## Seventeenth Marcel Grossmann Meeting



Contribution ID: 510

Type: Talk in a parallel session

## Constraints on quantum spacetime-induced decoherence from neutrino oscillations

Tuesday, 9 July 2024 15:45 (15 minutes)

We investigate the implications of decoherence induced by quantum spacetime properties on neutrino oscillation phenomena. We develop a general formalism where the evolution of neutrinos is governed by a Lindblad-type equation and we compute the oscillation damping factor for various models that have been proposed in the literature. Furthermore, we discuss the sensitivity to these effects of different types of neutrino oscillation experiments, encompassing astrophysical, atmospheric, solar, and reactor neutrino experiments. By using neutrino oscillation data from long-baseline reactors and atmospheric neutrino observations, we establish stringent constraints on the energy scale governing the strength of the decoherence induced by stochastic metric fluctuations.

Primary authors: Dr GUBITOSI, Giulia (University of Naples Federico II); D'ESPOSITO, Vittorio (University

of Naples Federico II)

**Presenter:** D'ESPOSITO, Vittorio (University of Naples Federico II) **Session Classification:** Quantum gravity phenomenology

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