



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 4101

Type: **Invited Speaker** / **Conférencier(ère) invité(e)**

Cosmological collider vs particle scanner: primordial features as early universe scenario discriminator and signs of new particles

Wednesday 29 May 2024 08:15 (30 minutes)

Precision cosmology has allowed us to learn a great deal about the very early universe through correlations in the primordial fluctuations. New data will abound in the next decade, from which we forecast the potential appearance of features in the correlations that could be due to new high-energy particles, otherwise inaccessible in particle accelerators on Earth. Moreover, the distinctive form of these features could inform us about the evolution of the very early universe, e.g., whether it was inflating or contracting before a bounce. Hardly any other single observable could properly distinguish whole scenarios in a model-independent way. Discriminating evidence for the paradigm (inflation) or an alternative (such as a bounce) would significantly advance our knowledge of primordial cosmology and high-energy physics. This talk will review the latest developments of this program.

Keyword-1

Primordial cosmology

Keyword-2

Inflation and its alternatives

Keyword-3

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Session Classification: (DTP/DNP) W1-1 Astrophysics | Astrophysique (DPT/DPN)

Track Classification: Technical Sessions / Sessions techniques: Theoretical Physics / Physique théorique (DTP-DPT)