

# First search for inelastic dark matter at the LHC with the CMS detector

*Thursday 30 March 2023 14:15 (15 minutes)*

Searches for dark matter at the LHC have largely focused on WIMPs, but what if instead of just one dark matter species, there exists a richer dark sector hidden from ordinary view? This opens up a whole new paradigm for dark matter searches, allowing us to focus not only on the coupling between dark matter and the standard model, but also on the interactions between dark matter constituents themselves. The LHC is in a unique position to investigate such a rich dark sector, which is otherwise difficult to probe with direct and indirect detection techniques. In this talk, I will report the hot-off-the-press results of the first search for inelastic dark matter (IDM) at the LHC with the CMS detector. IDM predicts a unique and striking long-lived final-state signature, which can be exploited to access a significant fraction of unexplored dark matter parameter space. This parameter space is especially interesting because of the compatibility with the thermal-relic dark matter abundance leftover from the early universe.

**Primary author:** FRANKENTHAL, Andre (Princeton University (US))

**Presenter:** FRANKENTHAL, Andre (Princeton University (US))

**Session Classification:** SESSION 7: Searches at Accelerators (CHAIR: Jay Hauser - UCLA)

**Track Classification:** Dark matter searches at accelerators