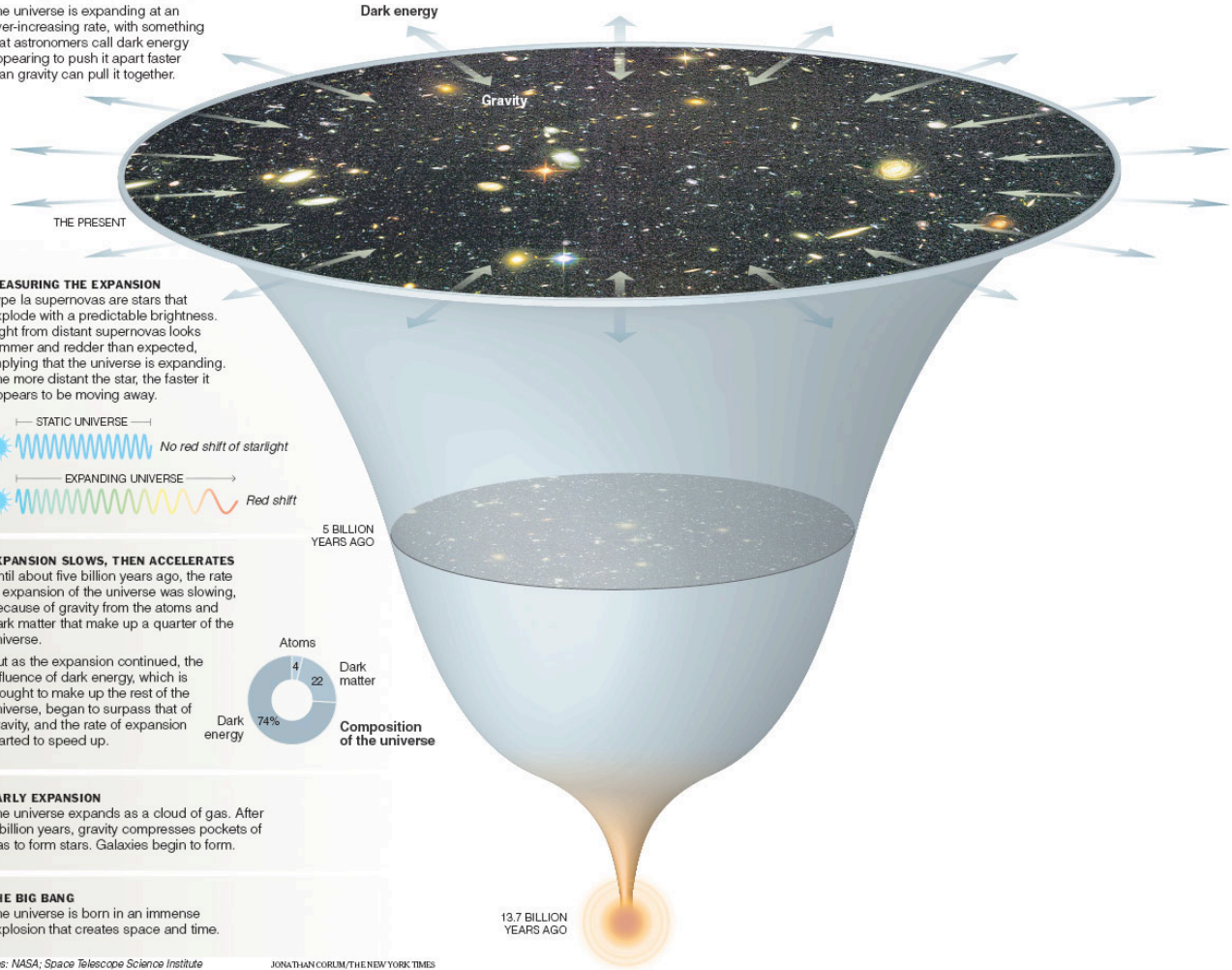


The New York Times

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### Driving Galaxies Apart

The universe is expanding at an ever-increasing rate, with something that astronomers call dark energy appearing to push it apart faster than gravity can pull it together.



#### MEASURING THE EXPANSION

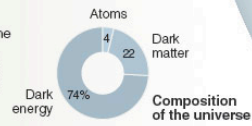
Type Ia supernovas are stars that explode with a predictable brightness. Light from distant supernovas looks dimmer and redder than expected, implying that the universe is expanding. The more distant the star, the faster it appears to be moving away.



#### EXPANSION SLOWS, THEN ACCELERATES

Until about five billion years ago, the rate of expansion of the universe was slowing, because of gravity from the atoms and dark matter that make up a quarter of the universe.

But as the expansion continued, the influence of dark energy, which is thought to make up the rest of the universe, began to surpass that of gravity, and the rate of expansion started to speed up.



#### EARLY EXPANSION

The universe expands as a cloud of gas. After a billion years, gravity compresses pockets of gas to form stars. Galaxies begin to form.

#### THE BIG BANG

The universe is born in an immense explosion that creates space and time.

Sources: NASA; Space Telescope Science Institute

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