Dear Sabine:

Thank you for paying attention to our new results, and for taking the time to discuss them on your YouTube podcast.

The incredible irony of the reaction to our RSPA paper which demonstrates the instability (and hence non-viability) of the standard model of cosmology, is that leading physicists all over the world are now reading our paper, and the biggest point they strain to make is that this is not physics, its "just mathematics".

I fully understand Physics trying to control the narrative here.

Unfortunately I guess for Physics, what we have done is "physics", and its not a stretch to claim that.

When you repeat their narrative, it makes me think that you are not fully aware of the story, and of what we have accomplished.

First, the referee at RSPA stated unequivocally that this paper was of "fundamental importance to physics". RSPA and everyone involved fully accepted this.

Moreover:

(1). We prove that the Standard Model of Cosmology with Dark Energy, on the largest scale of the theory, is not a viable stable solution of the Einstein equations of General Relativity.

That's Physics. Establishing the instability of a fundamental physical solution is physics.

(2). We proved that an arbitrarily small generic underdense perturbation of the large scale physical model of standard cosmology, symmetric about some center, (generic at the Big Bang itself), would approximate the standard model arbitrarily well at early times, but would introduce accelerations away from the large scale critical Friedmann spacetime at intermediate and late times, because our analysis establishes that every generic underdense perturbation continuously transitions from the flat critical Friedmann spacetime of the standard model at early times, to a $k < 0$ Friedmann spacetime and then to flat Minkowski space as t tends to infinity, due to the instability of the critical Friedmann spacetime at the Big Bang. Moreover, we prove that these generic transitions from critical $k = 0$ to underdense $k < 0$ Friedmann entail a speeding up of the expansion rate which quantitatively mimics the effects of Dark Energy in the sense that they create *precisely the same range* of quadratic corrections to redshift vs luminocity as is created by a positive cosmological constant as it ranges from zero to infinity.

Thus viewing the standard model as an unstable saddle rest point, the magnitude of the underdense perturbation mimics the size of the cosmological constant, and depending on that size, solutions can stay close to the unstable saddle rest point for arbitrarily long times, until eventually the perturbation kicks in like the cosmological constant, creating acceleration by transition from $k = 0$ to $k < 0$, in place of acceleration as the classical energy density drops to the order of magnitude of the cosmological constant. Thus we prove that the instability picture implies quantitatively correct generic accelerations with the character of Dark Energy, without assuming the cosmological constant, while preserving early time physics of the standard model.

Our global analysis establishes that these generic underdense perturbations are globally asymptotically stable, and hence we have a proof that generically, any underdense perturbation converts the unstable standard model, a non-viable solution of Einstein's equations, into a viable asymptotically stable solution of Einstein's equations—thereby providing a physical mechanism whereby the early physics of the standard model is preserved, while at the same time converting the non-viable standard model with Dark Energy, into a viable model which introduces generic accelerations without the need to posit unknown, anti-gravitating Dark Energy.

Establishing which physical corrections to a fundamental physical model will stabilize it and produce new physical effects consistent with physical measurements, is physics.

(3). We show that the simplest and most natural generic perturbation of the standard model, namely, an immeasurably small perturbation generated by a self-similar perturbation of the flat critical Friedmann spacetime at the end of radiation epoch, creates a correspondingly small perturbation at the start of the matter dominated epoch which fully accounts for the Hubble constant and the quadratic correction to redshift vs luminosity implied by the standard model with dark energy at present time, but produces a third order correction, which we calculate, and which differs from the prediction of Dark Energy. The discrepancy between our prediction and the prediction of the standard model with dark energy, although apparently beyond current measurement feasibility, is in the correct direction of errors from dark energy deduced from actual observations.

Making a quantitative prediction, based on a physical correction to a physical model, which produces corrections in the direction of actual observations, is physics.

So I think we should all move on from this painful tired old "stand on your ear-just mathematics" case that physics is trying to make to control the narrative, and spend more time concentrating on what we have actually contributed.

The fact that our proof of instability reduces the standard model to merely an ad hoc model that "fits a lot of the data", and the fact that this has dredged up so many confusions from the Hubble Bubble era about length scales of oscillation due to the fact that cosmologists are now no longer confident about what is actually true, is not a valid criticism of our paper. In fact, the resulting confusion well described in your podcast, actually helps demonstrate the physical importance of our results.

Acknowledging the standard model is not a viable solution of Einstein equations, and glibly accepting it now as an ad hoc model that "fits a lot of the data", we point out that the theory of the Big Bang based on Friedmann spacetimes gets its credibility historically from Hubble's celebrated experiment, which was famous, important and fundamental not because it was an ad hoc model that "fits a lot of the data", but because it purportedly anchors general relativity and the Einstein equations as the intellectual framework that explains the expanding universe of galaxies. Our theory supplies the simplest way to restore that credibility.

Our paper is very readable. I encourage everyone to take a look. The introduction sets out all of these issues very plainly in words.

Again, thanks for engaging this... and as always, I'm happy to hear your reactions.

Sincerely,

Blake Temple
July 20, 2026