

What is the shape of the Universe?

One of the profound insights of General Relativity was the conclusion of ^{the} fact that mass caused space to be curved.

If it is curved it could have three possible shapes:

(1) If universe has negative curvature, it means it does not ^{have} enough mass that will stop the expansion of universe. This is open universe.

(2) If universe has zero curvature i.e. flat, it means it has sufficient mass to ~~to~~ stop the expansion of universe but with in infinite time.

(3) If universe has positive curvature i.e. sphere, it means it has sufficient mass that will stop expansion of universe within finite time.

Boomerang and Microwave Cosmic Radiation results and Supernova observations have shown that universe contains exact amount of mass that will stop it from expanding. Since universe is expanding at faster rate it suggests that shape of universe is flat.

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Q: Will the universe start expanding?

Universe had been expanding since its origin (13.8 billion years ago).

Big Bang theory explains how singularity matter and energy in it in an undifferentiated manner. But later singularity started expanding.

Hubble's law:

Galaxies are moving away from each other at a receding speed which is proportional to the distance between their

portant

centres as evidenced by red shift.^{??}

Future of the Universe:

Researchers have found that universe has been expanding at faster rate.

Dark energy:

Repulsive force that mysteriously seems to cause universe expand at faster rate.

But this Dark energy is decaying simultaneously. Within 100 Million years, universe will grind to a small point. Thus, it would shrink.