



Lemaître and Hubble: What was discovered - if any - in 1927-29?

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The Big Bang predicted theoretically by Friedmann could not be discovered in the 1920th, since global cosmological distances (more than 300-1000 Mpc) were not available for observations at that time. In 1927-29, Lemaître and Hubble studied receding motions of galaxies at local distances of less than 20-30 Mpc and found that the motions followed the (nearly) linear velocity-distance relation, known now as Hubble's law. For decades, the real nature of this phenomenon has remained a mystery, in Sandage's words. After the discovery of dark energy, it was suggested that the dynamics of local expansion flows is dominated by omnipresent dark energy, and it is the dark energy antigravity that is able to introduce the linear velocity-distance relation to the flows. It implies that Hubble's law observed at local distances was in fact the first observational manifestation of dark energy. If this is the case, the commonly accepted criteria of scientific discovery lead to the conclusion: In 1927, Lemaître discovered dark energy and Hubble confirmed this in 1929.

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