

Friedmann's million
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Friedmann's model showed that the galaxies move away from one another. The universe can be compared to a balloon painted with spots. If the balloon is steadily blown up, the distance between the spots will grow. More the distance means faster movement. No spot can be pinpointed as the center of expansion.

The farther apart the spots, the faster they will be moving. But the question is, will contraction begin for the universe in the future or will its expansion continue? The current expansion rate can be derived from the velocities at which other galaxies are moving away. However, their distances can only be measured indirectly. This brings us to the assumption that the universe expands between 5 to 10 percent every thousand million years.

Furthermore, the total mass of the stars is extremely less than the required amount to halt the expansion. Therefore, evidence suggests that the universe will continue to expand forever. And, if it's progressing towards recollapse, it won't happen for at least another 10, 000, 000, 000 years. The most successful theory of the origin of the universe is the big bang. It assumes that distance between neighboring galaxies must have been zero.

The density of the universe and the curvature of space-time would have been infinite. Within a big bang, there is a singularity which means that all laws of science would break down. This is based on the assumption that space-time is smooth and almost flat. That is why all predictability fails at the big bang.

Any event before the big bang will be nullified. They have no consequences and they can be cut off the scientific model of the universe. Time, therefore, begins at the big bang.

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Another theory called steady state attempted to disprove the big bang. It claims that as galaxies move away, new ones are being formed in between. And, that the new galaxies were created from new matter that is being developed. But, the discovery of the microwave radiation by Penzias and Wilson invalidates it. Therefore, the steady state theory should be abandoned. Roger Penrose proposed the existence of black hole in 1965.

He thought that a star collapsing under its own gravity may be trapped in a region. This void has a surface and volume that eventually shrinks to zero. The collapsed star will eventually form a