



Contribution ID: 50 Type: **Poster presentation (90 second oral summary, 90 minute poster session & free presentation times over 3x 40m coffee breaks)**

# The DarkNESS CubeSat: demonstrating sub-electron noise with skipper-CCDs for space-based imaging

Skipper-CCDs with sub-electron noise have been a transformative device for rare event searches. There is growing interest in using skipper-CCDs in future space-based telescopes, but skipper-CCDs need further development to realize their potential for space-based imaging. The DarkNESS mission will deploy an array of skipper-CCDs on a 6U CubeSat in Low Earth Orbit to search for electron recoils from strongly-interacting sub-GeV dark matter as well as X-ray line signatures from sterile neutrino decay. These measurements will demonstrate the single-electron counting capabilities of skipper-CCDs in the space environment, and pave the way for the future implementation of skipper-CCDs for space-based imaging. This contribution will describe the DarkNESS mission, detail the ongoing DarkNESS R&D efforts, and outline the technical challenges that arise when using skipper-CCDs for imaging and spectroscopy on a satellite.

### contribution subject matter

CCD sensors

### Keywords for your contribution subject matter (this will assist SOC in accurately characterizing your contribution)

Skipper-CCDs, Space-based imaging, single-photon counting sensors

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**Session Classification:** New Detector Technologies

**Track Classification:** Major ISPA Workshop Tracks: New Detector Technologies