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Viscous universe models and the Hubble tension

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The ΛCDM model is well known and widely accepted in cosmology because of its capability to effectively describe the observed phenomena at large scales. Examples of this is the explanation of the accelerated expansion and the abundance of the primordial light elements. However, with the improvement of astronomical data, a significant tension for the current Hubble parameter has been consolidating. This tension, which is nowadays around 5 σ, raises when comparing the data obtained from SH0ES, in the local universe, and the data from PLANCK, in the cosmic microwave background, the latter being based on the ΛCDM model. Having in mind the possible dismissal of the Hubble tension as due to systematic errors, it is plausible to follow a line of research in the search of new cosmological models that replace the current paradigm. In the search for the solution to this tension, diverse cosmological models have been proposed in the latest years; among these, the viscous cosmological model that describes the dark matter as a viscous fluid. The purpose of this work is to study a pair of phenomenologically-distinct viscous universe models and evaluate if they can ameliorate the Hubble tension. To this end, computational tools like CLASS and MontePython will be used to infer the different free parameters that characterize the models; the latter is possible thanks to a Bayesian statistical analysis in the light of the observations from supernovas and the cosmic microwave background.

Authors: MORENO DIAZ, David Ricardo (Universidad Industrial de Santander); ORJUELA-QUINTANA, JOHN BAYRON (UNIVERSIDAD DEL VALLE); RODRÍGUEZ GARCÍA, Yeinzon

Presenter: MORENO DIAZ, David Ricardo (Universidad Industrial de Santander)