Contribution ID: **98** Type: **Talk**

A nontrivial footprint of standard cosmology in the future observations of low-frequency gravitational waves

Wednesday 31 August 2022 16:10 (20 minutes)

Recent research shows that the cosmological components of the Universe should influence on the propagation of GravitationalWaves (GWs) and even it has been proposed a new way to measure the cosmological constant using Pulsar Timing Arrays (PTAs). However, these results have considered very particular cases (e.g. a de Sitter Universe or a mixing with non-relativistic matter). In this work we propose an extension of these results, using the Hubble constant as the natural parameter that includes all the cosmological information and studying its effect on the propagation of GWs. Using linearized gravity we considered a mixture of perfect fluids permeating the spacetime and studied the propagation of GWs within the context of the CDM model.
We found from numerical simulations that the timing residual of local pulsars should present a distinguishable peak depending on the local value of the Hubble constant. As a consequence, when assuming the standardCDM model, our result predicts that the region of maximum timing residual is determined by the redshift of the source. This framework represents an alternative test for the standard cosmological model, and it can be used to facilitate the measurements of gravitational waves by ongoing PTAs projects.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

No

Details

N/A

Internet talk

Yes

Authors: ALFARO, JORGE (Pontificia Universidad Católica de Chile); Mr GAMONAL, Mauricio (Pontificia Universidad Católica de Chile)

Presenter: ALFARO, JORGE (Pontificia Universidad Católica de Chile)

Session Classification: Workshop on Astro-Cosmo-Gravity