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A skipper-CCD light shield for dark matter detection in space

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Skipper-CCDs serve as ultra-low energy threshold detectors increasingly used for rare event searches. Exploring their potential for operation in space to detect electron recoils from strongly interacting sub-GeV dark matter and X-ray signatures of dark matter annihilation or decay raises novel challenges. In this work, we present advancements in the design of Skipper-CCD sensors tailored for operations in environments with high optical background levels, such as those expected in space. These packages incorporate a custom-made aluminum shield placed on the CCD surface that successfully blocks over 99.9% of visible light while preserving the efficiency for >keV X-rays.

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