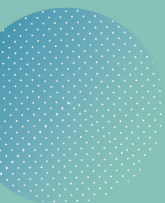




INSTITUTO DE FÍSICA  
DE PARTÍCULAS Y DEL COSMOS

IPARCOS



Preprint Series in Particles and Cosmos Physics

n° IPARCOS-UCM-23-012

# Graviton-photon oscillation in a cosmic background for a general theory of gravity

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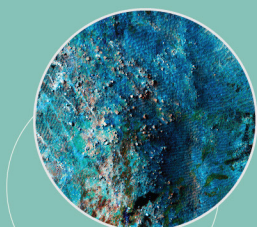
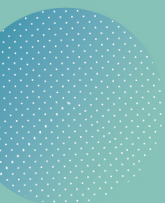
February 2023

Plaza de las Ciencias, 1 28040 Madrid, Spain

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## Abstract

Graviton-photon oscillation is the conversion of gravitational waves to electromagnetic waves and vice versa in the presence of a background electromagnetic field. We investigate this phenomenon in a cosmological scenario considering a background cosmic magnetic field and assuming different gravitational frameworks. We obtain the damping term that characterizes the attenuation of the conversion probability in cosmological backgrounds. This is a general feature that is present even for standard General Relativity. Furthermore, we show that the effects of decoherence, which are due to the interaction with the cosmological expansion and with the additional degrees of freedom of alternative theories of gravity, can be relevant to the phenomenon of graviton-photon mixing.

