UNIVERSITÀ
DI PARMA

DEPARTMENT OF MATHEMATICAL,
PHYSICAL AND COMPUTER SCIENCES

Avviso di seminario

Giovedì 25 gennaio 2024, ore 11:30 Aula Newton

## *Utilizing the causal spectrum of gravitational waves: implications for Pulsar Timing Arrays*

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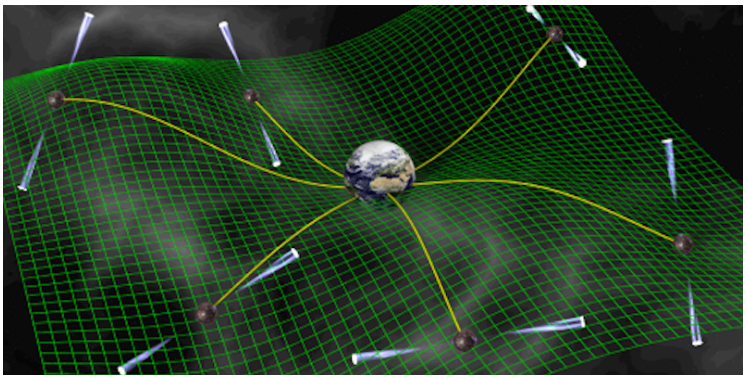
The low-frequency part of a primordial gravitational wave spectrum generated by local physics in a wide class of phenomena (such as a phase transition), is largely fixed by causality, offering a clean window into the early Universe. The physics of low-frequency modes allows to probe in a model-independent way the Hubble rate at the time of GW production, the equation-of-state of the Universe at subsequent times and the presence of free-streaming particles at primordial epochs. I will highlight the importance of these considerations for the GW background recently measured at Pulsar Timing Arrays, where the Standard Model has an unavoidable and distinctive effect on a primordial GW signal.



*Credits: D. Champion/Max Planck Institute for Radio Astronomy*

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