

12.2: Hubble's Law Origins

Hubble's Law Origins

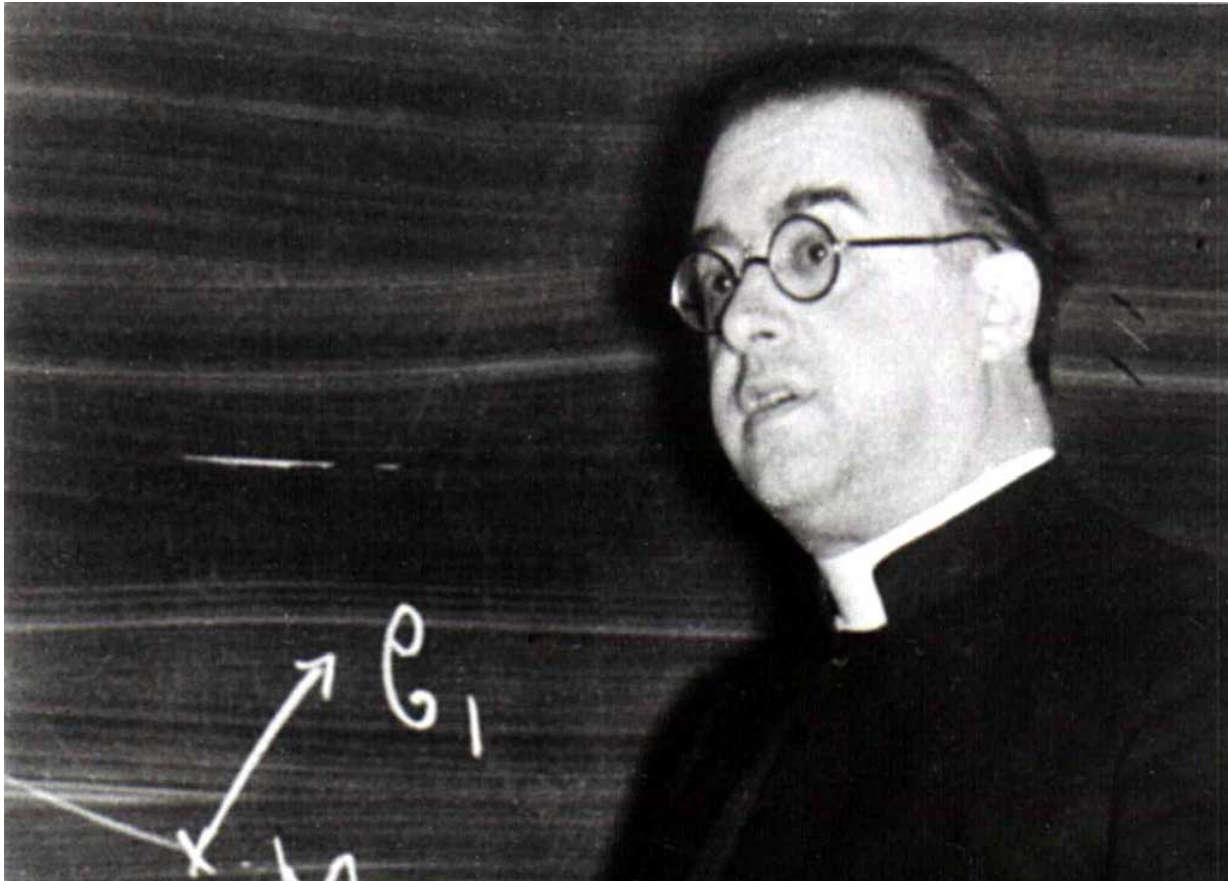
Hubble's Law is a proportional relationship between a galaxy's distance and that galaxy's receding velocity. This relationship between an object's distance and the velocity it is moving away is a direct observation of the expansion of the observable Universe. Hubble's Law infers that a galaxy that is moving away from an observer twice as fast as another galaxy is twice as far away.

Before Hubble and the early work on modern cosmology, there was much discussion about the size and shape of the Universe. And, questions such as a finite or infinite Universe were often discussed. In 1920, two American astronomers, Harlow Shapley and Heber Curtis, debated over the size of the Universe issue. Shapley thought the Universe was small, about the size of a spiral galaxy. Curtis argued that the Universe was much, much larger. In a few short years after the famous Curtis-Shapley debate, ideas put forth and data collected would begin to resolve these questions.

Even though Hubble's Law is named after American astronomer Edwin Hubble, others worked on this cosmological concept and relationship before Hubble. In 1922, Alexander Friedmann, a Russian physicist, postulated through a set of equations that the Universe might be expanding, and if so, the equations he developed could explain that expansion. In 1927, Father Georges Lemaître, a Catholic Belgian Priest, proposed the theory that the Universe was expanding and not simply set into place. He also hypothesized the rate at which the Universe is expanding. Lemaître was also responsible for the initial concepts of the Big Bang theory. He drew his work from Einstein's Law of General Relativity. His 1927 paper was entitled *Un Univers homogène de masse constante et de rayon croissant rendant compte de la vitesse radiale des nébuleuses extragalactiques* (A homogeneous Universe of constant mass and growing radius accounting for the radial velocity of extragalactic nebulae). The problem was that few scientists outside of Belgium read Lemaître's paper.

Lemaître was the first to propose that the expansion of the Universe explains the spectral redshifts being observed in galaxies. There are many who believe Hubble's Law should be called Lemaître's Law.

In addition to being a Catholic priest, Lemaître was an astronomer and professor of physics at the Catholic University of Leuven, Belgium.





Georges Lemaître, Belgian priest, astronomer and professor of physics at the Catholic University of LeuvenLemaître by huidig is in the [Public Domain](#)

This page titled [12.2: Hubble's Law Origins](#) is shared under a [CC BY 4.0](#) license and was authored, remixed, and/or curated by [Lumen Learning](#).