Simple solution to the accelerated expansion of the Cosmos.

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Abstract: A short rethink on the whole C as a constant issue.

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Non-Einstein's gravities have a long and varied history. They arise: by the perturbative quantization of 4D Einstein gravity[1] and by the consideration of quantum fields on the background of curved space-time[2] and by addition of other dimensions into the model[3].
What are inflation and dark energy ? These are the two biggest questions in this region that demand an answer. Modified gravity theories are all possible avenues of answering those two critical questions.

The main idea shown by this simple model is in quantum gravity we consider a connection

$$\Gamma$$

and metric

$$g$$

as independent variables. Then using a nonperturbative quantization we assume that

$$\left\langle Q \left| \hat{\Gamma}^2 \right| Q \right\rangle \approx \{\}^2 + B(\phi)$$

and the metric factor

$$\left\langle Q \left| \widehat{\sqrt{-g}} \cdot \hat{g}^{\mu\nu} \right| Q \right\rangle$$

Where the Einstein -Hilbert Lagrangian also has a quantum correction where the simplest is to assume that both quantum corrections are functions of one scalar function

ϕ.

Usually we consider the scalar field as an independent variable one can exclude the scalar field from the Einstein - Hilbert Lagrangian obtaining a F(R)−modified theory. But it is possible due to the narrowing down of the Higg's particle within a metastable region that we must consider the scalar field into the Einstein - Hilbert Lagrangian obtaining a different sort of F(R)−modified theory especially if the Higg's itself can decay over time. Certainly its decay would have implications as far as the dark matter/dark energy issue goes especially since its decay to a lower energy state would uncouple it from the EW scale making it non-radioactive in that region. This also has strong implications in the solution to the ZPF fields own relation when it comes to gravity.

On the surface this seems to imply we should have either functions F(R) for an inflation era and a modern universe acceleration or one but very complicated function for the description both regimes. The first seems too adhoc. But nature seems to be telling us the second is the real truth. Part of the reason I suspect this goes back to not only the current findings on the Higg's itself, but, also to the nature of the ZPF itself. As the universe expands so does the ZPF grow in volume and size. In a smaller universe the average wave length would have been smaller. But, as the Cosmos grows in size that average wave length will get longer and longer. In general then the ZPF is redshifting itself over time which translates for quantum particles as a longer road from point A to point B. Since quantum events actually in the end dictate the process/event flow we call time then in essence time itself must slow down if as we generally assume C remains a constant. If on the other hand C itself is a variable then there might be a mechanism in this where the universe stays on track, so to speak. Already it has been known that C during an inflation era might not have had the same value it has today[4]. That rather implies at least one slow down during our cosmic history. But any method that already assumes C to be a constant since that period faces an interesting observational problem with that assumption when it comes to the red shift of the ZPF. As we look out across the cosmos since at a quantum level distances have become longer as far as path goes and if C stays constant we would see events as taking longer and longer to arrive at our observation point. The only conclusion we are forced to is that things are expanding away from us faster and faster because of the constant in our theory on the velocity of the propagation of those signals, especially since we do not consider the expansion of the ZPF to begin with. If however, C has not slowed down but increases over time we would look at those same events and find that the cosmos was either expanding as expected or slowing down over time. In essence, the biggest evidence we would have for C having changed or the clock in this case would be an accelerated expansion of the cosmos that our best theories could not explain given that assumption of a constant C to begin with. This in turn is exactly what a universe where the Higg's value changes over time due to decay would predict.

References

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