On the mathematical relation to the structure of particles/ strings

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Abstract: The following pages are to do with Symmetries and decisions. There may be errors in the working, but that is the entire purpose of placing work to be evaluated. The author is not well versed in Noether's theorem but would like to present to, and possibly inspire an experienced physicist.

The decision term µ (from previous papers) may represent some sort of contradiction. That is to vanish or not. From previous papers; defining:

[E – B] {P, I , D , C…. } as the actual metaphysical structure, as an entire abstraction, as the actual structure of mass/ energy, that is the transcendental concept of a particle having logic as it's structure and conversely energy.

N.B The logic (hopefully accounting for validity and soundness) depends on $E = \frac{hc}{x}$.

Results:

Using the Euler – Lagrange equation

$$\frac{dl}{dx} - \left(\frac{d}{dt}\right) dl/dx' = 0$$

(N.B dx' is the coordinate time derivative – an authors problem with Word – Latex would not load. Also d is partial).

We have:

$x(t) \rightarrow x(t) + \quad \mu x(t)$

s.t the small term vanishes for a symmetrical process.??

The author is unsure of the next but assumes to "break" symmetry the R.H.S of the Euler – Lagrange equation is non zero. That is equal to the decision term µ. (see previous papers).

Again defining the generalised Lagrangian operator as:

$$L = [E - B]f$$

Where f is a function.

One proposition is that volumes/ areas x^n are conserved.

For example the area of a rectangle = $x \ f(x)$

Regarding this in the definition of continuity.

$$|x - a| < \boldsymbol{\delta}$$

$$|f(x) - f(a) < \varepsilon$$

Then a useful heuristic may be :

$$|x - a||f(x) - f(a)|$$

Now $[E - B]f$ as the mass energy.

To conserve we have.

$\left(\frac{d}{dx}\right)[E - B] - \left(\frac{d}{dt}\right)\left(\frac{d}{dx\prime}\right)[E - B]$= μx(t)

Where d is partial and dx' time.

To produce a contradiction the R.H.S must vanish. That is symmetry is reconstructed. Now if we define decisions as a conscious process that is a change. Where $C - BC =$ μ.(see next paper)

That is C is awareness and B is again the choice function. Now $B \ C$

Is logic itself (the "right" choice). For complete logic B= I .; But The RHS μx(t) must vanish for symmetry. (this may be the important contradiction).

For a mass m

$$E_k = \ m\, x^{2f^2}$$

(kinetic energy) . And potential energy = kx^2

So to show (or perhaps prove?) that

$$[E-B]m^i x^j f^k = [E-B]f$$

Where f is some function; that is the very structure.

Ignoring anything other than dimension.

$$\frac{[E-B]}{x} - \frac{[E-B]}{tx'}(\quad) = \mu x(t)$$

Where again x' is time derivative.

Rearranging;

$$[E-B] = \frac{v[E-B]}{v} + x\,\mu\,x(t).\ so,$$

$$[E-B] = [E-B] + \mu x^2$$

But potential energy $E_p = kx^2 = \mu x^2$

So multiplying through by ;

$$m^i x^j f^k$$

$$[E-B]m^i x^j f^k = [E-B]m^i x^j f^k + (E_p)m^i x^j f^k$$

Using

$(C - BC)x\text{^}2 = \ E\_p$

Thus

$$\frac{[E-B]m^i\, x^j f^k - [E-B]m^i x^j f^k}{m^i x^j f^k} = \ E_p$$

So this essentially applies [E-B] twice ;

$$\frac{L}{m^i x^j f\text{^}k} = E_p$$

L the lagrangian operator. (the denominator can be chosen suitably N.B E = E(t) and B = b(t) time dependent as is μ = μ(t). St different equations progress in time. Perhaps the same symmetry analysis could be applied but the author is unsure. We may be able to drop a mass term to suit.??

So

$$\frac{L}{x^j\, f^k} = \ \mu\, x^2 m^i x^j f^k$$

Rearranging and using f = 1/t

$$\frac{[E-B]}{x} = \frac{x^j}{t^k}\mu x\, m\frac{x^j}{t^k}$$

Setting suitable j and i

$$= \ mv^2 \mu\, x$$

Using $f(m\, v^2) \rightarrow \ \ f(x)$

That is

$$E\_k = \frac{hc}{x} \rightarrow f(x) \rightarrow \frac{1}{x} = E\_k$$

$$\frac{[E-B]}{x} = \ f(x)\mu x$$

That is

$$f(x) = \ mv^2$$

For a continuous change and perhaps oscillation $-f(x) = f(-x)$

$$\frac{[E-B]}{\delta} = x\, f(x)\varepsilon$$

Here $\mu = \ \varepsilon$

Using again (the author believes permissible?? Duality??)

$$\delta \to 1/x = \frac{1}{E_k} = \frac{hc}{x}$$

$$\frac{[E - B\ ]}{\frac{1}{E_k}} = x\, f(x)\varepsilon$$

But $f(x) = \ \ mv^2$

Using RHS and different infinitesimals to avoid mistakes.

$$[E - B)]E\_k = \ \ x\, mv^2\, \boldsymbol{\delta} = \boldsymbol{x} + \ \mu\boldsymbol{x}$$

$$x\, f(x)\boldsymbol{\delta} = \boldsymbol{x}(\mathbf{1} + \mu)$$

But

$$\delta = \frac{1}{E_k} = \frac{1}{m^i\, x^j f^k}$$

thus

$$\frac{xf(x)}{E_k} = \ \ x + \ \mu x$$

But for symmetry conditions

$$\mu x \to 0$$

thus

$$x\, f(x) = E_k x$$

Using

$$[E - B]E_k = \ \ x + \ \mu x$$

Again

$$\mu x \to 0$$

$$x\ \frac{f(x)}{E} = x$$

Thus

$$[E - B]E_k = E_k x$$

And the structure of a particle is derived. i.e

$$[E - B] = x.$$

There is possibly errors and implications that the author is unaware of. Following this we now look at how energy, decisions and consciousness depend on each other. That is a topic for the next paper.

Conclusion:

The author believes there may be some logical fallacies or perhaps treasure in the above equations. Not being particularily well versed in valid and sound arguments and Noethers theorem the work is entirely speculative, though hopefully enjoyable for the reader. The last few lines of equations are hopefully correct. The term breaking symmetry simply means an extra non – zero term in the Euler – Lagarange equations. The points made may be quite subtle. If we define entropy correctly we can connect the decision process to awareness. This will be expounded in the next paper.

References:

Corben, H.C, Stehle, P. , Classical Mechanics, John Wiley and sons, 2nd edn, 1964.

Wikipedia, Noethers Theroem, Euler – lagrange equations.