



Contribution ID: 634

Type: **Parallel session talk**

Freeze-In during Reheating and Inflationary Constraints

Wednesday 23 August 2023 17:50 (20 minutes)

Models of freeze-in Dark Matter (DM) have emerged as a compelling explanation for the absence of a signal in direct detection experiments. In these models, DM is generated through the decay of a feebly coupled parent particle. If the parent carries a gauged charge, it can be potentially detected in long-lived particle searches (LLPs). Moreover, in this framework, DM production predominantly occurs at temperatures around the mass of the parent particle. Therefore, the phase of inflationary reheating becomes crucial in determining the relic density, when the reheating temperature is comparable to the parent's mass. We investigate scenarios of bosonic and fermionic reheating with power-law potentials and point out the implications for interpreting collider limits. Additionally, we emphasize the interplay between cosmological constraints on the reheating temperature, dependent on the specific inflationary model, can provide a probe of freeze-in parameter space complementary to collider searches. This interplay could also offer valuable insights into the dynamics of inflationary reheating in case of a LLP signal.

Collaboration / Activity

None

Primary authors: COPELLO, Emanuele (Johannes Gutenberg Universität Mainz); Prof. HARZ, Julia (Johannes Gutenberg Universität Mainz); BECKER, Mathias (Johannes Gutenberg Universität Mainz); Dr XU, Yong (Johannes Gutenberg Universität Mainz); LANG, Jonas (Technische Universität München)

Presenter: BECKER, Mathias (Johannes Gutenberg Universität Mainz)

Session Classification: T02 Gravitation and Cosmology

Track Classification: Gravitation and Cosmology