



Contribution ID: 553

Type: **Invited talk in a parallel session**

## **Some ramifications from the choice of clocks in canonical classical and quantum cosmology**

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

To address the problem of time in canonical quantum gravity, one strategy is to use relational observables which results in the use of reference fields or clocks. We explore various ramifications of these clocks in the classical as well as quantum setting. First we show the way the choice of clocks is tied to gauge fixing and gauge invariant variables in the classical cosmological perturbation theory. Second, we discuss the way choice of clocks influences the loop quantization of inflationary spacetimes. Our results point to various subtleties in the use of the reference fields both in the classical and quantum theory.

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**Session Classification:** Navigating science and philosophy: exploring limits

**Track Classification:** History of Relativity (HR): Navigating science and philosophy: exploring limits