

Universal Physics Journal

Question 5 - Addendum

Additional thoughts on the confusion surrounding accelerating frames of reference

While in Universal Physics it is correctly recognized that centrifugal force is an object's outward-directed reaction force that provides the Newton LAW III required support for the inward-directed centripetal action force, many Modern Physics authors and educators are promoting a different understanding of the role of centrifugal force that is decidedly incorrect. By doing so they are wasting a perfectly good and useful Physical term upon a non-event where no centrifugal force (outward-directed push or pull) is present. But this sad state of affairs is not permanent. Recognition of the depth of this Modern Physics confusion along with understanding the truth can remedy this unfortunate situation.

An example of a Modern Physics "centrifugal force" event is as follows: An observer is sitting a bit inboard of the rim of a large, slowly rotating, turntable located in an even larger featureless room. While the observer is fully aware of the turntable's rotation, he chooses to ignore this fact while making his observations. Attached to the room's flat, darkened ceiling is a straight, invisible track complete with a motorized trolley from which is hanging by wire an ordinary billiard ball. When activated, the trolley will cause the ball to travel with a uniform (straight-line) motion whose level path is tangent to the rim of the level turntable. If timed correctly, the non-accelerating ball will pass by the seated observer less than an inch above the rim of the turntable when they both arrive at the point of tangency.

The slowly orbiting (accelerating) observer sees the billiard ball both while it is approaching to and departing from the point of tangency with the turntable. But the observer does not see the billiard ball as traveling a straight-line path. Instead, due to his own rotation (acceleration) the observer mistakenly sees the billiard ball as following a path that appears to be curved in the outward direction. Choosing to ignore his own inward curving orbital path of observation as being the cause of the billiard ball's apparent outward curving path of travel, the observer instead decides that the billiard ball is truly experiencing outward-directed "centrifugal acceleration". Further, citing Newton's LAW I, the confused observer decides that the invention of a "centrifugal force" as the "cause" of the observed "centrifugal acceleration" of the non-accelerating billiard ball is justified.

But the truth of this event is easily determined by the Modern Physics author or educator who is hidden outside the room at one end of the trolley track. Through a screen he sees that the orbiting observer is ignoring his own acceleration including the curved path from which his observations are being made. Further, he sees that the suspended billiard ball is traveling a straight-line path, not the outward-curving path claimed to be true by the turntable's observer. This straight-line path leads him to conclude that no "centrifugal acceleration" is occurring to the billiard ball so there exists no need for the invention of a "centrifugal force". While "centrifugal acceleration" and "centrifugal force" seem real for the confused observer seated on the rotating turntable, the Modern Physics author or educator sees the truth that both of these effects are imaginary. Hence to the Modern Physics author or educator professing that "centrifugal force is fictitious" seems a perfectly logical conclusion.

Yet one cannot help but wonder if the expert author or educator sees the deeper truth of this event. Since "centrifugal acceleration" and "centrifugal force" both exist only as the confused and mistaken thoughts generated in the mind of the turntable observer, why does the expert think it is valid to apply these scientific terms to events where no characteristics representing these terms are present? In this turntable event, the subject object, the billiard ball, once moving at a steady pace along the ceiling track, is not experiencing any form of acceleration, certainly not one that is causing its path of travel to veer away from the turntable observer in the "centrifugal" or center-fleeing direction. Applying the false term "centrifugal acceleration" to this event is silly and misleading science. (See Article XI: Reaction Forces beginning at paragraph 39 regarding how "centrifugal acceleration" is an impossibility.) Then to follow this "centrifugal acceleration" mistake by applying the true scientific term "centrifugal force" where no force in the outward direction, relative to the turntable's observer at the moment of tangency, can be shown to exist against or within the matter of the suspended billiard ball is nothing short of a waste. Here the true scientific term "centrifugal force" is wasted by misapplying it to the mistaken observation made by a mind suffering from Coriolis confusion. (For an analysis of Coriolis confusion visit Question 14) By using this term here, it becomes unavailable for application to the real centrifugal acceleration/Reaction force recognized in Universal Physics as present within the matter of every rotating or orbiting object. Such an object is experiencing inward-directed centripetal acceleration provided by an inward-directed centripetal acceleration/Action force with said force also acting as the cause of a Newton LAW III support force in the form of an internal, outward-directed centrifugal acceleration/Reaction force from the accelerating object. But since its proper term "centrifugal force" has already been wasted on the expert's non-event supported only by Coriolis confusion, the object's acceleration/Reaction force, often with testable magnitude and direction, shall go nameless. Its name has already been given away by the experts to an impostor event. The true term "Centrifugal force" has been scientifically and expertly applied to the mental state of a confused, accelerating observer. Since when is it good science to apply a perfectly valid Physics term to cover the mental state of an observer, confused or not? I find this misapplication belongs in the realm of the pseudo-science of "metaphysics". For certain it is a prime example of homocentric Physics where the experts hold the centrally located observer in such high regard as to honor his mistaken observations by the exclusive granting of a valid Physical term that has been borrowed and thereby removed from its true role of describing the outward-directed centrifugal reaction forces that are always internally present within the matter of objects that really are experiencing the action of an acceleration in the centripetal direction. Let us resolve here and now to restore the term centrifugal force to its proper place, as the only true reaction force that exists in the Universe.

The Universal Physics Journal is loaded with events where the presence of the true centrifugal acceleration/Reaction force is described. One such event is the simple whirling of an object about your person by an attached rope. Insert a tension scale midway along the length of the rope. Present at the scale's inner hook is the inward-directed centripetal acceleration/Action force responsible for causing the activity of centripetal acceleration for all matter located in the scale, in the outward-portion of the rope and in the whirling object. Also revealed is the presence at the scale's outer hook of the outward-directed centrifugal force of acceleration/Reaction of all the whirling matter located beyond the outer hook.

Now that the true role of centrifugal force has been restored to its rightful place of honor as the real reaction force present in every event involving centripetal acceleration, we are free to once again realize that the acceleration/Action force known and named by Isaac Newton as centripetal force along with the acceleration/Reaction force known as centrifugal force, represent an important action/reaction pairing of equal and opposite accelerational forces.

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