



Contribution ID: 110

Type: **Talk in a parallel session**

## The Physics on a Gravitational Wave Background

*Tuesday, 9 July 2024 17:55 (15 minutes)*

It is a fact that the universe lives on a gravitational wave background (GWB). In this talk we start from this hypothesis. Due to the GWB, space-time is fluctuating in such a way that it locally resembles a lake with small waves and therefore quantum particles cannot follow geodesic trajectories, but rather follow stochastic trajectories. In the present talk, we begin by adding a stochastic term to the trajectories of quantum particles and derive the corresponding field equations of a quantum particle. Surprisingly we arrive at the Klein-Gordon equation in curved space-time. Since in the proper limit this equation reduces to a Schrödinger equation, this leads to the following relevant result: the Schrödinger equation can be a direct consequence of the fact that the universe lives in a GWB

**Primary authors:** MATOS, Tonatiuh (Centro de Investigación y de Estudios Avanzados del IPN); Dr ESCOBAR-AGUILAR, Eric S. (Departamento de Física, Universidad Autónoma Metropolitana Iztapalapa)

**Presenter:** Dr ESCOBAR-AGUILAR, Eric S. (Departamento de Física, Universidad Autónoma Metropolitana Iztapalapa)

**Session Classification:** Quantum gravity phenomenology

**Track Classification:** Quantum Gravity (QG): Quantum gravity phenomenology