ID ZGV-1-04
Title Time - a Virtual 4th Dimension
Stage 2-The Early 3-Sea of Space

Abstract

A virtual 4th D is shown to be present in the model and the gross implications of this are presented. It is suggested that the virtual 4th D forms an “Arrow of Time”.

Assumptions

1. The cooling of the Universe has reach a point where a 3-D sea of motes has formed
2. The motes are still massively pressurised and expanding
3. Much chaos remains

Description

Any mote, set in the 3-D sea, will experience expansion. This expansion will be determined by the pressure disparity across the “skin” of the mote i.e. set by the internal vs. external “environmental” pressure the mote experiences.

Take a notional cube drawn about expanding motes. This can be drawn at a moment t0 and again at t1, a while “later”. The cube will have expanded thus the t1 cube will enclose the t0 cube.

A line of growth can be drawn from the vertices of t0 to t1. This draws the shape of a tesseract; a 4D cube. Although an “experienced passage” - the 4th D is a product of expansion; it is an artefact of process, not a true dimension. It is a virtual 4th D implicit in any expanding Universe (motes being real or no).

The author was investigating electrodynamics within the model and had drawn the t0t1 cube a few times - before realising the obvious implication; this might be a candidate for an arrow of time.

Later work strongly suggests that this is correct; simply as: by making this assumption much that was difficult becomes easy. ZGV adopts this structure (3-space+ 4th virtual) as an Arrow of Time.

Some immediate consequences drop out:

> being virtual, “time” as a linear reality - is a fiction!
> the only incarnate cube is the one existent “now” - the past has ceased, the future is latent
> time is an aspect of space so is as plastic as space
> exterior spacial pressure vs. internal mote pressure determines instantaneous expansion
> a quanta of expansion gives “tempo” - a quanta of time (...interchangeable concepts)
> situations which modify pressure states / relations can be expected to modify tempo

Pros and Cons

No violations of the Standard Model are immediately apparent

The concept of “time” is suggested to be a moment-by-moment experience, not a solid reality
The “river of time” model is suggested to be false
The moment “now” is the only incarnate moment; “now” exists throughout all space simultaneously
The model fits observed reality well - an example

> a fast spaceship experiencing relativistic effects does not “fall behind, into the past” - rather it experiences a slower passage of time. It remains “in the now”

The passage of time is via a plastic tempo, the local instantaneous rate of “gaining age”
Time is seen to be intimately married to space; indeed integral of all tempos > “age” > 3-volume
Time travel becomes impossible - there is no incarnate Universe to visit in the “past” or “future”

Plus, the greatest boon -
Hooray! No more clocks a-ticking and radar signals between spaceships to confound poor undergrads! Begone, vile world-line! ...ahem.

Afterword

We need now but charged particles to start electrodynamics - and the second real contribution of the model - a simple diagrammatic derivation of +g and -g using charge plus the above Arrow of Time.

The impact of this view of time is profound. As the model completes it will be necessary to revisit the early Universe and adjust our view to compensate for the plasticity of tempo.

Example:

The cooling of expansion cools tempo - which slows. Just like space, time has inflated - “same sized chunks” are now “bigger”. That is, the number of tempos which would fit into an arbitrary absolute period drops as the Universe expands. There was “more time” in the past.

Early tempo ticks (quanta of time) were very small (=short), as seen from the present.

As a result most of the early Universe would experience inflation {by then-current tempo} normally, but to our “slowed tempo Universe” early tempos seem very rapid. Re-drawing the rate of expansion of the Universe to present it from “our view” creates an early rapid burst of inflation.

A distant future might view the present time as part of the inflation phase, still with rapid tempo.

This is a big subject with many impacts on cosmology, not just the above.

Note:
1. The model is named after a factor substitution: the net gauge scale (dimensional size) of space to expand in the “zepto” range i.e. about 1 part in 10^21 per second (zero is theoretically important and experimentally seen. A substitution of 0.00000000000000000001 is suggested). This is seen as an average for the entire Universe - and is likely wrong, for it depends on knowing mote density and absolute size of the Universe plus the rate of expansion. It makes for a good title, though.

2. “Gauge invariance” is a term referring to translations and rotations. These are not affected.