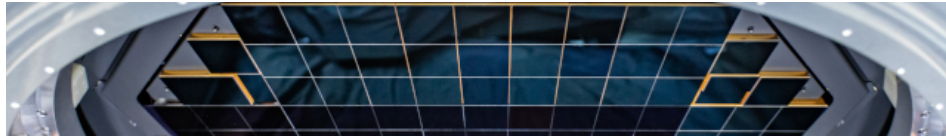


## Image Sensors for Precision Astronomy (ISPA 2024)



Contribution ID: 27

Type: **Oral presentation (20 minute)**

# Partial charge collection and quantum efficiency of a back-illuminated skipper-CCD

*Thursday, 14 March 2024 11:20 (25 minutes)*

The partial charge collection (PCC) layer is a transition interface between the back-end SiO<sub>2</sub> (or SiO<sub>2</sub> + ZrO<sub>2</sub> + In) death layer and the high-purity Silicon bulk in a CCD. Due to the increased likelihood of re-absorption of electron-hole pairs in this region, the charge collection efficiency is typically below that in the bulk. This layer has a large impact on the efficiency loss of the optical spectrum, particularly in the blue region, significantly influencing the sensitivity and precision of back-illuminated CCD sensors. This study presents a preliminary measurement of the PCC layer using a 677 eV X-ray source and a 200 um back-illuminated thinned skipper-CCD. Additionally, I will discuss a method based on the PCC layer to assess the quantum efficiency of visible light without reliance on a calibrated light source or photodiode.

### contribution subject matter

CCD sensors

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

Skipper-CCD, quantum efficiency

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**Session Classification:** New Detector Tech / Skippers - 2

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