Θ Paradox (private beta)

Shimron Alakkal

This paper engages with proving the existence of a theoretical paradox that is based on some fundamental concepts of math.

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)

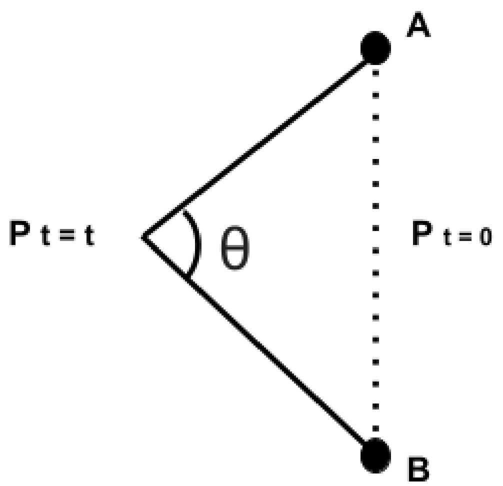


Figure 1

Hypothesis

Part 1 :

Assume that '**A**' and '**B**' are two stationary points on a single plane, separated by a constant distance '**x**' ,

'**x**' **≠ 0 or 0 < 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)

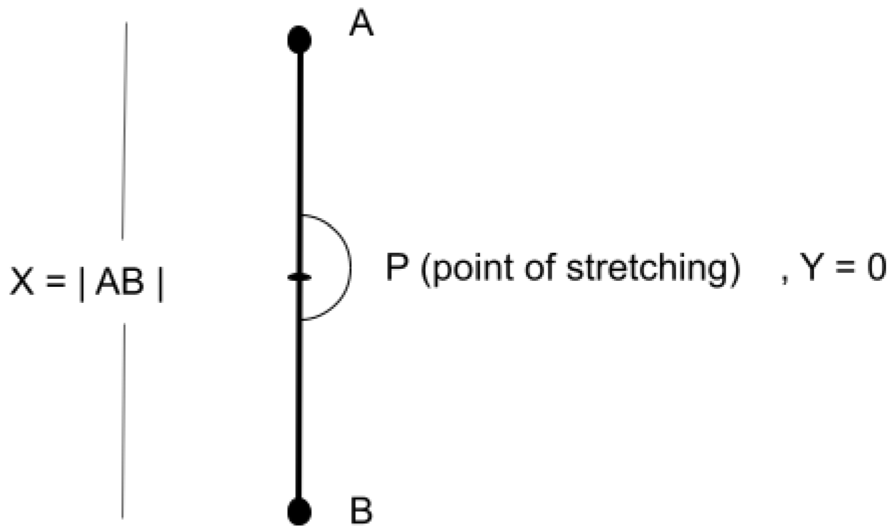


Figure 2.1, Initial state of line

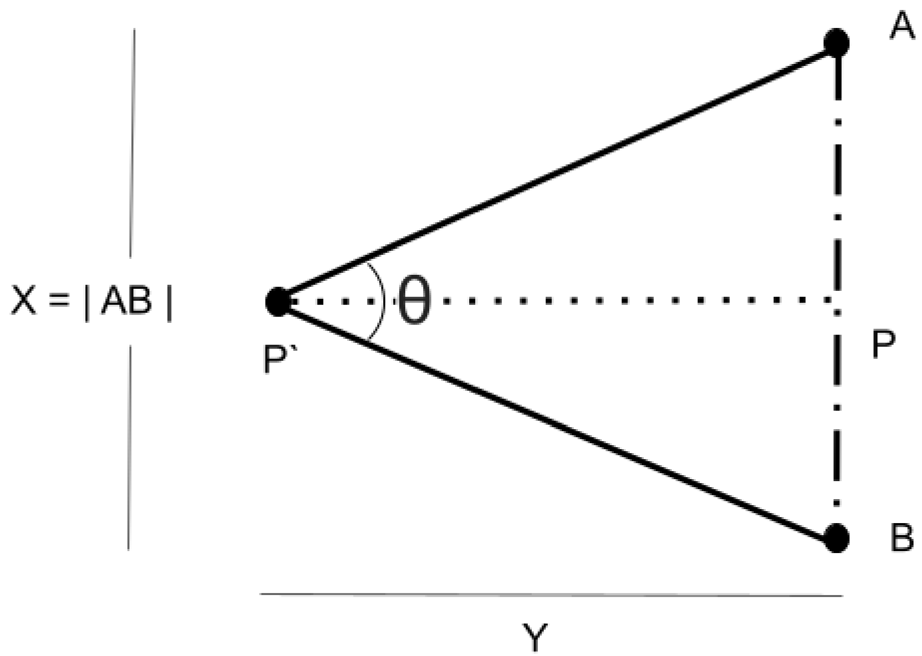


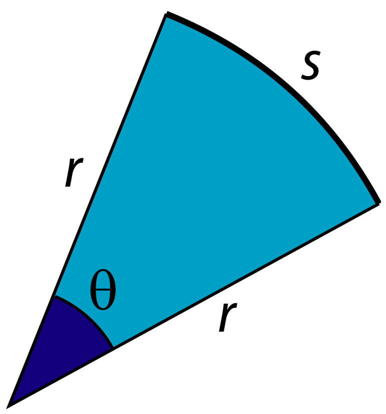
Figure 2.2, final state at a time t = t, θ<180

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.

When the line (stretchable line between points A and B taken above) is stretched so that the magnitude of the perpendicular vector distance between the initial point of stretching and the final point is infinite, the angle **AP'B** is 0° . (refer to figure 3)

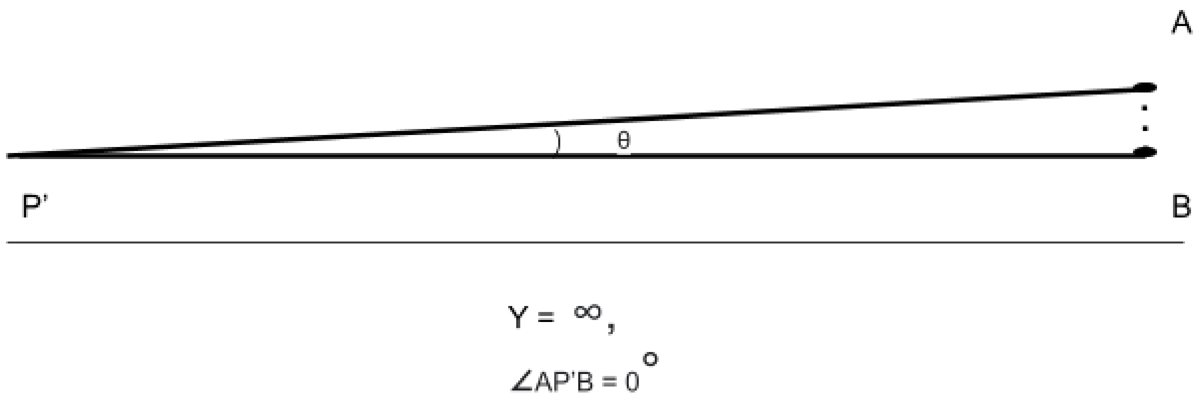


Figure 3

The above picture shows **P'** extended from a point **P, which is the midpoint of AB (taken for ease of solving).**
The above image is also scaled to pictorially represent an infinite distance.
The magnitude of AB is still X units and will always be throughout.

Math:

From figure 3, when **$y = \infty$.**

$\theta = AB / P'B$ … [circle with infinite radius is a line]

Here **AB** can be a part of a circle with a radius = y = ∞,

Central angle subtended by an arc on a circle =

$\theta = AB / P'B = x / P'B$

$\therefore \theta = x / \infty$

$\therefore \theta = 0$ rad $= 0°$ … [**Any number divided by infinity** is equal to 0]

Since the distinct parts of the lines, namely **P'A** and **P'B** from the point **P'** are originating from the same point and since **$\theta = 0°$ (angle between P'A and P'B),** it is safe to say that these are the same lines when **$y = \infty$.**

i.e **$|P'A| \cong |P'B|$**

. i.e. the lines **P'A = P'B** and are both one and the same and they start and end at the same point **P' and P,** respectively.

BUT we've always had a stationary distance separating these lines, <u>'x'</u> which is not changing throughout the process, which is never going to be **0** even when the distanc**e y = ∞.**

=> $0 < x \leq \infty$

=> $\theta \neq 0$, or $\theta > 0$

But θ is 0 at an infinite value for **y** which make rise a Paradox.

Please contact Shimron Alakkal using the below link for any corrections or other opinions
https://www.instagram.com/shimron.alakkal or shimron.alakkal1804@gmail.com