Contribution ID: **52** Type: **not specified**

Composite Hybrid Inflation

Thursday, May 22, 2025 11:55 AM (30 minutes)

I will describe a model of hybrid inflation coming from a general composite theory. Starting from an effective chiral Lagrangian with a dilaton and pions, we identify inflation occurring during the walking dynamics of the theory. A Z2 symmetry-breaking term in the pion sector induces a shift in the inflaton's trajectory, which leads to a tachyonic instability phase. Curvature perturbations grow exponentially, producing copious primordial black holes and a stochastic gravitational wave background. We show that the primordial black hole mass and the gravitational wave frequency is strongly restricted by the anomalous dimension values, with larger anomalous dimensions giving lighter primordial black holes, and higher frequency gravitational waves. Future gravitational wave observatories are within the reach of probing associated signatures.

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Session Classification: Fixed Point & Compositeness

Track Classification: Fixed Point & Compositeness