

Probing thermal freeze-out with searches for dijet resonances at LHC and 100 TeV

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A new Z' boson with couplings to quarks and dark matter offers an intriguing possibility for setting the dark matter relic abundance via thermal freeze-out. Hadron colliders are a promising tool for probing this set-up using searches for dijet resonances. Nevertheless, there are various ways to hide the new mediator: the Z' could couple so strongly to dark matter that it decays almost always invisibly, the width of the Z' could be so large that it is not easily recognizable as a resonance or dark matter annihilation in the early Universe could proceed with a large resonant enhancement and rather small couplings. In my talk I will explore these possibilities and discuss whether they can be constrained by the LHC or a 100 TeV collider. I will show that a Z' with a broad width is already tightly constrained, while a 100 TeV collider can make significant progress even for small couplings and narrow resonances.

Summary

Primary author: KAHLHOEFER, Felix (DESY)

Co-author: FAIRBAIRN, Malcolm

Presenter: KAHLHOEFER, Felix (DESY)

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