

PARTICLE PHYSICS SEMINAR SERIES

Embracing the dark side: Hidden naturalness in cosmology and colliders

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The existence of a hidden sector, in which all the new particles are neutral under the strong, weak and electromagnetic forces, is an intriguing possibility for new physics. Within this framework, theories of hidden naturalness can provide elegant solutions to the fundamental mysteries of the hierarchy problem and dark matter. At present, these theories are only mildly constrained by data. However, as I will show, scenarios of this type can lead to striking signatures in cosmology, dark matter halo structure, and collider searches. I will explain how to use the current and future data from Large Scale Structure measurements, direct detection experiments, and long-lived particle searches at the LHC, to uncover the existence of a hidden sector that solves deep physics puzzles.



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