Contribution ID: **97** Type: **Talk**

Very Special Linear Gravity: A Gauge-Invariant Graviton Mass

Tuesday 6 September 2022 16:30 (20 minutes)

Linearized gravity in the Very Special Relativity (VSR) framework is considered. We prove that this theory allows for a non-zero graviton mass m_g without breaking gauge invariance nor modifying the relativistic dispersion relation. We find the analytic solution for the new equations of motion in our gauge choice, verifying as expected the existence of only two physical degrees of freedom. Finally, through the geodesic deviation equation, we confront some results for classic gravitational waves (GW) with the VSR ones: we see that the ratios between VSR effects and classical ones are proportional to $(m_g/E)^2$, E being the energy of a graviton in the GW.For GW detectable by the interferometers LIGO and VIRGO this ratio is at most 10^{-20}. For GW in the lower frequency range of future detectors, like LISA, the ratio increases signficantly to 10^{-10}, that combined with the anisotropic nature of VSR phenomena may lead to observable effects.

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

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Session Classification: Cosmology, Astrophysics, Gravity, Mathematical Physics