

# Seminar

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## **Inconsistency of an inflationary sector coupled only (minimally) to gravity**

The inflationary sector might very well have no direct couplings to other species, apart from inevitable gravitational interactions. In the context of General Relativity, a thermal universe can still emerge after inflation if i) a radiation sector is excited towards the end of inflation, and ii) the equation of state after inflation becomes sufficiently stiff  $w > 1/3$ . In such circumstances, the inflationary background of gravitational waves (GWs) is significantly enhanced, making this signal (potentially) observable by GW detectors. I will discuss first how LIGO and LISA could measure this signal, probing in this way the expansion rate of the early Universe. Secondly, I will show that the very same enhancement of the GW signal leads however to an inconsistency of the scenario, violating standard bounds on stochastic backgrounds of GWs. Finally, I will show that the very existence of the Standard Model Higgs can actually save the day, by simply requiring the Higgs to be non-minimally coupled to gravity.

**Donnerstag, 17.09.2020, 14:15 Uhr**  
**Ort: in cyberspace (zoom meeting)**