The concept of mass and the cosmological Hubble tension

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Abstract

The standard cosmological model with cosmological constant can not explain the discrepancy between the value for the Hubble constant obtained studying the early microwave background: $H_0 = 67.4\, Km/sec/Mpc$, and the one obtained studying the more recent supernovae: in the range $70 \leq H_0 \leq 76$. Using a recent revision of the concept of gravitational mass [1] , that introduces a time dependent gravitational mass, we can explain the H_0-discrepancy and interpret both, dark matter and dark energy, in terms of the revised gravitational mass: the dark matter is considered as the gravitational mass acquired by the particles (" first stars") that collapsed to form the galaxies, and dark energy as the gravitational mass acquired by the galaxies from their beginning until the present epoch. The last one tends to a constant, at the present epoch, that we consider as the meaning of the cosmological constant: the limit value of the galactic gravitational mass.

References

[1] Miguel Portilla. Inertial and Gravitational Mass in General Relativity and Their Cosmological Consequences. *Journal of Modern Physics*, Volume(12):1729 -1748, Year 2021.

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