

# Sequential Freeze-in: A Tale of Two Scalars

*Monday, September 22, 2025 11:30 AM (30 minutes)*

The process of thermal dark matter production can be significantly more complex and richer than is usually assumed. In this talk I will discuss some of the recent progress in understanding the impact of non-equilibrium effects on multi-component freeze-in. In particular, I will present a sequential freeze-in realisation for a simple model of scalar dark matter coupled to the visible sector through a Higgs portal. Although its freeze-in origin, dark matter in this scenario can be within reach of indirect detection experiments and simultaneously the scalar mediator can be probed in forward physics searches. Finally, consequences of performing the calculation taking into account non-equilibrium distributions will be highlighted.

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