

Some of my friends were discussing the 137 fine line constant described here:

<https://bigthink.com/surprising-science/why-the-number-137-is-one-of-the-greatest-mysteries-in-physics>

$$e^2 = hc/137$$

The 137 is dimensionless.  $e$  is the electron's charge,  $h$  is Planks constant, and  $c$  is speed of light.

While bike riding this morning I did some conversion in my head I will share here.

$E$  energy =  $hf$  where  $f$  is frequency in cycles per second and  $h$  is Planks constant.

so  $h = E/f$  and  $E$  for charge at a point is  $V$  voltage times  $e$  charge.

$$\text{so } h = Ve/f$$

then  $e^2 = Ve/f \text{ times } c = Ve \text{ seconds} / \text{cycle times meters per second}$

$$e^2 = Ve \text{ times wavelength or distance } r \text{ meters.}$$

cancel out the  $e$  and we have

$$e = V r$$

But this is just the formula of

$$Q = CV \text{ for charge and voltage}$$

furthermore the formula  $e = V r$  is the energy in a shell of charge if the  $r$  represents the radius  $r$

so for a sphere with charge  $e$  on it and radius  $r$  the formula is

$$e = 4 \pi \epsilon r V$$

but this is the same formula that we started with  $e^2 = hc/137$

**So we can say that the 137 constant comes from a spherical ball of charge in which the  $e = V r$  holds true.**

**The reason charge is a constant is because as the voltage  $V$  increases the radius of the sphere decreases.**

**This suggests to me that what is warping space is the permittivity as  $V$  increases.**

**The permittivity gradient can describe QED and gravity forces.**

Now all we need to do is find the exact formulas.

It should not be too hard at this point.

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