

Contribution ID: 24

Type: **not specified**

Long-Lived Particles, Dark Matter, and Matter-Antimatter Asymmetry

Wednesday, June 28, 2023 4:00 PM (45 minutes)

I discuss how sub-TeV long-lived particles (LLPs) in the visible sector may drive an epoch of early matter domination (EMD). This scenario can accommodate the correct dark matter (DM) relic abundance for both cases with small and large annihilation cross section. I will then present a minimal extension of the standard model that includes a weak-scale LLP and a light DM candidate with $O(\text{GeV})$ mass. The LLP decay at the end of an EMD period yields the correct DM abundance and generates the observed baryon asymmetry of the universe. The parameter space of this model can be probed by proposed LLP searches as well as next-generation neutron-antineutron oscillation experiments.

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