Contribution ID: **1406** Type: **DM**

Sources of Low-Energy Backgrounds in SENSEI

Wednesday 26 May 2021 14:45 (15 minutes)

Several low-threshold detectors looking for sub-GeV dark matter have observed a large rate of low-energy events. The SENSEI experiment, which looks for small ionization signals in Silicon Skipper CCD to search for sub-GeV dark matter, has also observed a large single-electron event rate which cannot be explained by previously explored backgrounds. In this talk, I will focus on radiative backgrounds like Cherenkov radiation and Luminescence from electron-hole recombination in the SENSEI detector. With results from a detailed simulation of these backgrounds, I will show that a significant fraction of the observed single-electron rate can be attributed to these radiative processes.

Summary

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Session Classification: DM V