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Beyond the Standard Model Physics with Lattice Simulations[1]

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Lattice simulations of gauge theories are a powerful tool to investigate strongly interacting systems like Quantum Chromo-Dynamics (QCD). In recent years, the expertise gathered from lattice QCD studies has been used to explore new extensions of the Standard Model of particle physics that include strong dynamics. This change of gear in lattice field theories is related to the growing experimental search for new physics, from accelerator facilites like the Large Hadron Collider (LHC) to dark matter detectors like LUX or ADMX. In my presentation I will explore different plausible scenarios for physics beyond the standard model where strong dynamics play a dominant role and can be tackled by numerical lattice simulations. The importance of lattice field theories is highlighted in the context of dark matter searches and the search for new resonances at the LHC.

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