

Offered Title: Is The Universe Infinite?

Before we get into the topic, I want to introduce a new feature I propose for this space. I call it Ask an Astronomer. Email your astronomical question to me, and I will pass it on to our club members for response in this column.

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Short answer, we don't know.

To me it seems given that if it had a beginning, The Big Bang, it is not infinite. But wait, there's more. The Big Bang could simply have been a manifestation of existing conditions. We might be one bubble among an infinite number of bubbles. The universe might be an infinite expanse and our universe just a wee bit of stuff.

OK, enough, let's look at what we know.

We understand our universe is expanding and the expansion is accelerating. This has been measured and verified by numerous groups. If, and this we cannot predict, our universe continues its expansion, we appear to be in a "flat" universe. What does a flat universe mean to us? It means our universe will obey Euclidean geometry such as parallel lines never intersect. If the expansion continues indefinitely is that infinity? Everything will eventually become an island with nothing close enough to detect. A very lonely existence. This cannot tell us if our universe is finite or infinite.

We have the "observable" universe. That is, how far from Earth can things be detected? Best measurements have given us 13.8 billion light years. That's using our best and only measuring stick, the electromagnetic spectrum. But our universe isn't static, it's expanding and apparently had an explosive expansion early on, so that has to be included. Best estimates of expansion add another 32.7 billion light years, that's a lot of expansion! So, it appears the farthest things we can detect are 46.5 billion light years away in all directions. Then our universe is around 93 billion light years across. Just remember, this is what we can detect with current tools. Everything we can detect in the electromagnetic spectrum makes up less than 5% of what's out there! It cannot confirm a finite or infinite universe.

So much for what we know, how about theories and hypotheses?

There's the "multiverse". This hypothesis has been around in various forms since Sir Isaac Newton. The main tenant is that of many or perhaps infinite "universes" outside our own. The only difficulty is we have no reliable tools to search for another universe. Investigators are using WMAP data to look for evidence of interaction or impact between us and another universe. So far, no hits.

An interesting thought to wrap up.

If the universe is infinite it allows for infinite versions of the Milky Way, solar system, Earth, Eric, and so on. Rod Serling, where are you?

What's in the Sky?

May 20; Dusk; West: Venus is less than 1 degree to the right of open star cluster M35 in Gemini. Use binoculars.