

## Phenomenology 2023 Symposium



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# Cosmological challenges for dark sectors with new gauge forces

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New gauge forces in nature are among the most well-studied proposed ingredients for particle models of the dark sector. The popularity of such scenarios is driven by the simplicity of the low-energy effective theory needed to describe the associated phenomenology ranging from collider physics, astrophysical systems, and physics of the early universe. However, the origin of the parameters in the effective theory is often overlooked. From this perspective, I will argue that dark sectors with new gauge forces naturally suggest the existence of new heavy particles and discuss the implied challenges for their thermal history in the early universe and their direct detection.

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