



Contribution ID: 33

Type: **Parallel Talk**

## CMB hotspots from tachyonic instability of the Higgs potential

*Thursday 13 June 2024 17:30 (20 minutes)*

At high energies, such as during inflation, the quartic coupling of the Standard Model (SM) Higgs potential runs negative, according to current measurements. This can lead the potential into a tachyonic regime, where the square of the mass of the SM Higgs becomes negative. This tachyonic instability can exponentially enhance Higgs particle production via Hubble-induced effects and via the dynamics of the Higgs field itself. Furthermore the enhanced Higgs particle production can draw energy out of the Higgs field and produce stabilizing thermal corrections.

The early produced Higgs particles would then modify the curvature perturbations of the early universe which in turn can cause hot or cold spots on the cosmic microwave background (CMB).

The aim of our work is to look into this enhanced Higgs particle production and calculate the temperature of the CMB hotspots, as well as looking into CMB hotspots from other sources such as primordial black holes.

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**Session Classification:** Cosmology and modified gravity

**Track Classification:** Cosmology and modified gravity