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Theorie-Palaver

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Lorentz room (Staudingerweg 7, 5th floor)

Elias Bernreuther
Fermilab

Light long-lived particles at the LHC and at Belle II

Searches for long-lived particles (LLPs) are a rapidly expanding frontier at the LHC and other collider experiments. Still, many gaps remain in the current search program, in particular for LLPs with masses at the GeV or sub-GeV scale and with very large decay lengths. In this talk, I will illustrate two different approaches to filling this gap by discussing two models of light LLPs and their associated collider signals. First, I will show that the dominant decay mode of vectorlike leptons can be a very long-lived pseudoscalar and a tau lepton and argue that the muon chambers of CMS or ATLAS are ideal places to search for this final state. Second, I will illustrate the excellent sensitivity of Belle II to light LLPs with meter-scale decay lengths using the example of displaced vertex signals from strongly interacting dark sectors.

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