



Contribution ID: 73

Type: **Oral presentation**

Gravitational Waves signatures from non-trivial realisations of the Cosmological Principle

Thursday 19 June 2025 14:30 (30 minutes)

The Cosmological Principle is one of the pillars of the standard model of cosmology and it is commonly realised in a trivial way with homogeneous $SO(3)$ -scalars. I will discuss several scenarios where the matter sector realises the Cosmological Principle in a non-trivial manner by resorting to combinations of spacetime and internal symmetries. A natural consequence of some of these scenarios is the appearance of a second helicity-2 mode in the cosmological perturbations that produces oscillations of gravitational waves with distinctive signatures.

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