

# THIRTHIETH GENERAL ASSEMBLY

## RESOLUTIONS PRESENTED TO THE XXXth GENERAL ASSEMBLY

### RESOLUTION B4

#### on a suggested renaming of the Hubble Law

*Proposed by the IAU Executive Committee*

The XXX General Assembly of the International Astronomical Union,

**considering**

1. that the discovery of the apparent recession of the galaxies, which is usually referred to as the “Hubble law”, is one of the major milestones in the development of the science of Astronomy during the last 100 years and can be considered one of the founding pillars of modern Cosmology;
2. that the Belgian astronomer Georges Lemaître, in 1927 published (in French) the paper entitled “*Un Univers homogène de masse constante et de rayon croissant rendant compte de la vitesse radiale des nébuleuses extra-galactiques*” [1]. In this he first rediscovers Friedman’s dynamic solution to Einstein’s general relativity equations that describes an expanding universe. He also derives that the expansion of the universe implies the spectra of distant galaxies are redshifted by an amount proportional to their distance. Finally he uses published data on the velocities and photometric distances of galaxies to derive the rate of expansion of the universe (assuming the linear relation he had found on theoretical grounds);
3. that, at the time of publication, the limited popularity of the Journal in which Lemaître’s paper appeared and the language used made his remarkable discovery largely unperceived by the astronomical community;
4. that both Georges Lemaître and the American astronomer Edwin Hubble attended the 3rd IAU General Assembly in Leiden in July 1928 and exchanged views [2] about the relevance of the redshift vs distance observational data of the extragalactic nebulae to the emerging evolutionary model of the universe;
5. that Edwin Hubble, in 1929 published the paper entitled “*A Relation between Distance and Radial Velocity among Extra-Galactic Nebulae*” [3] in which he proposed and derived the linear distance-velocity relation for galaxies, ultimately including new velocity data

in his 1931 paper with Humason [4]. Soon after the publication of his papers, the cosmic expansion became universally known as the “Hubble law”;

6. that, in 1931, on invitation by the Journal Monthly Notices of the Royal Astronomical Society, G. Lemaître translated in English his original 1927 paper [5], deliberately omitting the section in which he derived the rate of expansion because he “did not find advisable to reprint the [his] provisional discussion of radial velocities which is clearly of no actual interest, and also the geometrical note, which could be replaced by a small bibliography of ancient and new papers on the subject” [6];

#### **desiring**

7. to pay tribute to both Georges Lemaître and Edwin Hubble for their fundamental contributions to the development of modern cosmology;

8. to honour the intellectual integrity of Georges Lemaître that made him value more the progress of science rather than his own visibility;

9. to highlight the role of the IAU General Assemblies in fostering exchanges of views and international discussions;

10. to inform the future scientific discourses with historical facts;

#### **resolves**

11. to recommend that from now on the expansion of the universe be referred to as the “Hubble-Lemaître law”.

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[1] Annales de la Société Scientifique de Bruxelles, A47, p. 49-59 (1927)

[2] Humason (<https://www.aip.org/history-programs/niels-bohr-library/oral-histories/4686>), as reported by Sidney van den Bergh, 2011, JRASC, Vol. 105, p. 197

[3] Proceedings of the National Academy of Science, USA, 15, 168 (1929)

[4] “The velocity-distance relation among extra-galactic nebulae”, Astrophysical Journal, Vol 74, pages 43-80 (1931)

[5] Monthly Notices of the Royal Astronomical Society, Vol. 91, pages 483-490 (1931)

[6] Letter by G. Lemaître to Dr. Smart quoted by Mario Livio, Nature, Vol 479, pages 171-173 (2011)

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