

Dark Sectors from Strongly Coupled Theories

Friday, 29 September 2023 09:45 (20 minutes)

In this talk I will talk about two complementary ways to extend the Standard model and account for a possibly strongly coupled hidden or dark sector. I will highlight the theoretical framework used for both and the phenomenological signals expected and show how the two explore different mass scales –from 100 MeVs to 100 TeVs.

The first half of my talk will envisage the possibility that an SM-neutral dark sector couples to the SM via portals with dimension greater than five. Probing this dark sector directly in the scale-invariant regime allows us to construct a framework we deem model-agnostic. I will mostly focus on how such dark sectors can be probed via decay signals in neutrino detectors which are primarily used for neutrino oscillation measurements. In the second half of my talk, I will instead focus on a class of strongly coupled vector-like GUT theories. Such theories can improve the gauge coupling unification in the SM and simultaneously give rise to an accidentally stable dark matter candidate –the dark baryon. I will talk about the parameter space in which the two aspects of the theory can be made realistic.

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Session Classification: Topical Talks