Phenomenology 2021 Symposium



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Sources of Low-energy Events in Sub-GeV Dark Matter Detectors

Wednesday 26 May 2021 14:30 (15 minutes)

We point out several unexplored low-energy backgrounds to sub-GeV dark matter searches, which arise from high-energy particles of cosmic or radioactive origin that interact with detector materials. In this talk, I will focus on Cherenkov radiation and luminescence from electron-hole pair recombination. I will show that these processes provide plausible explanations of the observed events at SENSEI and SuperCDMS HVeV. A detailed simulation of these events at SENSEI will be presented in the companion talk. We also propose several important design strategies to mitigate such backgrounds, which could have a significant impact on the design of future dark matter experiments.

Summary

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