Θ Paradox

Shimron Alakkal

This paper engages with proving the existence of a theoretical paradox that are based on fundamentals of math and physics concepts.

Check out https://www.github.com/ShimronAlakkal for more updates on this paper.

Introduction:

This experiment shows us a theoretical paradox of the relationship between an angle, **θ**, made by a stretched line from two stationary points on a line from time t = 0s to t = ts. (refer to figure 1)

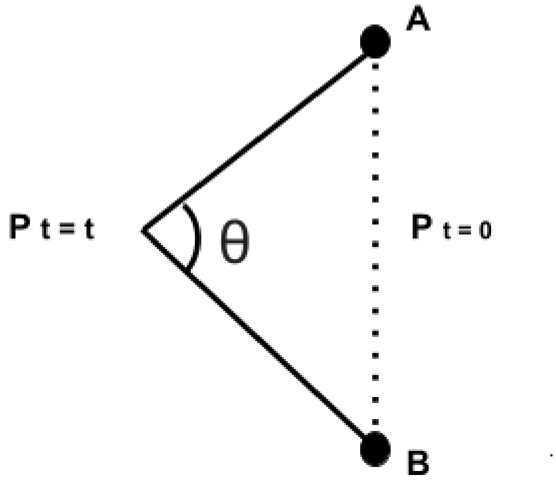


Figure 1

Hypothesis

Part 1 :

Assume that '**A**' and '**B**' are two stationary points on a single plane, separated by a constant distance '**x**' (only considering 2D now), which are joined by a line '**AB**', which is an infinitely stretchable line.

At a time t = 0s -- which is the initial time -- the angle **θ** between the points is 180 degrees (**π rad**).

At a time t = t , i.e. when the line is stretched from a specific point (point of stretching) and the angle is made between the points '**A**' and '**B**' , opposite to the direction of stretch of line which is always < 180 degrees (**π rad**) and a perpendicular distance, say '**y**' is made from the point used for stretching to the final destination at time t = t (which would be **y**).

(refer to figure 2.1 and 2.2)

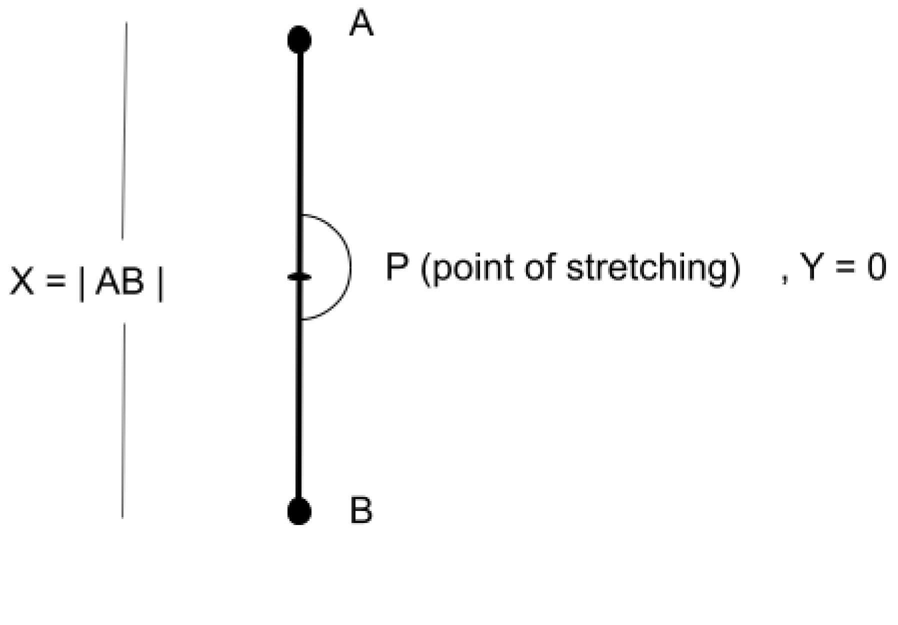


Figure 2.1, Initial state of line

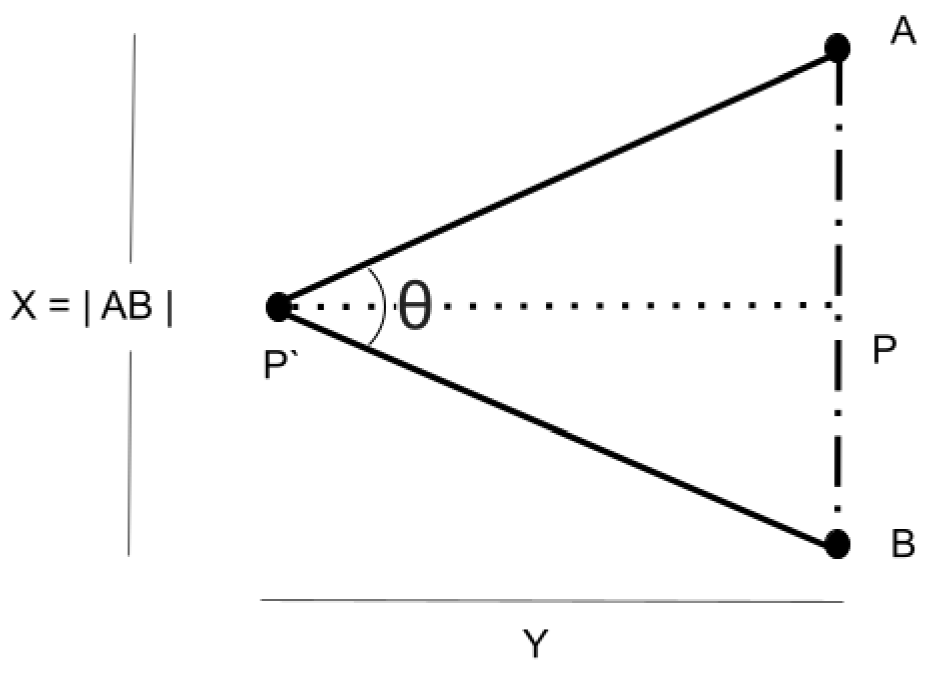


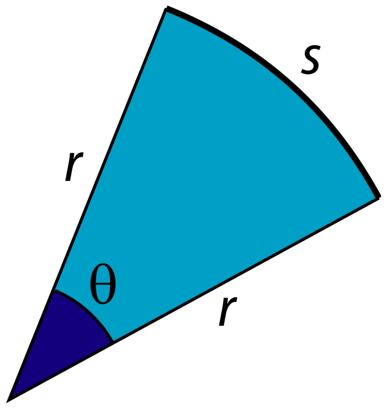
Figure 2.2, final state at a time t = t, θ<180

As long as **y** is stretched the angle θ is always < 180. The graph of the relation between angle as a function of distance from **P to** goes similar to that of a f(x) = 1/log(x) graph.

From figure 2.2, we get ***(eq 1)***:

$$\theta \approx AB / PB = AB / PA = x / PB$$

It is known that central angle in a circle subtended by an arc length (in radian) = Arc length / radius



$$\theta = s / r$$

When a circle has an infinite radius, a tangent to a part of the circle would be parallel to the

circle, passing through the circle itself.
Therefore, **A CIRCLE WITH AN INFINITE RADIUS IS A STRAIGHT LINE.**