Note: This file can not replace watching the video lecture. Because the video lecture contains more explanation through graphical elaboration.

Certified Junior Astronaut Training Course

Origin of Satellites and their roles (Part 2)

This lecture will answer the following inquiry:

How can a satellite fly? Or how could it rotate in its orbit without falling on the ground?

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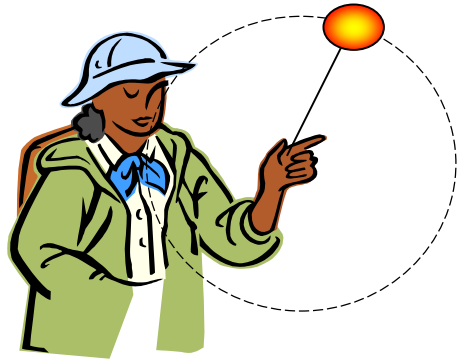
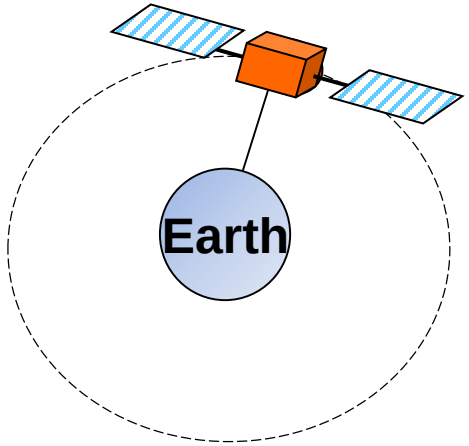
- In order to understand the Satellites' flying theory, first we should understand the following simplified example to imagine how satellites fly. Assume that you are holding a thin thread where a heavy ball is tied to its end. Start rotating the thread using your hands in one direction, what will happen? The ball will rotate around your hand and the thread will remain stretched; holding the ball without being pushed outwards.



- The same theory applies to satellites. A satellite resembles the heavy ball that rotates around the hand and Earth resembles the hand that is considered the center of rotation. In this case, the stretched thread is the earth's gravity that attracts the satellite to the earth and resists the centrifugal force that pushes the satellite outwards. This is how satellites fly. The question here is where does this force that pushes the satellite outwards come from?



Cont.. How can a satellite fly? Or how could it rotate in its orbit without falling on the ground?

- This centrifugal force arises from the final launching phase of the rocket where the satellite is positioned in its orbit.
- At this stage, the satellite is launched from the rocket with a specified angle of inclination and a highly accurate calculated force that gives it the ability to move in its orbit around Earth. It is theoretically assumed that a satellite continues to rotate forever due to the absence of resistance outside the atmosphere where there is no friction between the satellite and anything else like air; thus applying Newton's law (For every action there is a reaction, equal in magnitude but opposite in direction). There is no opposite reaction for the satellite movement in the space; however, there are some cosmic factors called "Perturbations" that affect the movement of satellite rotation and makes it deviates from its orbit with the passage of time.

Source: NASA NPP Earth Observing Satellite Launch

Thanks for your undivided attention