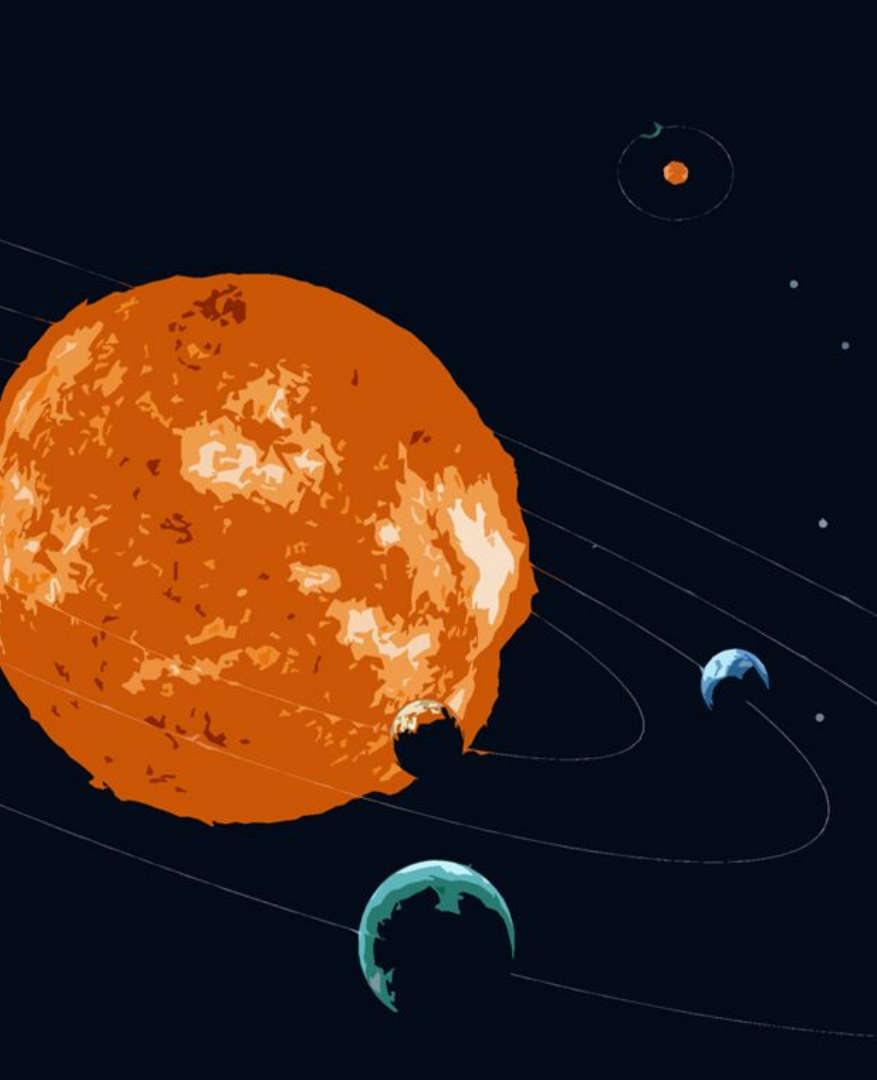


# Results

The spinning gyroscope moved accordingly to its produced torque , maintaining a stable axis.

Contact would not change its plane, similar to its behavior in the presence of Earth's gravity





# Results

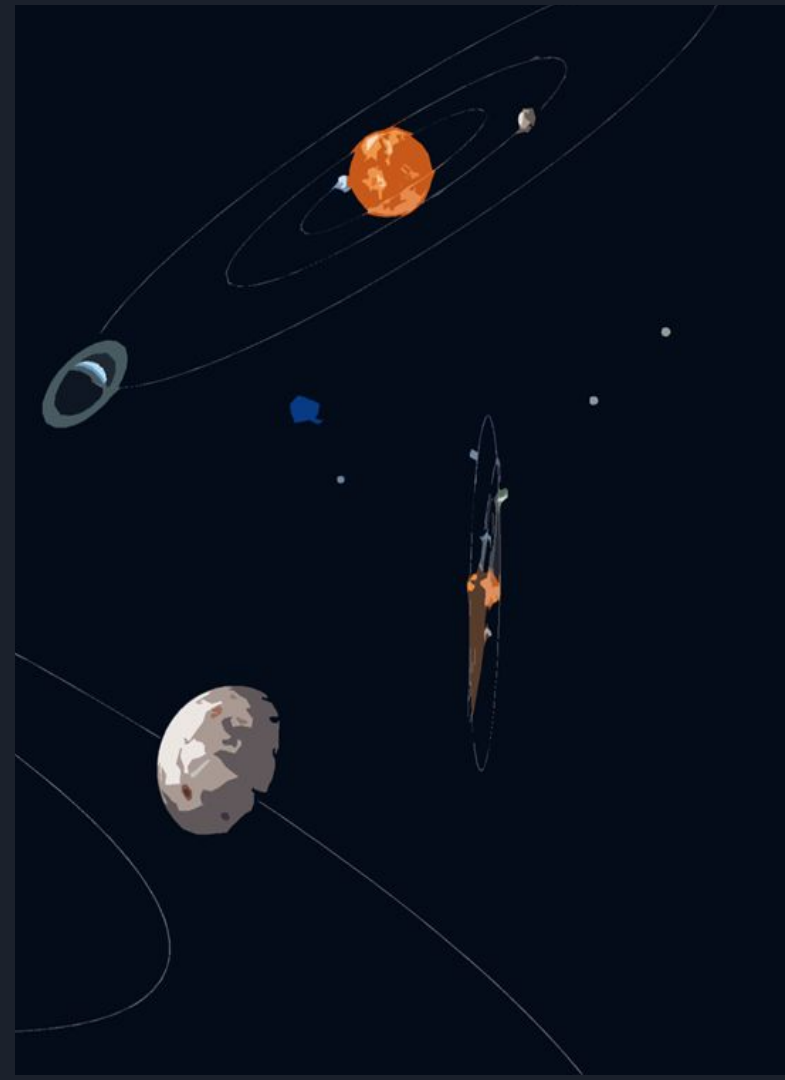
Contact would change the direction in which it moved.

It moves accordingly to its torque and maintains its axis, its rigidity, precession and rotation remained unaffected.



# Discussion

These results can be attributed mainly to the fact that the gyroscope is driven by the principle of conservation of angular momentum which applies even in microgravity conditions, making a gyroscope effective even in space.





# Discussion

These findings confirm that gyroscopes are indeed effective in various applications of flight mechanics in both space and on Earth, utilizing its properties of precession and rigidity to suit the advancement of different spacecrafts and aircrafts.



# References

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