Astronomy has not yet factored in all the General Relativity effects in its big bang calculations.

The age of the universe is based on how long light has traveled from the most distant galaxies observed based on their brightness and size. This has been carefully calibrated. However, there is one important concept that has been left out that is central to General Relativity.

The Pound-Rebka experiment proves that time flows more slowly near large masses and faster when away from those masses. By time flowing, we mean how fast clocks run. A clock moves more slowly near a large mass and faster when away.

Consider that the universe has a mass density. If the universe is expanding then the mass density is decreasing over time. As the mass density of the universe drops with time, the clocks run faster and faster everywhere as time progresses. This is in agreement with Pound-Rebka.

So when we look out into the universe we are seeing clocks that were running slower back in time than today due to the expansion of the universe. Time was running slower back then. Our 14 billion year age of the universe calculation is based on our present rate of time flow.

Galaxies are red shifted due to a Doppler effect or stretched wavelengths due to inflation. Suppose red shifting is also due to our speeding up of time flow making an additional red shifting. Two mechanisms cause red shifting. We can't tell how much red shifting is due to Doppler and how much is due to our clocks running faster as the universe ages.

Let's do a mental experiment. Suppose today we say the universe has a radius of 14 billion light years. Performing the measurement a billion years ago might have calculated the radius to be 13.5 billion light years. Two billion years the observed radius might have been 13 billion light years. If you go backwards in time and the change in the universe radius is less than our change in time you will never reach t=0 big bang time. The universe may be very very old, possibly infinite in age. If this calculation goes backwards in time to infinity there would be no big bang.

This has implications. The universe may be much larger and older than what we see. The universe inflation may be exceeding the speed of light at the boundary of what we can see. General Relativity shows us that objects moving away from us as they approach nearly the speed of light can only be seen at a given distance into the past. However, if we were in a space ship moving near the speed of light we could see farther back in time in our direction of travel and new galaxies would appear. Behind us we see distant galaxies disappear. This shows there was no "edge" to the universe that we had imagined. The galaxies were already there and our motion did not create them or remove them. These relativity concepts have not yet been applied. To do the math correction on the universe's age, we have to identify how much of the red shifting is due to velocity of expansion of the universe and how much to the rate of time flow increasing as the universe expands.

The universe is likely much older than 14 billion years and much larger than what we can see. There is likely no such thing as an outer edge of the universe and possibly no big bang ever occurred. This could explain how distant galaxies are observed to be much older.

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