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Neutrino Oscillations as a Gravitational Wave Detector?

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Gravitational Waves (GWs) can alter the neutrino propagation distance and thus affect neutrino oscillations. This can result in a complete disappearance of the oscillatory behavior that competes with other sources of neutrino decoherence. We develop a set of criteria that determines under which conditions neutrino oscillations are sensitive to this effect, and discuss three concrete scenarios for neutrinos from astrophysical sources. We find that neutrino oscillations may probe so far unexplored regions of the GW parameter space.

Primary authors: Mr HELLMANN, Dominik (Technische Universität Dortmund); PAES, Heinrich (TU Dortmund); TABET, Mustafa; KRIEG, Sara

Presenter: KRIEG, Sara

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