



Contribution ID: 17

Type: **not specified**

Chiral Gravitational Waves and Primordial Black Holes in Axion Inflation

Wednesday 7 October 2020 16:00 (25 minutes)

We consider an UV-protected Natural Inflation scenario involving Chern-Simons-like interactions between the inflaton and some beyond the Standard Model gauge fields. The accelerated expansion of the Universe is supported by a combination of a gravitationally-enhanced friction sensitive to the scale of inflation and quantum friction effects associated with the explosive production of gauge fluctuations.

The synergy of these two velocity-restraining mechanisms allows for: *i*) Natural Inflation potentials involving only sub-Planckian coupling constants, *ii*) the generation of a dark matter component in the form of primordial black holes, and *iii*) a potentially observable background of chiral gravitational waves at small scales.

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Session Classification: MOCa