ASIAN TRY ZERO-G 2017/18

AIRCRAFT STABILITY BY SINGAPORE

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(1) PURPOSE OF EXPERIMENT

- To determine the relationship of neutral point and centre of gravity of an aircraft

(2) MATERIALS & METHODS

- MATERIALS
  - Balsa Wood
  - Plain Paper

- METHOD
  1. Assemble the balsa wood aircraft
  2. Launch the aircraft and observe flight movement
  3. Attach the additional wing attachment
  4. Launch the aircraft and observe flight movement

(3) HYPOTHESIS

- Due to the effects of microgravity, is hypothesized that the aircraft would obey an imaginary centre of gravity

(4) RESULT

- The aircraft repeatedly pitches upwards gradually
- The yaw and roll of the aircraft does not change

(5) DISCUSSION

- The upward motion of the aircraft is similar to when the centre of gravity is behind the neutral point
- It can be believed that an aircraft would obey an imaginary centre of gravity in microgravity
- As such, the hypothesis is not proven to be false

QUESTIONS FOR KANAI-SAN

1) The aircraft was thrown only once per setting; wing in front, mid, and back. Do you think if the experiment was repeated numerous attempt, the results may change?
2) The aircraft was launched manually, hence it was difficult to maintain launch parameters such as throwing strength or throwing angle. Is it possible to have a simple launcher set-up on board the ISS? (catapult?)
3) The aircraft was released in a pressurized environment. How do you minimize the influence of cabin airflow on the trajectory of the aircraft?
4) As observed from the experiment, each time the aircraft was launched, it tends to fly upwards. Do you think its possible to achieve straight, leveled flight?

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Thank You


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