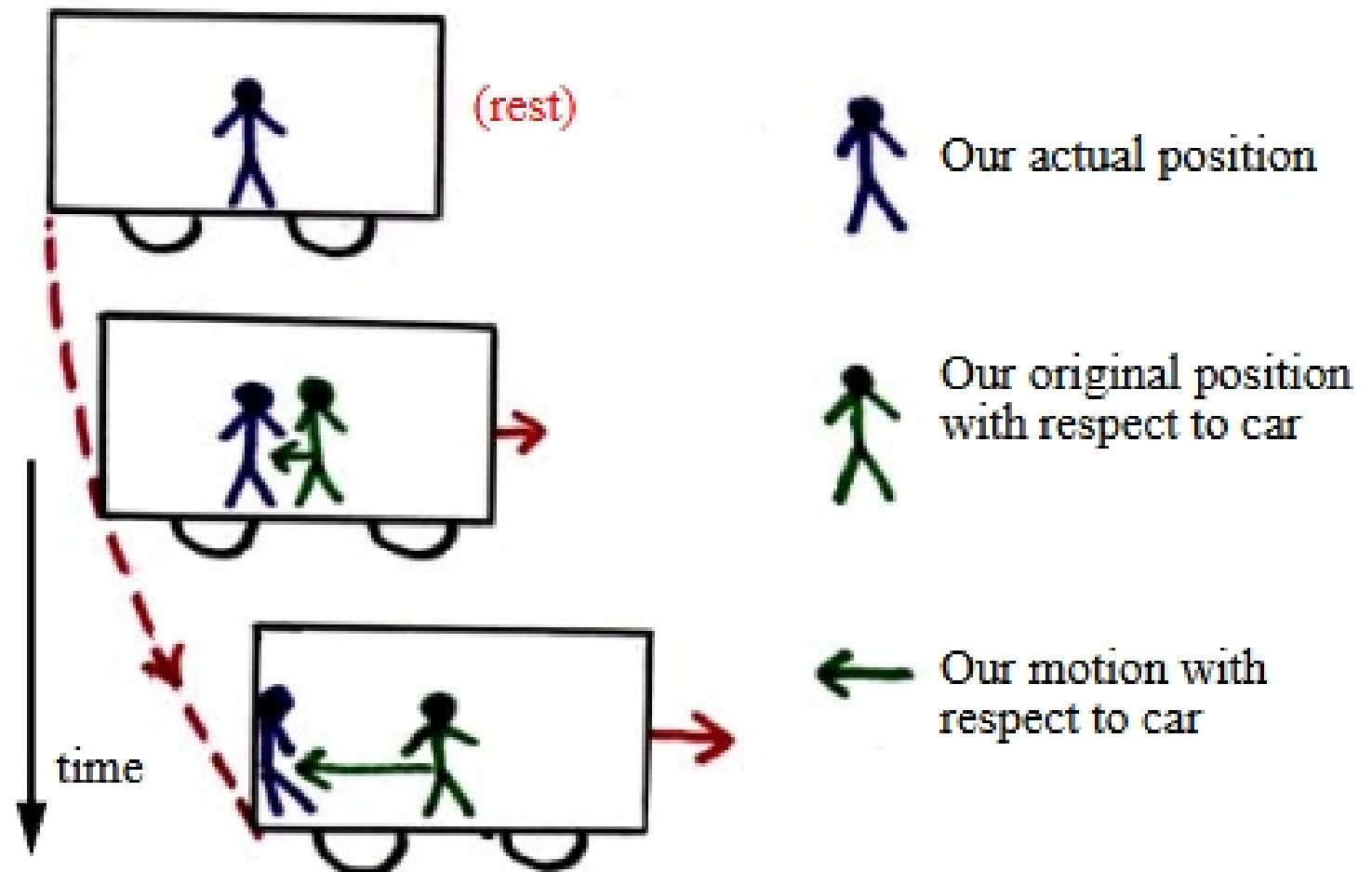


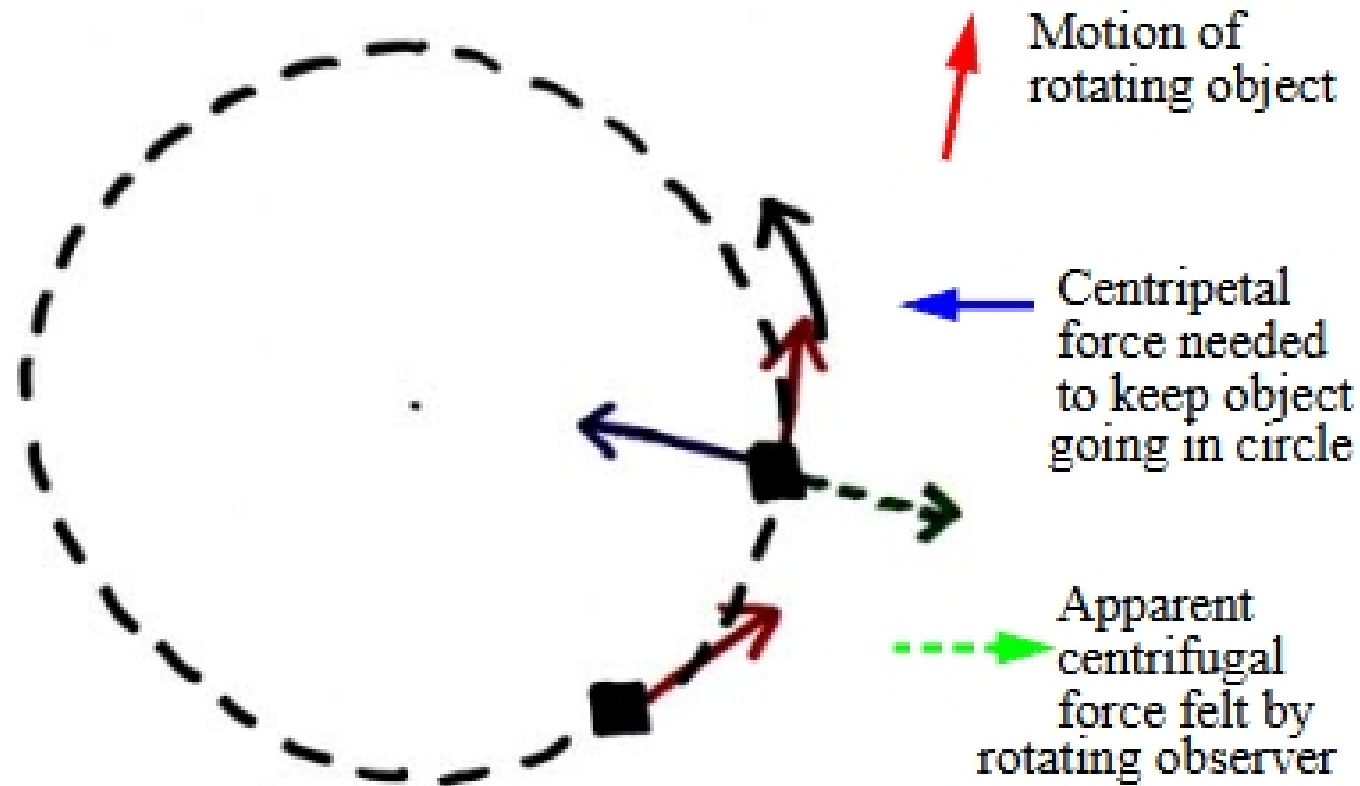
Lecture 9 The Coriolis Force

Life in an Accelerating Reference Frame

- Suppose we step into a subway car with a Teflon floor.
- When the train starts to accelerate, we slide backward until we hit the back wall.
- From our perspective in the accelerating car, there is a backward 'apparent' force that rammed us into the back wall.



On the rotating earth, we feel similar 'apparent' forces because it takes a force to accelerate an object in a circle.



These apparent forces are:

Centrifugal force

Coriolis force

Centrifugal 'Force'

- Apparent force pulling outward from Earth's polar axis.
- Slightly changes the apparent gravity
 - 0.5% weaker at the equator than at poles
- Sea level (and Earth surface) are pulled 20 km (0.3%) further from the center of the earth at the equator than at poles.
- By redefining 'gravity' to point perpendicular to sea level everywhere we can absorb centrifugal 'force' into gravity.

